ONE THOUSAND WAYS TO MAKE A LIVING

HAROLD M. DUNPHY, LL.B.

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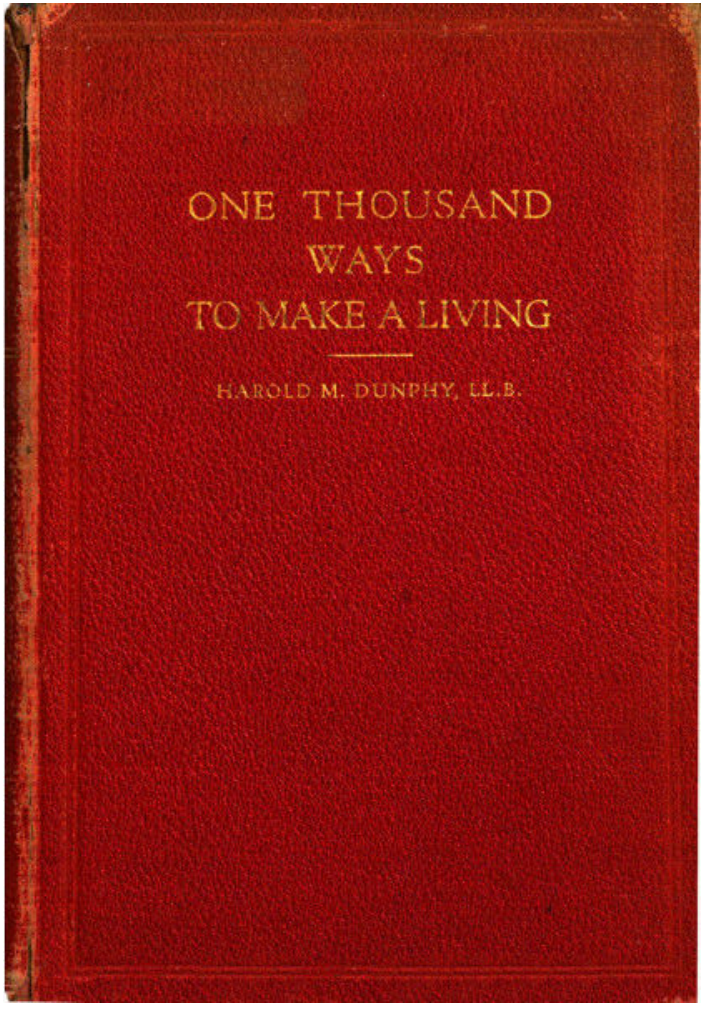
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Please see the Transcriber's Notes at the end of this text.


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HAROLD M. DUNPHY, LL.B.



HAROLD M. DUNPHY, LL. B.
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Attorney at Law

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OR

AN ENCYCLOPÆDIA OF
PLANS TO MAKE MONEY

Collated and Edited

by

HAROLD M. DUNPHY, LL. B.

FIRST EDITION

SPOKANE, WASHINGTON
1919

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BY

H. M. DUNPHY

SPOKANE, WASHINGTON

IMPORTANT PUBLISHER'S ANNOUNCEMENT

The contents of this book have taken years to gather. They have been collected from every corner of this vast continent, and in some cases from Europe. The literary style, no doubt, from the reviewer's point of view, will leave much to be desired. This, from the very start, was pointed out to the editor, Mr. H. M. Dunphy, who, however, determined that his object was to give a plain, unvarnished story of how to make a livelihood, and not to produce a book of a high literary character. His exact words every time were: "My position as editor of this work is simply to take the matter as handed in to me from time to time, see that nothing objectionable or prohibited by the States laws is allowed to be published. So far as the literary style is concerned, it would not be difficult for me, a lawyer of long practice, to fall into line with the orthodox. But I prefer to give the different information just as sent in to me, with certain exceptions I have mentioned.

"I did not arrive at this decision in haste, but after due deliberation. It was a choice of altering—and placing almost every experience I received—into literary phraseology, or allowing same to pass for publication in the language of the people. I choose the latter." We think Mr. Dunphy is right. This book's aim is the people rather than the classes; although we have no doubt it will appeal to many people of high education with slender means.

However, the language in every case is understandable by the people, so, while no excuse is offered, we think the reviewers and the higher educated public should be given an explanation.

Not only from a business point of view, but for the betterment of the conditions of the people, we desire this work to have a wide circulation. There is no

need for people to call aloud about lack of employment if they will not consult this book.

One way to make a livelihood has been omitted in the edition of this work, and we feel sure he will excuse us for drawing attention to the fact. We want agents in every part of the country—and we don't want those agents to handle the work without proper compensation.

Write us for terms.

PREFACE

The title of this book speaks for itself and should require no foreword from me. However, the able compiler and editor thinks otherwise, so I gladly fall in with his wishes.

I grasp the opportunity, because I think when doing so, I can benefit a great number of my fellow-countrymen and country-women, who to-day have the constant shadow of unemployment confronting them.

This is not a "get-rich-quick" book. It is a work to teach people how to get a livelihood. Of course, a great many people who commence in business through reading this book, and adopting one or more of the plans, will naturally push ahead and accumulate wealth. That, however, is not the object of the book. If it were, I certainly should not sponsor its sale. I maintain, as all decent citizens must

believe, that every soul on this planet has a right to a decent existence. But it grieves me to see so many people, young and old, foot-sick, walking about looking for a “job,” which employers of labor are unable to offer. If these people would only look around and try to help themselves a little, the world would be a happier place in which to live.

There is work everywhere to be done, and this book tells how to go about it. It is a book that should be in every public reference library in the country, for the use of those who are unable to buy it.

The various plans for making a living are set forth in such detail that they can be understood by all. They do not cater only to the person who is out of employment, but they are also valuable to the man in business, who through competition may find he is not doing as well as he should. They are a great storehouse of general business knowledge. I, myself, am what people would call a “successful business man.” Yet the book is invaluable to me from the point of view of an investor. If I had had in my possession “Protection against Fraud and Wildcat Schemes” only three years ago—and acted upon it, I should have saved myself from entering into a bad speculation. This chapter is undoubtedly worth ten times the price asked for the whole book.

Out-of-door folk such as farmers and market gardeners, are firm believers in the theory of luck. I suppose it is because there is no more speculative occupation than the cultivation of the soil. Well, I don’t grudge them their theory, but I will say this: If they will only consult this book and act upon its plans, they will find their “luck” has been increased considerably.

But to come back to the unemployed; to the man or woman who is looking for work. It is these people

I personally wish to benefit, and it is to them I would particularly address myself. Of the sincerity of their desire for work, there is no shadow of doubt; and since the only remedy for unemployment is employment, its discovery is the duty of man.

Well, here in this book we have it, of that I am convinced. Only co-operation must come from the unemployed. Let them select one of the plans at once and get to business. I'm sure they will succeed if only they put their heart and soul into it. After a *little* effort, if everything *does not prosper at once*, they must not lapse like Watts' sluggard did: "'Tis the voice of the sluggard, I hear him complain. You've waked me too soon—I must slumber again."

That won't do. In this life, whatever it may be in the next, if we wish to *live*, we must *work*. There will be plenty of time for slumber later on.

And now, a final word. If there should be one person who reads this foreword and who does not believe every word I have written, I ask one favor: Let him individually select one of the plans set forth, and give it a fair trial. I give this advice, knowing full well that all I have written will be found to be true.

This book has my very best wishes for a large sale.

THE WAY TO WEALTH

The following article, "The Way to Wealth" was published by one of the greatest of Americans,

Benjamin Franklin, in his famous “Poor Richard’s Almanac,” in the year 1757. This article is especially strong, as it represents the observations of Benjamin Franklin after twenty-five years of publishing “Poor Richard’s Almanac.” There is, perhaps, no other of Franklin’s writing that won for him more reputation than the following:

“The Way to Wealth” is run in the same form as it was originally written. “The Way to Wealth” should be regarded as the constitution of this book and should be read and followed with each and every plan.

The Way To Wealth

I have heard that nothing gives an author so great a pleasure as to find his work respectfully quoted by others. Just, then, how much I must have been gratified by an incident I am going to relate to you. I stopped my horse lately where a great number of people were collected at an auction of merchant goods. The hour of the sale not being come they were conversing on the badness of the times; and one of the company called to a plain, clean, old man, with white locks: “Pray, Father Abraham, what think you of the times? Will not these heavy taxes quite ruin the country? How shall we ever be able to pay them? What would you advise us to do?” Father Abraham stood up and replied: “If you would have my advice, I will give it to you in short; for a word to the wise is enough, as Poor Richard says.” They joined in desiring him to speak his mind, and gathering around him he proceeded as follows:

“Friends,” said he, “the taxes are indeed very heavy, and if those laid on by the government were the only ones we had to pay, we might more easily discharge them, but we have many others and much

more grievous to some of us. We are taxed twice as much by our idleness, three times as much by our pride, and four times as much by our folly, and from these taxes the commissioners cannot ease or deliver us by allowing an abatement. However, let us hearken to good advice and something may be done for us: 'God helps those who help themselves,' as Poor Richard says.

"I. It would be thought a hard Government that would tax its people one-tenth part of their time to be employed in its service, but idleness taxes many of us much more; sloth by bringing on disease, absolutely shortens life. 'Sloth, like rust, consumes faster than labor wear, while the used key is always bright,' as Poor Richard says. 'But dost thou love life? if so then do not squander time, for that is the stuff life is made of,' as Poor Richard says. How much more than is necessary do we spend in sleep, forgetting that the 'sleeping fox catches no poultry,' and that 'there will be sleeping enough in the grave,' as Poor Richard says.

"'If time be of all things the most precious, wasting time must be,' as Poor Richard says, 'the greatest prodigality,' since, as he elsewhere tells us, 'lost time is never found again, and what we call time enough always proves little enough.' Let us then be up and doing, and doing to the purpose; so by diligence shall we do more with less perplexity. 'Sloth makes all things difficult, but industry all things easy; and he that rises late, must trot all day, and shall scarce overtake his business at night: while laziness travels so slowly that poverty soon overtakes him. Drive thy business, let not thy business drive thee; and early to bed and early to rise, makes a man healthy, wealthy, and wise,' as Poor Richard says.

"So what signifies wishing and hoping for better

times? We may make these times better if we but bestir ourselves. ‘Industry need not wish, and he that lives upon hope will die fasting. There are no gains without pains; then help, hands, for I have no lands; or if I have they are smartly taxed. He that hath a trade hath an estate, and he that hath a calling hath an office of profit and honor,’ as Poor Richard says. But then the trade must be worked at and the calling followed, or neither the estate nor the office will enable us to pay our taxes. If we are industrious we shall never starve, for ‘at the working man’s house hunger looks in but dares not enter.’ Nor will the bailiff nor the constable enter, for industry pays debts, while despair increases them. What, though you have found no treasure, nor have any rich relations left you a legacy, ‘diligence is the mother of good luck, and God gives all things to industry. Then plow deep while sluggards sleep, and you shall have corn to sell and to keep.’ Work while it is called today, for you know not how much you may be hindered tomorrow. ‘One today is worth two tomorrows,’ as Poor Richard says; and further, ‘never leave that till tomorrow which you can do today.’ If you were a servant would you not be ashamed that the good master should catch you idle? Are you then your own master? Be ashamed to catch yourself idle when there is so much to be done for yourself, your family, your country and your king. Handle your tools without mittens; remember that ‘the cat in gloves catches no mice,’ as Poor Richard says. It is true that there is much to be done, and perhaps you are too weak-handed, but stick to it steadily and you will see great effects; for ‘constant dropping wears away stones; and by diligence and patience the mouse ate in two the cable; and little strokes fell great oaks.’

"Methinks I hear some of you say: 'Must a man afford himself no leisure?' I will tell thee, my friends, what Poor Richard says: 'Employ thy time well, if thou meanest to gain leisure, and since thou art not sure of a minute, throw not away an hour.' Leisure is time for doing something useful; thus, leisure the diligent man will obtain, but the lazy man never; for 'a life of leisure and a life of laziness are two things. Many, without labor would live by their wits only, but they break for want of stock'; whereas industry gives comfort and plenty and respect. 'Fly pleasures, and they will follow you. The diligent spinner has a large shift; and now I have a sheep and a cow, everybody bids me good morrow.'

"II. But with our industry we must likewise be steady, settled and careful, and oversee our own affairs with our own eyes, and not trust too much to others; for, as Poor Richard says:

"And again, 'three removes are as bad as a fire.' And again, 'keep thy shop and thy shop will keep thee.' And again, 'if you would have your business done, go; if not, send.' And again, 'He that by the plow would thrive, himself must either hold or drive.' And again, 'the eye of the master will do more work than both his hands.' And again, 'want of care does us more damage than want of knowledge.' And again, 'not to oversee workmen is to leave them your purse open. Trusting too much to others is the ruin of many; for in the affairs of this world men are saved, not by faith, but by want of it.' But a man's own care is profitable; for, 'if you would have a faithful servant, and one that you like, serve yourself. A little neglect may breed great mischief; for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost, being overtaken and slain by the enemy; all for want

of a little care about a horseshoe nail.'

"III. So much for industry, my friends, and attention to one's own business; but to these we must add frugality, if we would make our industry more certainly successful. A man may, if he knows not how to save as he gets, keep his nose all his life to the grindstone and die not worth a groat at last. 'A fat kitchen makes a lean will; and many estates are spent in the getting. Some women for tea forsook spinning and knitting. And men for punch, forsook hewing and splitting. If you would be wealthy, think of saving as well as getting. The Indies have not made Spain rich, because her outgoes are greater than her incomes.' Away then with your expensive follies, and you will not have so much cause to complain of hard times, heavy taxes and chargeable families; for, 'Women and wine, game and deceit, make the wealth small and the wants great.' And further, 'What maintains one vice would bring up two children.' You may think, perhaps, that a little tea, or punch now and then, diet a little more costly, clothes a little finer, and a little entertainment now and then, can be of no great matter; but, remember, 'Many a little makes a mickle.' Beware of little expenses. 'A small leak will sink a great ship,' as Poor Richard says; and again, 'who dainties love, shall beggars prove;' and moreover, 'Fools make feasts, and wise men eat them.' Here you are all got together at this sale of finery and nicks-nacks. You call them goods; but if you do not take care, they will prove evils to some of you. You expect they will be sold cheap, and perhaps it may be less than they cost; but if you have no occasions for them, they must be dear to you. Remember what Poor Richard says: 'Buy what thou hast no need of, and ere long thou shalt sell thy necessaries.' And again, 'At a great

pennyworth, pause awhile.' He means, that perhaps the cheapness is apparent only, and not real; or the bargain, by straightening thee in thy business, may do thee more harm than good. For in another place he says, 'Many have been ruined by buying good pennyworths.' Again, 'it is foolish to lay out money in a purchase of repentence,' and yet this folly is practiced every day at auctions for want of minding the Almanac. Many a one for the sake of finery on the back, has gone with a hungry belly and half starved his family. 'Silks and satins and scarlets and velvets put out the kitchen fire,' as Poor Richard says.

"These are not the necessaries of life; they can scarcely be called the conveniences; and yet, only because they look pretty, how many want to have them! By these and other extravagances, the genteel are reduced to poverty and forced to borrow from those whom they formerly despised, but who, through industry and frugality, have maintained their standing; in which case it appears plainly that: 'A plowman on his legs is higher than a gentleman on his knees,' as Poor Richard says. Perhaps they had a small estate left them, which they knew not the getting of; they think, 'it is day, and will never be night;' that a little to be spent out of so much is not worth minding; but 'always taking out of the meal-tub, and never putting in, soon comes to the bottom,' as Poor Richard says; and then, 'when the well is dry, they know the worth of water.' But this they would have known before, had they taken his advice. 'If you would know the value of money, go and try to borrow some;' for 'he that goes a borrowing, goes a sorrowing,' as Poor Richard says. And indeed so does he that lends to such people, when he goes to get it again. Poor Dick further advises and says: 'Fond

pride of dress is sure a very curse; ere fancy you consult, first consult your purse.' And again, 'Pride is as loud a beggar as want, and a great deal more saucy.' When you have bought one fine thing, you must buy ten more, that your appearance may be all of a piece; but poor Dick says, 'It is easier to suppress the first desire than to satisfy all that follow it. And it is as truly folly for the poor to ape the rich, as for the frog to swell in order to equal the ox.'

"It is, however, a folly soon punished; for, as Poor Richard says, 'Pride that dines on vanity, sups on contempt. Pride breakfasted with plenty, dined with poverty, and supped with infamy.' And after all, of what use is this pride of appearance, for which so much is risked, so much suffered? It cannot promote health, nor ease pain; it makes no increase of merit in the person; it creates envy; it hastens misfortune.

"But what madness must it be to run in debt for these superfluities? We are offered by the terms of this sale six months' credit; and that perhaps, has induced some of us to attend it, because we cannot spare the ready money, and hope now to be fine without it. But ah! think what you do when you run in debt; you give to another power over your liberty. If you cannot pay at the time, you will be ashamed to see your creditor; you will be in fear when you speak to him; you will make poor, pitiful, sneaking excuses, and by degrees come to lose your veracity and sink into base, downright lying; for 'the second vice is lying, the first is running into debt,' as Poor Richard says; and again, to the same purpose, 'Lying rides upon Debts back;' whereas a free-born Englishman ought not to be ashamed nor afraid to see or speak to any man living. But poverty often deprives a man of all spirit and virtue. 'It is hard for an empty bag to stand upright.'

"What would you think of that prince or government who should issue an edict forbidding you to dress like a gentleman or gentlewoman, on pain of imprisonment and servitude? Would you not say that you were free and had the right to dress as you please; that such an edict would be a breach of your privileges, and such a government tyrannical? And yet you are about to put yourselves under such tyranny when you run in debt for such dress! Your creditor has authority, at his pleasure to deprive you of your liberty by confining you in gaol till you shall be able to pay him. When you have got your bargain, you may perhaps think little of payment; but, as Poor Richard says, 'Creditors have better memories than debtors; creditors are a superstitious sect—great observers of set days and times.' The days come around before you are aware, and the demand is made before you are prepared to satisfy it; or, if you bear your debt in mind, the term which at first seems so long will, as it lessens, seem extremely short. Time will seem to have added wings to his heels as well as to his shoulders. 'Those have a short Lent who owe money to be paid at Easter.' At present, perhaps, you may think yourselves in thriving circumstances, and that you can spare a little extravagance without injury, but, 'for age and want save while you may—no morning sun lasts a whole day.' Gain may be temporary and uncertain, but ever, while you live, expense is constant and certain; and 'it is easier to build two chimneys than to keep one in fuel,' as Poor Richard says; so, 'rather go to bed supperless than rise in debt.' 'Get what you can, and what you get, hold; 'Tis the stone that will turn all your lead into gold.' And when you have got the philosopher's stone, surely you will no longer complain of bad times, or the difficulty of paying taxes.

"IV. This doctrine, my friends, is reason and wisdom, but, after all, do not depend too much on your own industry and frugality and prudence, though excellent things, for they all may be blasted, without the blessing of heaven; and therefore ask that blessing humbly, and be not uncharitable to those that at present seem to want it, but comfort and help them. Remember Job suffered and afterwards was prosperous.

"And now, to conclude, 'Experience keeps a dear school, but fools will learn in no other,' as Poor Richard says, and 'scarce in that, for it is true we may give advice, but we cannot give conduct.' However, remember this, 'They that will not be counseled cannot be helped,' and further, that 'if you will not hear reason, she will surely rap your knuckles,' as Poor Richard says."

Thus the Old Gentleman ended his harangue. The people heard it and approved the doctrine, and immediately practiced the opposite, just as if it had been a common sermon; for the auction opened and they began to buy extravagantly. I found the good man had thoroughly studied my Almanac, and digested all I had dropped on these topics during the course of twenty-five years. The frequent mention he made of me, must have tired anyone else, but my vanity was wonderfully delighted with it, though I was conscious that not a tenth part of the wisdom was my own which he ascribed to me, but rather the gleaning I had made of the sense of all ages and nations. However, I resolved to be the better for the echo of it, and though I had at first determined to buy stuff for a new coat, I went away, resolved to wear my old one a little longer. Reader, if thou wilt do the same, thy profit will be as great as mine. I am, as ever, thine, to serve thee.

RICHARD SAUNDERS.

SELF-PROTECTION AGAINST FRAUDULENT SCHEMES AND WILDCAT INVESTMENTS

Thousands of men and women, who have lost their savings of years through the skillfully manipulated schemes of men who make a profession of robbing the unwary, might still be in comfortable circumstances had they been forewarned and forearmed against these people by the timely advice of some one who knew the crooks and turns by which they approach their victims with honeyed words and roseate pictures of fortunes quickly and easily made.

Women who have come into the possession of considerable sums of money, through inheritance, or as beneficiaries of husbands, fathers or brothers, are the special objects of exploitation. It is estimated that fully 90 per cent of the women thus provided for, lose the entire amounts within three to six months.

Many of these women succumb to flatteries accompanying offers of marriage, and willingly turn over every dollar that some loyal and devoted husband and father has made untold sacrifices to provide. Once in possession of the money, however,

these villains usually disappear, to seek new fields and swindle other women by the same contemptible methods.

The greater part of the fraudulent schemes through which women with little savings are swindled, consists of plausible plans for making “profitable” investments. The writer of this chapter is reliably informed that in a certain city of over 100,000 inhabitants, more than sixty-five men engage in this business.

Women, however, are not the only victims, for men are also easily persuaded to part with their savings.

The man or woman known to have acquired any considerable sum of money, or even a few hundred dollars, is skillfully approached and asked to make an investment that is “sure to double your money in six months,” or guaranteed to pay 1,000 per cent dividends within a year, and every year thereafter, and the alluring picture thus held out is usually a veritable gem of literary and artistic skill.

Perhaps it is a choice piece of real estate, which the owner will sell at a “great sacrifice,” as his health requires a removal to a “milder climate.” Or it may be a block of mining or industrial stock, represented by a gorgeously engraved certificate, embellished with an elaborate seal and is advertised as a “real snap,” as only a few dollars of additional capital will start the enterprise to grinding out dividends. Whatever it is, there is a dazzling certainty about its future that is perfectly bewildering to the poor investor, who is made to see him- or herself soon very wealthy. And how easy it is to make an inexperienced woman—or man, either—believe that her or his few hundred dollars can so easily be turned into a channel that will bring a swift and sure

reward.

The bait may be a first mortgage on a piece of farm land, “worth many times the small indebtedness it represents,” bears a high interest rate, and which, if foreclosed by the holder, would make him well to do.

Oftentimes these seductive offerings come through a friend, who offers—for a commission—to guide the faltering steps of the investor to certain wealth, as a personal favor.

The valuable farm land is found to be upon a mountain top or in the middle of a swamp, where no one could live or nothing can grow. It is worthless. But the mortgage, which showed some one had loaned a large sum of money on it? Oh, that was a mortgage made for the purpose. No real money was ever loaned on it.

And the stock in that wonderful mine, almost ready to pay dividends? Why, that consists principally of a set of location stakes, with perhaps a 10-foot hole in the ground, representing the first year’s assessment work on a very poor “prospect.” Anybody can see that it never will make a mine.

But the industrial enterprise—that surely must have a bright and promising future. Well, maybe, but as yet it has no equipment, no raw material, no franchise, no location—nothing but a certificate of incorporation, authorizing a few comparatively unknown men, with no capital whatsoever, to do a certain kind of manufacturing or other business—if they can raise a little money with which to make a start. At last, when the money is gone and it is too late, the poor investor begins to realize what has happened. His money is lost.

It is bad enough for the one who has been thus defrauded, but it is many times worse when little

children are made to suffer. It may be that the widow should pay the penalty of her foolishness but the innocent, helpless little children are the ones who suffer most.

How to guard against the depredations of these people, and protect one's self, is the object of this chapter. By following the plan here outlined, any man or woman can be assured of comparative safety. It has been successfully employed, and has saved thousands of dollars.

First of all, you must learn to do your own thinking, instead of becoming confused by the advice that is offered you, for no two of your friends or acquaintances will advise you alike. Use your own judgment, and carefully weigh every suggestion.

Suppose you are approached with a proposition to invest your money. No matter how attractive the prospect may look, adopt this as a slogan: "*Investigate before investing,*" and do this thoroughly, because the "snap" will not be gone if you delay a little while. Make sure that your investigation is as complete as possible. This will not only protect you from fraudulent and wild-cat schemes but will enable you to find a really meritorious proposition. It may cost you from $25 to $50 as expense for investigation purposes, but this is far better than losing $5,000 to $10,000. Make it a rule to test all propositions on which you are solicited—to never act until you have full information before you. When approached by the person desiring you to invest tell him before going into a discussion as to the investment you wish to be informed about his company. Copy all the following questions and submit them to him, requesting that each question be carefully answered, and that after the answers are made they shall be signed by the corporation, individual, company or partnership. If

his proposition is all right, and he believes in it, he will gladly co-operate; but if he is doubtful whether or not it will stand the test, he will endeavor to persuade you not to put the company to the trouble of answering so many unnecessary questions. Adhere to your resolution to have the information first. These questions alone will eliminate nine-tenths of the fraudulent investments and all weak propositions.

List of Questions to Submit

1. Give full name of corporation, partnership or association.
2. If partnership, has your firm name been properly filed of record?
3. If corporation, when were you incorporated?
4. Have you paid your last annual license fee to the state?
5. What is your capitalization?
6. In how many shares is the company divided?
7. Is the stock assessable or non-assessable?
8. Do you have common or preferred stock?
9. If you have common or preferred stock, how much common and how much preferred stock have you?
10. State the object of the company in issuing these two kinds of stock.
11. What advantage has the preferred over the common?
12. What is the preferred stock selling for? Also the common? How much have you sold to date of each?
13. What are the names of the present stockholders and their addresses and how much cash have they paid for the stock they hold?
14. If they have not paid cash—what did they give

for their stock?

15. Has any stock or interest in the company been given for the promotion of the company? If so, how much or what interest?

16. Give the names, addresses and businesses, also amount of stock held by each of the officers, trustees or directors of said corporation or company, also did they pay cash for their stock—if so, how much? If service was rendered for stock, what was the service?

17. Is the stock of the company paid for in full? If so, state how or in what manner it was paid for.

18. When and where do you hold your annual meetings?

19. Do your trustees meet regularly and transact their business and have they done so from the inception of the corporation?

20. Have you a list of articles of incorporation and by-laws printed? If so, please furnish me with a copy of them.

21. Please state where I can see the minutes of your meeting.

22. Will you allow my attorney to go over the minutes of your meetings?

23. Have you real estate? If you answer yes, set forth the legal descriptions of all the real estate now owned by you, whether in this state or in other states.

24. Is the above described property free and clear of all incumbrances?

25. If you answer no, state in detail the kind of incumbrance, amount, and date it is due.

26. Please state the present value of each piece of property and state whether or not it is improved.

27. If you answer that the land is improved, state clearly how and in what manner it is improved and set forth clearly what the improvements are on said

land.

28. What income has said lands and what is the gross expense of the property?

29. What net profit is made from land each year by your company?

30. What other assets has the company? And if there are other assets, where are they kept? Please set forth these assets in full, their present value and whether or not they are free and clear of all incumbrances.

31. What bank or trust company do you bank with? How long have you banked with it.

32. How much have you now on hand with said bank or trust company?

33. Please give the name and address of your lawyer and how long he has represented you.

34. What salaries are paid to officers of the company?

35. What are the total debts of the company at the present time? Please state to whom they are due and how long they have been owing.

36. Are there any judgments now on record or in existence against your company?

37. Are there any lawsuits now pending? If you answer yes, please give case number, name and address of plaintiff's attorney and amount involved.

38. Is there any contemplated suit against the company which you have any knowledge of? If you answer yes, state the facts concerning it.

39. Please furnish me with a detailed statement of the affairs of the company. Showing the present income and expense and net profit or loss made to date.

40. Have you as yet paid dividends on your stock?

41. Please furnish me with a complete statement in writing as to what your company plans to do this

year and the immediate future and what profits are reasonably possible from such operations.

42. If I invest $——, please state to what use my money will be put.

43. If it is to be used for a certain purpose, state how much of my money will go to the company and how much will go out on commissions.

44. Will the money I have subscribed be sufficient or will other money be necessary for the company successfully to carry out its plans? If you answer no, how much more will be necessary?

In the event of the above list of questions being answered in full, inform the salesman that you will familiarize yourself with the report and will later call upon him to go over the matter.

First look into the reputation of the men connected with the company. Also the reputation of the trustees and officers. Also obtain the financial standing of the large stockholders. This can be done in cities of over 50,000 by consulting reporting companies. See some prominent merchant and find out the best reporting company in the city. Call or write the reporting company and ascertain from them whether the above parties are good pay and whether they are the kind of men that are successful in carrying out plans. This report is important; it will cost you so much per name but it is well worth the fee to you. If the majority of these men are unknown—or have a poor reputation and are bad pay—it would be unnecessary to go further in your investigations as your chances would be very poor in such a company. Oftentimes this investigation alone will show the promotors have suits pending against them and even judgments on record.

However, if these investigations show the above-referred-to men O. K., submit the signed report to a

banker not named as the company banker and obtain as complete a report as possible in writing from the bank and pay for the trouble; if the bank will not give a written report obtain a verbal report and write it down later yourself. If their advice is for or against the investment, obtain their reasons, and if none is given do not give it any thought.

Now see a lawyer and have him give you an exhaustive written report on your signed report, and pay him for it. Remember that it is far better to pay $25 to $50 and know where your investment is to go, than take a chance of losing all you possess. These last two reports will be very valuable to you. I suggest that they be put in writing so that when you are alone in your home you will be able to consider more carefully their report and advice.

Now make a copy of the real property and write the assessors of the county in which the land lies for a report concerning this land and its improvements. This information will be furnished you free of charge. If it be farm property, they can inform you quite well the kind of land and its value and also give you what improvements, if any, are on the land and their nature. And the same is true of city property. While the assessor's estimate may be a little below the real value of the land it is far better to have the land at too conservative a figure than an excessive figure.

In the event that the company is in possession of mortgages, have a detailed report from the county assessor's office as to the mortgaged property. This will give you the character of the mortgage security.

The writer in the last two years has saved more than $5,000 to his clients by checking up the property used as a security for the mortgage.

In one case my client requested me to prepare a

deed and have it ready for him at three o'clock, the time of request being about 1:30 P. M., that he had decided to accept a $1,500 mortgage. The mortgage ran for three years—two years having elapsed—and the interest had been paid to date. He permitted me, by way of caution, to call the county assessor's office, some hundred miles away, by long distance, which revealed that the land securing the mortgage was above the snow line up in a mountain region and worthless.

Armed with the above information you are prepared to talk and question the salesman. If he is sincere he will endeavor to answer fully your questions. After you talk with the salesman do not give your answer at once but inform him that you will give him your final answer in two or three days.

With the various reports before you—and the salesman's answers to your questions which you should jot down—as judge of your own affairs decide your course of action. If your decision is to invest your money you will be an asset to the company as you will be familiar with its workings. Oftentimes ignorant investors in a company will destroy a good proposition.

If your decision is favorable, put away the signed report of the company, along with all the data, you have secured, and in case the future develops that the facts stated in the company's report is untrue, you can lay the representation made, before an attorney and your case will be clear.

ONE THOUSAND WAYS TO MAKE A LIVING

In presenting these one thousand tried and tested plans for making a living, the author hopes and believes that he will be the means of helping many people to better methods of earning money; by pointing out to them the occupations to which they are better adapted, and in which their chances of success may be greatly increased.

Especially will the opportunities thus presented be welcomed by the families of those who have sacrificed their lives for their country, and those who return from the war wounded, or otherwise incapacitated from following their former callings.

They will find in this book many valuable suggestions for the taking up of other lines of work, and profiting by the experiences of those who have successfully worked the various plans herein set forth.

It should be borne in mind, however, that those adopting any of the plans herein outlined must combine in the execution of the same the elementary essentials of earnestness, honesty and perseverance, coupled with a strong will power and a determination to win success. Let them make this their one definite aim, and they will find that what others have done, they can do, and thereby bring to themselves and their families that much desired end —prosperity and happiness.

PLAN No. 1. WEAVING BASKETS FOR FERNS

It was the clever idea of a woman that prompted her to dig ferns out of the woods of her native state, and put them in attractive raffia baskets woven by herself. The florists of her neighboring city gladly pay good prices for all of these she can bring in. In the winter she fills these same baskets with holly, attaches a bow of red ribbon to the side of each basket, and sells them as fast as she can turn them out. Other plants can be used to the same advantage in other localities.

PLAN No. 2. PROFESSIONAL HOSTESS

A young girl who possessed a pleasing personality, but had no capital, created a profitable profession for herself by announcing to the young mothers of her neighborhood that she would take charge of children's parties at the low price of two dollars for an afternoon. She arranged the menu and planned the entertainment for the youngsters, and did it so well that she soon had all the orders she could fill.

From this small beginning, she enlarged her activities by planning parties for grown people as well, at a much higher remuneration, and she is now receiving orders for conducting all kinds of entertainment, and it pays her well.

PLAN No. 3. A TEACHER TURNS CHAUFFEUR

One of the teachers of a Seattle school was obliged by ill-health temporarily to suspend teaching, and, for outdoor exercise, engaged to run an auto carrying children from a distance to and from the school. She soon found this work so healthful and pleasant that

she bought a machine, carried passengers for a while at a good profit, and finally, in partnership with her brother, an expert mechanic, went into the automobile business as a regular occupation.



Plan No. 3. A School Teach

She makes considerable money by giving lessons to women in the management of a car.

PLAN No. 4. PAID READING MATTER FOR

NEWSPAPERS

Just after the panic of 1893, when jobs were not to be had, an advertising man made a contract with a Denver daily newspaper to conduct a column of small reading notices, on a commission of forty per cent. He went among the small merchants who were not advertising in the display columns, and found they were willing to spend a little money each month in that sort of publicity, though not able to advertise extensively.

He wrote attractive items for each one, and had them set up in the form of news matter. By keeping his column free from display lines and other indications of advertising, he soon built up a very handsome column, which many merchants were willing to patronize, as the cost was small and the results extremely satisfactory.

He also wrote special articles that looked and read exactly like news items, and even secured columns of interviews, at regular rates, with leading business men concerning general trade conditions, thereby aiding in restoring public confidence following that panicky period. His commissions during that year of hard times averaged forty dollars per week, and he had made many thousands of dollars for the paper besides.

This plan is not so easy to work as it was then, as all paid articles must now be followed by the word “adv,” meaning advertisement; and yet, even with that handicap, reading notices are still regarded by many people as more effective than display advertisements, and the man who has a talent for writing that class of matter can still make good money by doing so.

PLAN No. 5. VACANT LOTS KEPT CLEAN

Here is the case of a woman who, though having only a few hundred dollars, had a lot of foresight and energy, and these qualities enabled her to originate a plan that paid.

Thousands of vacant lots in her city were covered with weeds that were an eyesore to their respective neighborhoods, and detracted from their appearance when shown to prospective purchasers. She went to the agents for these lots, made contracts with them under which she was to keep them clean of weeds the entire season for $3 per one hundred feet frontage, bought a mowing machine with her $100, and went to work. She also contracted to mow the lawns of a large number of people, hiring thirty men at $1.50 per day to do the work, and charging $2 per day for the work done by each man. The profits of her first month's work paid for her mowers and her advertising, but after that all the profit was hers. The summer's work, after paying all expenses, including her own board and clothes, netted her $1,200. The next season she contracted to keep the weeds from city lots that aggregated 2,000 acres, at $3 per one hundred feet frontage, plowed those lots all up, sowed them in wheat, kept fifty men employed, mowed more lawns, cut and threshed her wheat, and found she had made $11,000, with good prospects of making a great deal more the next year.

And all she had to start on was a few hundred dollars and a plan.

PLAN No. 6. MINT CULTURE

No capital, and but little space, is required for growing mint on a profitable scale. One woman, who

is making and saving money for the education of her children, goes at it in a very methodical manner. She lays out her ground in beds with walks between, and each variety is given a separate bed. Each bed has a border of sage or other herb plants that find a ready sale. The soil should be loose and fine, and well fertilized, to obtain the best results. She not only supplies customers in her nearest town, but, as her business increases, is shipping a great deal of it to the city markets, where it is in constant demand from hotels, cafes, druggists, candy makers, etc. What she does not sell, she utilizes at home in the making of candy, delicious sweets and aromatic vinegars. Crystallized and candied mint leaves, mint sprays, mint vinegar and other products of this herb are much sought after, and to the resourceful person who has a taste for this class of work there is a mint of money in mint.

PLAN No. 7. CLIPPING COLLECTION

The woman who has a taste for literary or club work can turn many an honest penny by starting a small clipping bureau of her own.

One lady who made a success of this, both socially and financially, procured some large envelopes, and put all the clippings she made from magazines, newspapers, etc., on any one subject, into one envelope, duly labeled, until she had accumulated an extensive variety. Realizing that material for papers to be read at the meetings of women's clubs are always eagerly sought for, she specialized on those subjects that engrossed the attention of club women, particularly biographical sketches, entertainments, plans for special holidays, and table decorations,

place cards, games, amusements, etc. Then she let it be known that for a small fee, she would furnish the material for properly entertaining the club, and found her clippings in constant demand.

This is a good plan, that can be carried out with considerable profit, and one that requires no capital to start or operate it.

PLAN No. 8. A ONE-COW DAIRY

Here is how a lady who knew her business made a lot of pin money from what she called her "One-Cow Dairy." There were three in the family and their available capital consisted of an excellent cow, with an average butter production of one pound per day the year round, besides supplying the family with plenty of milk and cream. They also had a small cream separator, which cost considerable to begin with, but more than paid for itself, even with the output of a single cow, as it insured clean milk, more and better cream, and required less work as well as but little space.

For a butter worker, they had a ten-gallon V-shaped barrel churn, also a four-gallon stone jar for holding the cream, and a good pair of balance scales. Her husband built a dairy, 8x12 feet, with cemented floor, on the shady side of the house, covering it with vines, thus assuring a cool place always. She bought an iceless cooler, made entirely of galvanized iron, which is placed outside for holding the cream, and in which, the night before churning, she puts two pails of water, to preserve an even temperature. She sells her butter the year around, to regular customers, at forty cents per pound, and has demands for more than she can produce.

When the cow is about to go dry, she puts away, in brine, strong enough to float an egg, all the butter the family will need for that period, and having tied the pieces of butter up in muslin thoroughly sterilized, it keeps as fresh and sweet as the day it was made.

The total cost of establishing her dairy, exclusive of the separator, was $26.25, and with the present equipment she is ready to add one or two more cows to her dairy, whenever she finds those that are as good as the one she already has. She will thus be at but little additional expense, while greatly increasing her revenue.

PLAN No. 9. WRITING BUSINESS LETTERS

Many good business men write very poor business letters, and anyone having a taste and a talent for this class of work can make the writing of such letters a permanent and profitable profession. A former newspaper man in a western city took it up, and found in it a much larger income than even the liberal salary he had formerly received.

Living in a town of about 50,000 inhabitants, and having a rather extensive acquaintance, he called upon a number of the leading merchants and offered to come at a certain hour each day and dictate the answers to all letters received from out-of-town customers. As most of these firms did a large mail order business, and the heads of the concerns in many cases lacked either the time or the ability to give the correspondence the attention it deserved, they were glad to turn it over to a man who could handle it in a thorough manner.

This man found that he could easily dictate one

hundred or more letters per day, among the various firms engaging his services, and could well afford to do the work for five cents per letter, thus making at least thirty dollars per week, with but little effort. He also prepared form letters for many of his patrons, for which he charged from five to ten dollars each, and thus increased his income to over fifty dollars per week. It is readily seen, therefore, that this is not only a very genteel profession for anyone adapted to it, but one that also pays well, besides being a good thing for the merchants who have their letters written by someone who knows how.

PLAN No. 10. WINDOW-CARD SUGGESTIONS

An Illinois woman tells an interesting story of how she helped her husband rise from a $20-a-week clerk to proprietor of a fine office business netting them $5000 a year, but she furnished the plan.

Both were employed in an advertising agency, and patronized a nearby delicatessen store kept by a German woman who prepared palatable foods, but never had used any form of publicity concerning them.

The lady with the idea was fond of the home-baked beans and the salads sold at this place, but had no means of knowing on what days they were to be had. So, instead of asking the German lady what days she had these on sale, she suggested the idea of furnishing her with attractive window-cards and appropriate decorations showing each day's specialties in a way that drew favorable attention—and an increased volume of trade. Later she asked her patron to allow her to write and place in the local papers notices regarding her specialties, and

this greatly added to the incomes of all concerned. But it was the results of those display cards in the window, "Today is Baked-Bean Day," and "If You Like Potato Salad, You'll Like Ours," that turned the trick and got things going.

Soon after this, the husband and wife joined forces and made a "drive" for other lines of business, with the result that in six years they were occupying a handsome four-room suite of offices, with two large national advertisers and twenty-seven smaller ones for a clientele, were employing a rather extensive corps of assistants, and clearing up $5,000 per year net profits.

It was a woman's plan that made this a success.

PLAN No. 11. STARTING A GINGHAM SHOP

From a position as a small-salaried clerk in a Missouri wholesale dry-goods store to the ownership of a good-paying store of their own, is told by a wife, who first conceived the idea of the enterprise.

Needing some ginghams for her little girls' school dresses, she learned that gingham stocks in all the retail stores were extremely limited, the clerks telling her that the firms purchased cheap wash goods only once a year, and they were practically out.

On her way home, she passed an attractive storeroom in a good location, and suddenly she formulated a plan by which she and her husband would start something new—A GINGHAM STORE!

She talked the matter over with her husband that night, and he was very favorably impressed with the idea. The firm by which he was employed also thought it would be a splendid thing and offered him very liberal terms on whatever purchases of stock he

might desire from them. What money they had they invested in stocks, improvements, rent, advertising, etc., the wife selecting every piece of gingham that went into the store, putting herself in the place of the woman who would want to buy ginghams for any purpose.

A handsome electric sign announced "The Gingham Shop"; as did the lettering on the windows, the bill-boards and in the street cars, and ads. in all the papers told the story of "The Gingham Shop." They advertised a dolly's gingham apron free to every little girl who came to their opening accompanied by her mother. That brought the mothers, and they kept coming, more and more of them every day, for they managed to keep the gingham idea before all the people all the time, in a thousand different ways, until every one who thought of ginghams at all thought of "The Gingham Shop." Their store became the fad, so that they had practically all the gingham trade of the town and for many miles around. They sold strictly for cash, and thereby eliminated bookkeeping, collecting and bad debts.

PLAN No. 12. CROCHETING DOLL CLOTHES

Noticing a very pretty doll's crocheted sack in a store, and hearing the proprietor say he feared he could get no more like it, as the lady who made those things for him had not been in the store for some time, a young lady who had ideas of her own decided to take up the work herself.

She bought some worsted, went home and proceeded to make a number of dolls' sacks, hoods, capes, booties, caps, slippers, muffs, etc., put some

baby ribbon on most of them, and, after figuring up the cost, put a price on each article and returned to the store. The proprietor was so well pleased that he gave her a large order, as did also several others in that and nearby towns. Then she learned where she could buy the worsted and ribbon at wholesale prices, and until after the holidays her spare time was all spent in crocheting dainty things for dolly, when she found she had made a profit of nearly $100 in odd moments. Later she began taking orders for crocheted scarfs, shawls, fascinators, etc., and made it a regular business for it continued to pay well. And it required very little time, capital or labor to make it a success.

PLAN No. 13. MAKING READY-TO-WEAR APRONS

Making and selling ready-to-wear aprons is the means a woman may employ to earn a good many extra dollars, without interfering very much with her regular household duties. She can turn her parlor into a work- and sales-room, where she can exhibit every description of aprons, in sizes and patterns, and offer them at attractive prices. A woman we know, now has a large list of regular patrons and has found it necessary to employ help in doing her housework, so that she can devote the larger portion of her time to this new enterprise.

PLAN No. 14. MAKING CANVAS GLOVES

Making canvas gloves would not seem to be a very good way to earn money, but a woman who lived near a small mining town, where the demand for

canvas gloves was much greater than the supply, found she could live very comfortably on it.

She had a sewing machine, and having ripped an old pair of gloves open to get the pattern, found that it was merely a matter of sewing seams on the machine, so she turned them out very rapidly, and earned many dollars by doing so.

One need not live in a mining town to find a demand for canvas gloves, for they are used by thousands of other people—railroad men, mechanics, teamsters, lumber workers, gardeners—indeed, nearly everybody who works needs them, so why should not other women of slender means also improve this humble but better-than-nothing means of making a living?

PLAN No. 15. SPATS FOR COLLEGE GIRLS

A college girl with a limited allowance had just enough spare cash to pay for a new blue-gray tailor-made suit, but not enough more to pay for a pair of spats to match, which the tailor offered to make for $2. However, she had a small piece of the goods left over when the suit was finished, and by ripping an old pair of spats to note the pattern, she proceeded to make a pair of new ones herself; silk-lined, but with the old buttons. They were so well made, and presented so neat an appearance, that all the other girls in the college implored her to make spats to match their suits. She did so and earned sufficient to pay her college expenses.

PLAN No. 16. A CHILDREN'S 5c PLAY GROUND

It was the sound of children's voices raised in shouts of glee, as they reveled in the delights of a six-passenger, hand-propelled merry-go-round in the back yard of a friend, that gave to a young man, temporarily out of a position, an idea which he promptly enlarged to the dignity of a community affair, and imparted a world of pleasure to hundreds of children, while adding very largely to his own bank account.

The small merry-go-round in the private grounds of his friend was operated upon strictly business principles by the hopeful scions of the household, and every other youthful pleasure seeker was obliged to contribute some toy or other article of small value in return for the privilege of a few dizzy whirls in the small-sized machine, while being regaled with music from a miniature organ that played certain lively tunes while the machine was in motion. The "admission fee" was a book, pencil, knife, rubber ball, or anything that represented value to the young proprietors, but it had to be something, and everybody was happy.

The young man who was a witness of the performance began at once to enlarge upon the idea of entertaining children for a merely nominal sum, but which in the aggregate would amount to hundreds of thousands of dollars; and, having a little available capital, he rented a vacant corner containing several lots, in a central location, and began systematically to equip it. He bought a 12-seated merry-go-round, three swings, four see-saws, three "Irish Mails", two tricycles, two velocipedes, and $100 worth of awnings to cover the entire scene of gaiety, and protect the little guests from both sunshine and rain.

He constructed a sand pit, installed rag-doll games,

etc., and built a board walk around it all for the racing of the tricycles, velocipedes and “Irish Mails.”

He hired a carpenter to build a fence around the property, with an arch over the entrance for the name of the play-ground, and considered a few booths for the sale of candy, soda water and other soft drinks. His entire expense, including advertising and incidentals, was $382, and he placed the price of admission, which entitled the visitor to all the attractions of the place at five cents.

From the day the gates were opened the place was filled with children, for parents were glad to have their little ones participate in the clean and healthful entertainment it afforded. Within the first three months the enterprising proprietor had taken in enough to pay all the expense of establishing and conducting the play-ground, and noted that he had earned a net profit of $210 besides. When winter came, he turned the place into a skating rink, and made a profit several times larger than it had brought as a summer play-ground for children.

PLAN No. 17. CO-OPERATIVE COOKING

The daily drudgery of cooking is a nightmare; the horror and the despair of the ordinary housewife. And no wonder; for no other member of the family would ever stand for it. Therefore, any reasonable and economical plan that will free the wife and mother from this thraldom, and at the same time assure equally satisfactory service in the matter of food, at possibly less cost, is sure of a cordial welcome.

The co-operative kitchen not only solves this vexed problem for the housewife in general, but at the

same time it affords a comfortable living to the two or three or half-dozen women who have the energy to give it a start in almost any community, and the culinary skill to keep it going good after it is started.

If women have sufficient capital to establish such a business in the right way, so much the better, but if they have not, they may incorporate for that purpose, and thus secure the necessary equipment for making it a going concern.

As a private enterprise it would produce a handsome and permanent income for its originators, while as an incorporated concern it would greatly reduce the household expenses of its members.

What is known as the Montclair plan provides for the serving of hot meals at any time desired, in the homes of the patrons or members, and according to the menu sent in by each individual in each family. Thermos bottles for the liquids, and Swedish containers for the meats, solve the problem of keeping food either hot or cold for an indefinite period, and the plan, if properly worked, is certain to grow in popular favor wherever it is tried. There's money in it for somebody. During the war England learned its practicability and great advantage.

PLAN No. 18. STARTING A TEA ROOM

To start a tea room, and start it right, will require an amount of capital ranging all the way from $500 to $1,000, according to the locality and the amount of competition, either of other tea rooms, or of the service offered by various larger enterprises that use this as a side line.

A lady in Denver gives her experience in the following condensed statement:

She was fortunate in securing a location where the advent of a tea room was joyously hailed as a much desired innovation, and where the conditions obviated the necessity for an extensive publicity campaign, so that her little capital of $500 was sufficient to launch the enterprise in fairly good shape.

She started with a limited menu, fully intending to extend it as she gained experience and patronage. To begin with, she served tea, coffee, chocolate, broths, toasts, muffins, sandwiches, salads, fresh eggs, cake, cold meats, together with simple desserts, such as rice pudding, tarts, baked apples and stewed prunes, with whipped cream. She made it a special point to see that every item was of the best quality, properly prepared, and served with delicacy and tact, while cleanliness pervaded every nook and corner of her dainty little establishment. At the same time she guarded zealously against waste, and showed excellent judgment in providing just the exact amount of each material that could be utilized to advantage. She hired a neat, pretty and attractively attired maid as waitress, who was tactful in her demeanor towards guests. The prompt, courteous and refined service of this maid proved a valuable asset, as she soon became a general favorite with the patrons of the place, through her earnest endeavor to please.

The taking and filling of large orders for outside affairs—such as sandwiches, salads, etc., as well as the renting of her china, table silver and other accessories, also proved a source of considerable revenue. Sometimes the tea-room itself would be rented out for social functions, such as card parties, church and lodge affairs or wedding feasts. On such occasions the proprietress did practically all of the

catering, and was well paid for her services and accommodations.

During the first year she kept on display and for sale a line of antiques, art novelties, embroideries, confectionary, fine stationery, and other articles that commanded a ready sale, and thereby added considerably to her income during that trying period of making a beginning. As her regular patronage increased, however, she gradually discarded these side-lines, and concentrated all her efforts upon steadily and permanently increasing the scope of her trade.

She showed decided originality and talent in the preparation of her menu cards, and gave them an artistic effect which was at once striking and vastly different from the ordinary. Her prices, while extremely reasonable, afforded a satisfactory profit on every item, and at the end of the first year she had not only paid all expenses, but had a comfortable balance left over with which to begin the second year on a much more extensive scale.

PLAN No. 19. BREAD AND CAKE BAKING

Many men lose their positions, from one cause or another, but it isn't every one of them who has a resourceful, skilful and determined wife to help him out. Here is one who had:

This man who had been a salesman was "let out" because his firm could no longer manufacture the goods he had been selling, and, as times were hard, another position could not be obtained. The family had never saved anything, and, their grocer changing suddenly to the cash system, left them with only half a dozen potatoes, a few pounds of flour, half a pound

of lard, a cup of sugar, a little salt—and three hungry boys, to say nothing of the parents.

It was then that the plucky wife and mother rose to the occasion and saved the day. But it required a lot of grit and hard work. She peeled, sliced and boiled three of the six precious potatoes, adding water as the boiling went on. Then she put into a pan three tablespoonfuls of flour, one of sugar, and one of salt, scalding them with the hot water in which the potatoes had been boiled, and adding two quarts of cold water, making the mixture lukewarm.

Five cents from the small hoard of the family bought yeast one-half of which was saved for the next time, after moistening it with water and pouring it into the mixture. Covering the pan tightly, she set it aside until morning while the family went supperless to bed.

The hustling little woman was up at five o'clock the next morning and put twelve pounds of flour into a large pan, mixed in two heaping tablespoonfuls of lard, two of sugar and two of salt, then added the yeast mixture, which made an ordinary bread dough, and set it in a warm place to rise.

At eight a. m. she molded the dough into rolls, twelve rolls to each pound, two and one-half inches across and pressed down to an inch in thickness. These she put into a greased pan, not allowing them to quite touch each other, as they sell better when baked separately. By ten o'clock her eldest boy, who rode a wheel, had been excused from school, came home to do the selling. With five dozen light brown rolls in a basket, he started out to sell them at 10 cents a dozen.

In less than half an hour he was back for three dozen more, and returned in a short time with an order for the remainder, which the mother refused to

accept, as she was keeping those for her own hungry family.



Plan No. 19. God helps those who l

The next day she went through with the same program, except on a larger scale, and still was unable to supply the demand for her beautifully browned hot rolls that were ready for delivery just before meal time, and looked so tempting.

Her boy being out of school on Saturday, she mixed two pans of cake dough, one white and one brown, and spread them into a large bread pan so as

to marble brown and white, and making a cake one and one-half inches thick, when baked.

Iced thinly, in plain white, and cut into two and one-half-inch squares, these sold readily for 20 cents a dozen, and were delicious. At the end of four days the little woman had made $10, and Monday morning her husband, still out of a position, offered to do the selling and delivering—greatly to her delight and the profit of both—for the sales increased until they had more demands for their products than they could supply.

She also began to bake delicious bread and pies, as well as rolls and cakes, and sold every article at a good price, that meant a handsome profit. This was the beginning of a successful bakery business for this family.

PLAN No. 20. PENCIL SHARPENING MACHINE FREE

The teacher who finds the sharpening of pencils for her pupils a large and disagreeable part of her daily duties, will welcome this plan as a perfect godsend: that the plan, when properly operated by a live man, is a money-maker, is demonstrated by the fact that a Chicago man made big profits out of it.

He bought a large number of that botanical wonder known as the Resurrection Plant, or Anastatica, which can be obtained at a cost of 2 cents each, or less, when ordered in large quantities, and even when retailed at as low a price as 10 cents each, yield an enormous profit. To those not familiar with this remarkable plant, it may be well to explain that, altho it stays green while kept in water changed often enough to prevent it becoming stagnant or

rancid, when taken out of the water it dries and curls up and goes to sleep, remaining in this state for years, and re-awakening or being "resurrected" immediately upon being placed in water again, when it will open up and commence to grow in half an hour or less. When tired of seeing it grow, you simply take it out of the water, let it "go to sleep" again, and re-awaken or resurrect it at any time you desire. Many people would gladly pay several dollars for a simple plant, but in the operation of this plan you can well afford to sell them at 10 cents each, as you realize a profit of 8 cents apiece, and one in every schoolroom in the land will prove a constant source of delight, as well as of educational value.

This is the way the Chicago man works the plan to the pleasure of teachers and pupils, and his own profit of something like $300 per week: he not only buys thousands of these Resurrection Plants, at, say, 2 cents each, but also a number of the best pencil sharpening machines, which cost him about 90 cents each. He consigns one of these machines and thirty of the Resurrection Plants to each teacher in a public school and requests her to announce that the pencil sharpener will belong to that particular room, for the full use of all of them, if each pupil will take home one of the plants and bring 10 cents back to her the next morning, explaining to them the peculiar characteristics of the plant. Of course, every child gladly performs this small service, and the teacher then remits to the consigner, the $3.00 collected, and he has exactly doubled his money, as both the pencil sharpener and the thirty plants cost him but $1.50. If there are over thirty pupils in the room, that simply means more plants and more profits, for with the second consignment of thirty plants it is not necessary to send the pencil sharpener, and the

Chicago man's profit on that transaction is therefore $2.40 instead of $1.50.

As there are many thousands of public schools in this country, and nearly all of them have a number of rooms, anyone who is good at figures can easily make a reasonable calculation as to the probable profits.

PLAN No. 21. $5,000 A YEAR FROM 8 1/2 ACRES

"The touch of a woman's hand" is what turned eight and one-half acres of unattractive, idle land on the shores of Long Island Sound into a productive little farm that is now netting it's owner a profit of over $5,000 a year! Don't believe it? Listen!

To be sure, she had a few hundred dollars—just enough to buy it and improve it with a cheap little cottage, a small barn and some poultry sheds, and plant it to fruit trees, besides every sort of vegetable that enjoyed the greatest demand. She now has an orchard containing the best varieties of fruit trees, 1,000 apple, 500 peach, 100 pear, 100 quince, 100 cherry—besides one-fourth acre in grapes, one-half acre in raspberries, blackberries, etc., and still has plenty of room left for vegetables, planting them between the rows of fruit trees, thus affording ample cultivation for all. She employs one man regularly at $40 per month, and hires extra help in the busy seasons of the year.

To supply the immediate demand for the less common garden products she grew okra, French finochio, endive, chicory, etc., getting many ideas from seed catalogues, Government publications that are sent for the postage. She plants large quantities of all vegetables, and cultivates every foot of the

ground, fertilizers are freely used, and crops changed from year to year. She finds early asparagus and peaches the most profitable of all the things she raises, and while her first garden was growing she wrote letters to her friends in the city, asking them if they would not like a few samples of her fresh vegetables. They did and said so, and each one became a regular customer. As she produced more, she kept increasing her list of patrons by the same means, and to these she ships her products in "knock-down" crates that cost her $2^1/_2$ cents each, and, unless otherwise ordered, she fills these crates half with fruit and half with vegetables. The crates each hold six great basketfuls of produce, and cost the customer $1.50, besides 25 cents each for expressage.

By picking her products early in the morning, she has them delivered in the city for dinner, while they are fresh and much preferred to those bought at corner groceries. Having her own horse and wagon, the cost and labor involved in shipping is very small, and 500 crates easily net her $750.

Realizing from her own experience, the longing of city women for a quiet, rural spot in which to spend the week-ends, she informed a limited number of her lady friends in town that for $1.50 per day she would give them room, board and transportation, to and from the station, and so many of them gladly accepted her invitation that the capacity of her small cottage was soon taxed to the utmost. But she will not take regular boarders, and thus has the greater portion of her time to herself, to be devoted to such activities as best suit her. Those women who are given the privilege of spending the week-end on the farm not only cheerfully pay the moderate charges, but many of them render valuable assistance by

working in her garden, as a pleasant means of relaxation and an agreeable change from the exacting requirements of city life.

The little $8^1/_2$ acre farm wasn't much to look at when she first took it over, but she has made it a veritable bower of beauty, a haven of rest, and a revenue producer to the extent of $5,000 a year, all set down in the column marked "net profits."

PLAN No. 22. POLITICAL MANUAL

Politics is always an interesting subject, particularly to politicians, whether of large or small calibre, and the man who can formulate a plan by which to "aid the party," and at the same time insure an income for himself has certainly "picked a winner." We know of a man who did this, most successfully, and this is the way he did it:

His city, like all others, had political organizations of varying degrees of efficiency and influence, and desiring to assist in placing his own political party in the lead, while devising a good revenue from his activities at the same time, he hit upon the plan of a manual giving a resume of the main issues of the campaign, his party's position regarding the same, the various ward and precinct boundaries, the names and addresses of all precinct committeemen, as well as those of the chairman and secretary of the central committee, the location of each polling place, dates of registration, of primaries and general election, and data of every character which would be interesting to voters.

Instead of leaving it to the secretary to compile and issue this manual, and having it printed and distributed at the expense of the committee, this man

sought and obtained the authority of the committee for the publication of the same without cost to them, had them indorse it as the official publication, and proceeded to have it issued in attractive form. Most of the candidates for office on his party ticket were glad to give him half tone portraits of themselves, with a declaration of the principles for which they stood and pay him from $25 to $50 each for the publicity thus obtained. Besides, practically all the merchants belonging to that particular party also gave him large advertisements, as the manual reached all the voters of the ward or county, regardless of party affiliations, and proved an excellent advertising medium.

Finding the plan so successful in his own county, he extended it to other counties, and finally to the entire state.

PLAN No. 23. THEATRE-GOERS' WEEKLY

In many cities the theatrical managers arrange in some way to compile a list of theatre goers, and send them, by mail, neatly printed postal cards announcing the attractions billed for their houses several days in advance of their appearance. This plan has proved successful in most cases, but a man in one city of the middle west improved greatly upon it by publishing a weekly that embraced all the theatres and amusement places, and gave them all very much wider publicity, at no cost to any of them.

He arranged with the manager of each theatre and motion picture house in his city to furnish him with all the data concerning engagements for a week or two in advance, obtaining details of coming attractions, with portrait cuts and personal sketches

of the most prominent actors and actresses billed for appearance at each house, a synopsis of the play, or any other feature that would naturally create a desire to see it. Write-ups and notes of local interest were also an excellent feature in this weekly, and it was so well edited and printed that nearly all copies were carefully preserved by those receiving them.

Instead of going to the trouble and expense of mailing, these weeklies were distributed at all the theatres and movie houses at every performance, and thus afforded each patron an opportunity to plan his amusement program ahead.

Having saved the theatre managers the expense of a program for each house, they were glad to allow him all the profits of the extensive advertising he secured, and he soon built up a business that netted several thousand dollars a year.

PLAN No. 24. SPRAYING FRUIT AND SHADE TREES

Every orchardist stands in mortal terror of the multitude of pests that infest both fruit and shade trees in practically all parts of the country, and as but few really understand how to prevent or destroy these persistent plagues, or have the time to do it properly, it affords some one in each community an excellent opportunity to make a good living by doing it for them. All he needs is to know exactly how.

An enterprising young man in one of the irrigated fruit districts of the Northwest thought of a good plan along this line and proceeded to put it into execution, with entire satisfaction to the fruit growers, and a corresponding profit to himself.

The leading hardware merchant in his town was

not only a good friend of the young man, but was thoroughly familiar with all the really effective methods of destroying tree pests through the spraying process. He sold him one of the best makes of spraying machine, gave him accurate instructions as to its use, as well as the various materials for spraying, and advised him to get busy at once.

He visited the principal fruit growers of that section and found most of them glad to turn the protection of their trees over to him, as he quickly demonstrated that he knew his business, and his charges were reasonable. In a short time he had contracts to keep him busy during the entire season, and found it was paying him at the rate of $175 a month. The next year he took more contracts, hired boys to operate several spraying machines, and is now clearing over $1,000 for a few months work each year. So can you.



Plan No. 24. Spraying Fruit in Sp

PLAN No. 25. HOME LUNCH DELIVERY

A Michigan young lady, who had an invalid mother and a little brother to support, hit upon the novel plan of supplying the families of her neighborhood, as well as nearby cafes, lunch rooms, business offices, stores, and soda fountains, with tempting lunches consisting mainly of nut sandwiches made of shredded wheat biscuit, or bread, or buns, baked by herself.

Buying all the materials in large quantities, she secured everything necessary at greatly reduced prices, purchasing English walnuts at so much per hundred pounds, and removing the shells with a nut cracker.

Slicing a moistened shredded wheat biscuit in two with a sharp knife, she spread it with peanut butter and finished with a layer of crushed walnuts, or made the sandwiches from slices of bread in the usual way.

Having distributed cards throughout the neighborhood, announcing the form of service she was prepared to render, she kept a list of her regular patrons, with the day and hour when deliveries were required, and sent her little brother to fill the orders. Each sandwich was wrapped in wax paper, and sold readily at 5 cents. However, when a more extensive lunch was required, she supplied two ham sandwiches, one cheese sandwich with pie or cake all neatly packed in a small paper box, with paper napkin and tooth pick, which was not only cheaper, but also much better, than the same articles bought at a restaurant.

And still there was a fair profit on each item included in this service. Of course, the increased cost of materials, now makes it necessary to charge higher prices for the lunches thus delivered, her patronage has grown to such proportions that she now hires boys on bicycles to make the deliveries.

PLAN No. 26. REPAIRING LAWN MOWERS

Can you repair a lawn mower that is out of order? If not, you can soon learn, and if you have any mechanical ability at all, you can put it to a practical

use and make a good business out of it.

An elderly man in a western city, who was regarded as “too old” to be given a salaried position, but who “needed the money,” turned his knowledge of lawn mowers to good account, and to-day has a profitable business that renders it unnecessary for him to ask anybody for a “job.” He made his own job.

Of course, he had no capital, but he needed none, except a few dollars for the purchase of certain small tools and lawn mower parts and a friend of his in a hardware store sold him those on time.

Starting out he was surprised to find how many lawn mowers in any given neighborhood were slightly out of order, the main trouble with most of them being that they merely needed sharpening, while a rusty bolt here, a missing nut there or a broken part almost anywhere about the machine was quickly replaced, and the mower put in fine working shape.

A charge of 50 to 75 cents an hour, or a flat rate for the job, netted him a profit of several dollars a day, and by doing good, honest work, he was usually called upon when anything else went wrong, as he left his card at every house he visited. After a couple of years he was able to open a little shop of his own, and had the work come to him, instead of being obliged to go after it.

He is making a comfortable living for himself and his family and doesn’t feel any longer that he is “too old” to be useful and self-supporting.

PLAN No. 27. THE INKLESS PEN

Never heard of an inkless pen? Well, you can make

one, or a thousand, so easily, and sell them so fast, at a splendid profit, that you will wish you had known how a long time ago. A down-east girl learned how it was done, and she has made a lot of money out of it, just as anyone else can by trying.

She got some of the very best quality of violet aniline, and reduced it with water, to a thick paste. She added about half as much mucilage as there was of the aniline and water, and mixed it thoroly. Then she applied it with a toothpick to the inside hollow of several ordinary steel pens, above the split, and laid them aside for ten hours to dry.

Either a fine-pointed, ordinary or stub pen can be used, but as an advertising leader a fine-pointed pen is best, and to give it a neat appearance, the pen should be inclosed in a very small envelope, with directions for use printed thereon, as follows: “The Wonderful Inkless Pen. Put in a penholder, and dip it in water up to the split, when ink will flow from the pen. When flow ceases, dip in water again.”

She then placed a small ad in the paper, saying, “Boys and girls, send ten cents for three of our wonderful inkless pens. Write by dipping in water. No ink necessary. Better than a fountain pen.”

This brought hundreds of answers, all containing dimes, and the business thus launched in a small way, with practically no capital, finally grew into an enterprise netting nearly $1,000 a year.

PLAN No. 28. OLD BARN MAKES $600 A YEAR

How a plucky woman, with an invalid husband and two small children, utilized a rickety old barn on a run-down farm eleven miles from a city, is best told in her own words:

"The old barn had not been used for years, and was in a dilapidated condition indeed. I paid $1.25 for new shingles and 5 cents for nails, and fixed the roof so it would not leak. I found some old hinges around the place, and put on the doors in good shape. There were six windows, and I bought $1.80 worth of cheese cloth and made curtains for these, and paid $7.00 for a crex matting to put on the floor.

"From some old furniture we were not using, I selected some chairs, beds, a table, old cupboard, and other articles needed. The three stalls I converted into a kitchen, dining room and den, and paid $2.75 for an old oil stove, $1.30 for cooking utensils, and $2 for crockery ware.

"I converted the loft into two sleeping rooms, using cretonne curtains for partitions, made a dresser from an old packing box, and above it I placed a cheap mirror, 18x12 inches. I also purchased two hammocks for $3, and was ready to let "apartments" at $20 per month, the tenants to furnish their own bedding and silver.

"I planted morning glories all around this "house," and put in several beds of California poppies, costing 65 cents, so that the total expenses renovating the barn and making it fit for human habitation were just $19.80.

"A small ad. in the paper quickly brought me a renter for the remodeled "apartments" at $20 per month for six months, and then I began to supply my tenants with home-grown produce, at good prices, such as berries, fresh vegetables, fresh bread, pies and cakes, cottage cheese, cream, milk, eggs, poultry, homemade soap, jellies, jams, etc., besides doing laundry work, renting horse and cart, making dresses and bonnets for tenants, neighbors and others. And all this without interfering with my regular work of

growing and marketing my poultry, dairy and garden products, which I took to the city on the weekly market days, and sold for good prices.

"The first year on this place netted me over $500, the second year $600, and it will be more this year. My first tenant has re-rented the old barn from me every year since I started, and wants it again next year, so I am no longer worrying as to where the next meal is coming from.

"Besides, the country air and home-grown foods have restored my husband to perfect health, and my children are getting big enough to help me."

PLAN No. 29. BAKING FRUIT CAKE TO SELL

Who doesn't love fruit cake? And yet how few can make it as it should be made. A lady who really knew how, found that she could make a fruit cake at a cost of about 10 cents a pound, and make it so good that anybody would be glad to buy it at more than three times its cost. She used the following receipt. Two cups of flour, 1 cup of raisins, 1 cup of currants, one-half cup of lard, 1 cup of sugar, 1 teaspoonful cinnamon, 1 teaspoonful of cloves, 1 teaspoonful of soda, $^1/_4$ teaspoonful of salt; flavor with lemon extract. These, with the exception of the flour, the soda and the extract, she boiled for a few minutes in an agate-ware sauce-pan, then took it off the fire, and when lukewarm mixed in the flour and soda and added the lemon extract. This, baked one hour in a moderate oven, will make a $2^1/_2$-pound loaf, and, requiring no eggs or butter, is not expensive.

She found her first customers were steady customers, and tho she had very limited baking

facilities, she cleared from $25 to $30 a month. With greater baking capacity, added from time to time, and with the aid of a few small ads, she increased her profits gradually, until now she is realizing a net profit of over $100 a month, and expects soon to do even better than that. Just a simple plan, intelligently carried out, and the result was—success.

PLAN No. 30. LAWYER MAKES MUNICIPAL COLLECTIONS

In nearly all cities of 75,000 to 150,000 population, there are usually many thousands of dollars due the municipality in old claims, unpaid assessments, and all sorts of overlooked accounts in practically all departments. These have been allowed to accumulate until they amount to a sum large enough to materially reduce the tax levy for several years, but incoming administrations, having all the difficulties incident to their own tenures of office to meet, and having no disposition to overcome the shortcoming of their predecessors, pay no attention to these delinquencies, and the city's debtors are thus allowed to escape payment of bills they justly owe.

It was under such conditions in a well known city of the Pacific Northwest that a young lawyer, just admitted to practice, discovered a field of activity that promised to bring him prominently into public notice, and at the same time to secure him a revenue that but few young attorneys are able to command in several of the earlier years of their practice.

He had previously examined the records in most of the departments, and thereby gained a close estimate of the enormous amounts still due the city on old accounts, which no effort had been made to collect

for so long that many of them were outlawed and not legally collectable.

He then interviewed a number of city officials and submitted a proposition to collect these accounts, on a basis of commission dependent upon the relative difficulty of getting the money. His proposition was accepted.

A closer examination of the records showed that the amounts still due the various departments ranged from $13,000 to $60,000 in each, the aggregate being $200,000.

Having carefully laid his plans, his first step was to have himself interviewed by the city hall reporters of all the daily papers, in which he made it clear that he would bring suit against every one of those who owed the city anything on old accounts. This caused considerable uneasiness among the delinquents, many of whom came to the treasurer's office and made settlements in full. Many of them, however, hung back, awaiting developments, and thereupon the young attorney brought a number of suits in the city's name, in all of which he secured judgments against the defendants, and nearly all of them were paid.

In some special cases, where the debtors felt that they were safe, since the claims against them had been barred by the statute of limitations, the attorney, called upon the parties in person and gave them so fair an outline of the entire situation, laying special emphasis upon their moral obligation to pay even an outlawed claim, that more than half of those old claims were paid into the city treasury.

There are hundreds of cities in which other young attorneys can follow the same plan, with equally good results.

PLAN No. 31. BRIEF-WRITING FOR LAWYERS



Plan No. 31. Lawyer puts Dictaphone

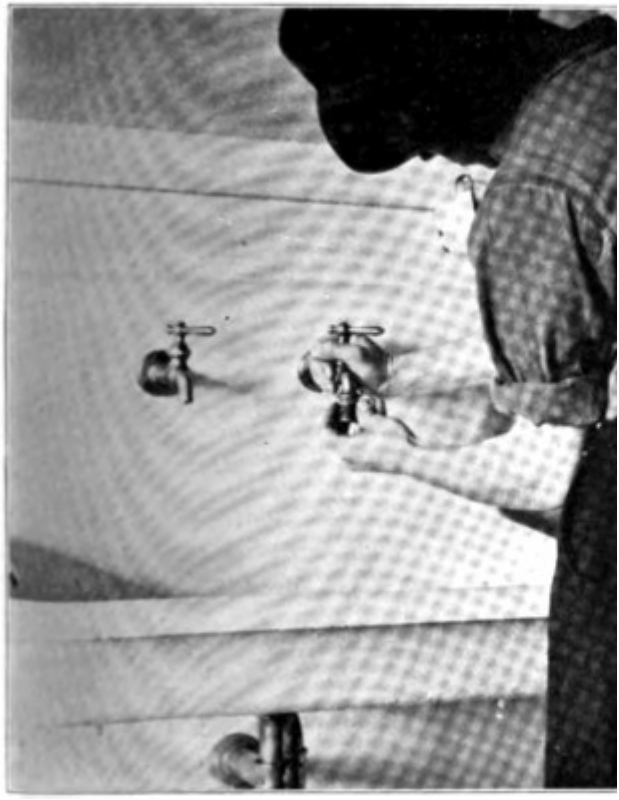
A far-sighted young attorney in a large city, desiring to extend his acquaintance among the older members of the bar, and at the same time add materially to his rather limited income, figured that he could do both by writing the briefs of those lawyers interested in cases taken to the higher courts on appeal. He purchased a dictaphone and, having familiarized himself with a case, by reference to the

files, and otherwise, he found it an easy matter to get the attorney's consent to brief it in proper form, especially when he could do it for considerably less than it would cost the attorney to do it himself.

This plan brought him an immediate financial return, gave him a large acquaintance among leading lawyers, and vastly increased his knowledge of law, through frequent references to supreme court reports and other authorities. It also aided him in building up a practice which has become both permanent and profitable.

PLAN No. 32. RENTING WATER FILTERS

For more than three years a man in a western city realized a net profit of $225 a month, through the very simple plan of renting water filters, and then sold out his business for $5,000. Having a little spare money he bought filters by the gross from the manufacturers, at $12.50 per gross, or a fraction over 12 cents apiece. They were the reversible kind, filled with powdered charcoal and crushed granite, were nickel plated, easily kept clean, and caught all the impurities in the water leaving it clean and pure. He bought the filtering material, charcoal and crushed granite, by the barrel, at a cost of about $6.00 a barrel. These materials he mixed in equal parts, placed them in the filters and was ready for business.



Plan No. 32. Pure Water his Fi

An epidemic of typhoid fever broke out in his city about that time, the cause of which was found to be in the water supply, and the means of excluding the disease germs from the water that came from the faucets assumed the form of an imperative demand. This man had some circulars printed, calling attention to the efficiency of his filters, and sent boys to distribute them all over the city.

Then agents were sent out to the houses to show the filters and offer them for rent at 10 cents each a month, a fresh filter to be installed every month. The agents were given one-half of all the money they

collected, and as nine in every ten households gave them contracts, both agents and originator of the plan realized a steady and handsome income.

At the end of the month the agent would call at each house, take off the old filter, attach the other end to the faucet, set a clean glass under it, turn on the water and show the lady a glass filled with impurities. That would settle it. She would at once hand over another 10 cents for a fresh filter, and the agent would proceed to the next house.

Between 5,000 and 6,000 filters were thus kept rented, the old ones refilled with fresh material, and the man who used this plan and a little money not only saved hundreds of lives, but cleared up over $13,000 for himself in three years' time.

PLAN No. 33. CLIPS PERSONAL NOTICES FROM NEWSPAPER

Not the big press clipping bureau, with its elaborately furnished offices and scores of employes, but one which any energetic young man or woman may start in a small way, and earn more than a comfortable living, while increasing the scope and revenues of the business. Here is how a bright young fellow did it:

Realizing the pride and vanity many people feel in seeing their names in print, and calculating on their curiosity as well, he subscribed for a number of papers in near-by cities and towns, and pays particular attention to the personal paragraph columns of them all.

He carefully notes the name and address of any person named in these paragraphs and sends him or her a letter stating that their name was mentioned in

a newspaper on a certain day, adding that it might be of interest to the person named, and that he will send the clipping for 25 cents.

Curiosity alone will impel most people to send the small amount required to obtain the article in question and this young man received seven orders and remittances from every ten letters he mails out. To mail fifty letters per day would cost him $1 for postage, and to fill the thirty-five orders received, $1.05 more, or a total expense of $2.05. He would receive $8.75, and his profit would be $6.70 a day.

PLAN No. 34. PUBLISHING A COOK BOOK

There are cook books and cook books, but we know of only one in which thousands of housewives, who contributed recipes to it, took that deep personal interest which made them feel that each one positively must buy a copy of it.

This one was thought out by a young man in a middle western state, and literally “takes the cake”—and the cash.

If there is any place where the ordinary woman likes to see her name in print, outside of the society columns of a Sunday newspaper, it is in a book, and especially in a cook book.

This young man was aware of this fact, and out of his knowledge he evolved a plan that paid him many thousands of dollars. First, he obtained from directories and mailing lists the names of several thousand women, and mailed to each one a letter, stating that he was about to publish a cook book, and asking them to send in such recipes as they personally knew to be exceptionally good. He told them that each woman so contributing would be

paid a royalty, based upon actual sales of the book, and also have her name and address printed in it. The price of the book was to be $2.00 per copy, but those contributors willing to waive all claims to royalty would be supplied at $1.00 per copy.

He also offered each contributor a commission of 50 cents on every sale of the book she made. The letter was carefully written, and brought answers and recipes in a perfect avalanche, practically all the letters contained orders for a book, so that he knew it would require 10,000 copies to fill all the orders.

Then he got busy with the national advertisers, manufacturers of, and dealers in, kitchen specialties, household supplies, flour and yeast dealers, etc., and, having proved to them that his first edition would be 10,000 copies, he secured advertising enough to pay the entire cost of publishing the book.

PLAN No. 35. GOOD SAFETY RAZORS FOR 25 CENTS

You know, as does everybody else, that $5.00 is too much for any safety razor ever made. A western man who found himself a cripple for life, and had to earn his living or starve, perfected a plan for supplying the best kind of a safety razor for 25 cents, and made a permanent income for himself and family. He wrote a good circular letter, in which he asked the reader to send in his old safety razor, no matter what its make or condition, together with 25 cents, and said that upon its receipt, with 4 cents in stamps to prepay postage, he would send a new safety razor that would give excellent service and be durable, the handle triple-silver plated and highly polished and one Swedish steel blade, well tempered

and hand-honed, while extra blades would be supplied at 15 cents for three, postpaid.

He bought safety razors of the kind described, for about $7^1/_2$ cents each, and made a profit of $17^1/_2$ cents on each one. A set of these blades cost him, with postage, about 7 cents, and his profit on them was 8 cents.

PLAN No. 36. LISTS OF NAMES FOR ADVERTISERS

Supplying reliable lists of names to magazine advertisers and others would not at first be regarded as a very profitable business, but here is the experience of an Illinois man who made it pay well:

Studying the advertisements in the magazines, he thought of how much these advertisers could save if they were only brought into direct contact with the class of people each one was trying to reach at so great an outlay as magazine space involves.

He thought of a way in which it could be done. He had learned that he could buy the 400-page edition of Webster's dictionary for 11 cents each with postage of 4 cents each, or a total of 15 cents, in quantities. Then he inserted, through an agency, an ad. in all the country papers for quite a distance around, offering to send a handsome dictionary free in return for a little information which anyone could easily give.

The answers came so fast that he was obliged to send mimeographed letters to those who replied, in which he asked for the names and addresses of all those in the community who were suffering from rheumatism, deafness, or any chronic ailment; also the names of property owners, horse and cattle

owners, people with lawns, fruit trees, porches; the names of mothers, prospective mothers, newly married couples, etc., and stated if the information so given proved authentic, he would later arrange to pay them on a cash basis for other names, though the dictionary would be sent for the first lists.

Thousands of names were obtained in this way, and he proceeded to typewrite them, making ten carbon copies of each list, fifty names to the sheet.

He then wrote to each of the advertisers to whom the lists would be valuable, stating that he had obtained the names through his own correspondents in various communities, and offering to send them 1,000 names of those who would be interested in the advertiser's line, for $5, or 500 names for $3.50.

He invited a trial order first, in order that they might test his service, and nearly all of them responded. In fact, he received more orders than he could well take care of, and the usual result of one day's work was a net profit of $70. He then branched out on a larger scale, using various articles as premiums.

And this man who had been a clerk on a small salary for years, had only enough money when he started to pay for his advertisement, buy postage stamps, and purchase a typewriter on the instalment plan. He "used his plan"—and won. He never sold the same list to two concerns in the same line.



Plan No. 37. Auto Inspector

PLAN No. 37. AUTO INSPECTION SERVICE

"I was a fair auto mechanic, familiar with the mechanism of every machine on the market," said a man who is now a prosperous dealer in a western city. "But I was out of work, and could not get the kind of job I wanted, so I decided to make one for myself. And I did.

"I called upon some twenty well-to-do owners of cars who did their own driving, but who were not able to locate or remedy many of the little troubles

that are certain to happen to all machines, and told them that for $1 per week I would spend an hour each week in their garages, inspecting their autos, adjusting such parts as were even slightly out of order, and doing all small repairs, but furnishing none of the materials required; that I would do square, honest work, and thereby save them many dollars. All but two of these men accepted my offer, and were so well pleased with the results that I soon had a list of fifty regular patrons, and was easily making my $50 a week and more, without the investment of a single cent, except what I had paid for my kit of tools.

"Of course, for extra work I made a reasonable additional charge, and later I arranged with a supply house to furnish me with extra parts of equipment, which netted me a nice little profit besides my regular income as auto inspector."

PLAN No. 38. A 5c AND 10c GROCERY STORE

Of course, everybody knows all about the 5- and 10-cent notion stores that have made millionaires of their owners, but who ever heard, until now, of a 5- and 10-cent grocery store?

One man, who lives in a good-sized western city, had never heard of such a thing, but one day the idea came to him, and he tried it out—and made it win.

He rented a small but neat store room in a good location, on a well traveled street, put up shelves on both sides and set a nice show case in the center. There were no counters. Then he went to the head of a leading wholesale grocery house and had them put up a special line of all their goods that were not perishable, in handsomely printed cartons, in

quantities that could be retailed at 5 and 10 cents each, and still pay both the wholesaler and the retailer a small but fixed margin of profit.

He made a similar arrangement with a well known and popular packing company to handle its products in the same manner, while a local cannery was only too glad to obtain the publicity this method afforded.

Inside and on top of the showcase were displayed bottled goods, preserves, jellies, flavoring extracts, candies, toilet specialities, soaps, etc., while the shelves were used for a convenient arrangement of cereals, rice, hominy, beans, teas, coffee, and most of the canned goods.

As soon as his doors were opened, he discovered that he had "picked a winner," for the neat and tasty display of the various articles and the fact that they could be had in the small quantities many people desired, made a hit with the women of the neighborhood, and the enterprising originator of this novel plan came out at the end of the year with a net profit of several thousand dollars.

PLAN No. 39. STORING SCREENS

It would hardly seem that the mere storing of door and window screens during the winter season, when they are not needed and are in the way, would prove profitable, but an old gentleman in a West Virginia town earns many good dollars through that plan, and others might follow his example with profit.



Plan No. 39. Work that Anyo

A spare room, or a barn loft, where there is no leakage from the roof, is all that is required to get into the business.

This man has about 300 customers, for whom he removes the screens in the fall and stores them carefully away, properly ticketed, so as not to get them mixed up with other people's screens. In the spring he takes them back to their respective owners and replaces them. His charge for the season is about $2.00 for the average house but where the screens are to be repainted, he of course makes an extra

charge for that service.

To be sure, this income is small, but it is $600 or more every spring or fall, and six hundred dollars extra often means a great addition to the comfort of an old man.

PLAN No. 40. BUTTON-HOLE MAKING

A lady living in a city of the Middle West had by long practice become an expert button-hole maker, and so great was her skill that she had more calls for her special work than she could fill.

Dressmakers, tailors, department stores, housewives who made their own dresses, all were anxious to secure her services in this particular line, and she derived a very comfortable income from this specialty.

Recently she has organized several classes of young ladies to whom she is teaching the art, as she realizes that she cannot continue to make all the good button-holes required in her community, and is anxious to give others a chance to do some of this work. In these days of specializing, why not a button-hole specialist—especially if it pays?

PLAN No. 41. TYPEWRITING AT HOME

A young lady typist who was obliged to give up her position, in order to take care of her invalid mother, arranged with a business man to write his letters in payment for the use of his type-writing machine.

Then she addressed letters to a number of other business men, offering to do their stenographic work

and typewriting at her home, and in a short time had work that brought her better returns than her former salary had been, besides being able to look after her sick mother.

PLAN No. 42. RAISING ANGORA CATS

An ambitious mother, who very much desired to send her daughter to college, decided upon cat culture as a source of raising the necessary funds. She paid $25 for a pair of pure-bred Angora kittens, gave them the best of care and in three years these kittens and their progeny have netted her more than $1,000. But her resourcefulness in providing charming surroundings assists her greatly in the important matter of sales.

She enclosed the back yard of her home with chicken wire, and divided it into two sections—one for colored cats and the other for white cats—with low buildings on each side for comfortably housing the mother cats and kittens.

The yard was then planted with roses and other flowers, and when the well-kept cats and kittens are seen by prospective purchasers in those delightful environments, the effect is so appealing to their sense of the beautiful that the buyers freely pay almost any price. A few small ads in the local papers bring her customers for all the cats she can raise. Just a little plan, but it has brought remarkably pleasing results.

PLAN No. 43. MANAGEMENT OF SOCIAL FUNCTIONS

A young lady who found herself dependent upon a married sister, decided that she would create a profession of her own and be under no obligations to anyone.

She distributed a number of her business cards among the society leaders of her town, announcing that she would take complete charge of parties and other social events, whether for grown people or children, and relieve the hostess of all anxiety concerning the success of the affair, besides saving considerable sums in the outlay for the occasion.

She was given a number of engagements, and succeeded so well that her services were soon in constant and ever-increasing demand.

She superintended the decorations, arranged the menu, looked after the comfort of each guest, and saw that all were served in a manner to meet their hearty approval. She also planned all the details of the entertainment, in whatever form, and became a positive necessity, as the various hostesses soon learned that she could not only provide a better program than they, but actually saved more in the matter of expenditure than her services cost, which varied all the way from $5.00 to $15.00 for an afternoon or evening.

PLAN No. 44. NEW WAY TO SELL SHEET MUSIC

A young lady in Ohio, who recently graduated from a music school, has originated a novel and profitable method of selling sheet music. Realizing from her own experience that the surest way to cause anyone to want a particular piece of music is to let them hear it properly played, so she arranged with a leading music dealer to allow her a rather liberal

commission on all sales she might make.

She then selects a number of the best pieces, and ringing the bell at the first house she approaches, and asks if there is a piano or an organ in the house. If the answer is yes, she asks if she may come in and play a piece of music. In most cases permission is freely given, and seating herself at the instrument proceeds to play two or three of the selections. She has chosen so well, and plays so beautifully, that in nearly every house where she is accorded the privilege of playing, she sells from one to half a dozen or more of the sheets, and goes on to the next house.

She has often made as high as $50 a week by employing this plan.

PLAN No. 45. SUPPLYING CLEAN TOWELS

Here is a plan which is good for a town where there are a large number of offices. A young woman who lived in a town of this kind made it pay.

She visited the various offices in the place and contracted to furnish each one with a clean, fresh towel every day for $1.50 a month, or two towels per day for $2.50 a month, two deliveries to be made each week. She secured contracts enough to bring in $47.00 a month.

She then bought $25.00 worth of good towels, hired a colored woman to come twice a week to wash and iron the towels, and paid a little boy to deliver the fresh towels and collect the soiled ones. The service proved satisfactory, and, although the enterprise netted the young lady only a little over $30 per month, she found it sufficient to support herself and her invalid mother, as they owned their

home and were economical in their expenditures. It left the young lady with her entire time at her own disposal to be devoted to other work.



Plan No. 46. Baby's First I

PLAN No. 46. TAKING CHILDREN'S PICTURES

Getting the children interested, and working on your side of a proposition, is the surest way to reach the pocketbooks of the parents. An Iowa man, who was out of work and money, evolved a plan that worked so well that he has been at it ever since.

He owned a good camera, and understood how to use it, and having tried soliciting orders from house

to house, without success, he hit upon the plan of borrowing a team of goats and a small cart from a boy friend, and started out.

Whenever he saw a child, he would stop and tell it that he would give it a free ride, and take its picture in the cart, if it would get the consent of its mother. Of course, all the children got busy right away, and called their mothers to come and see how "cute" they looked in the cart drawn by the goats. The result was that nearly every mother was glad to give an order for a dozen or more pictures to be delivered in three days, and the enterprising artist soon found that he had all the business he could attend to, at good prices, and now owns a complete outfit.

A young lady in a city who was quite expert in the use of a camera called at the homes which had children and took their pictures, usually with the mother and baby in some natural position. She obtained the birth records and forwarded a card each month congratulating her, also called attention to the service she was rendering by taking the pictures of children, stating that she would call in a few days—also said the mother took no obligation because of her call. She then called as early as possible to get the first picture of the new baby.

PLAN No. 47. TAUGHT CARE OF THE HAIR

Most people have hair troubles of some kind, and most of them have used the widely advertised hair tonics, restorers, etc., with but little appreciable benefit, as some simple home preparation usually produces the best results.

Now, you have read in scores of household magazines, and elsewhere of ways without number

in which the hair can be beautified and its growth and lustre wonderfully promoted, without the risk of injuring it in any way.

A widow lady in an eastern city collected all the formulas of this kind she could find anywhere for making dry, brittle hair soft and glossy, for preventing and stopping the hair from falling out, for making the hair thicker and longer, for the removal of dandruff, and correcting all other forms of hair trouble. These she had printed, each on a separate slip of good paper, and also provided herself with neat stationery.

She then advertised in a number of newspapers that covered the territory for 200 or 300 miles in every direction, stating that she had formulas for every conceivable form of hair trouble, and that particulars would be sent upon request. She received thousands of answers, and in reply to these she sent a circular letter saying she had a formula for the particular difficulty named in the inquiry, which she would send upon receipt of 50 cents, and the person to whom it was sent could have it put up under her own personal direction, thus knowing exactly what it contained. As many of these preparations can be put up from ingredients to be found in most homes, they are not expensive and the lady built up a very profitable business through this method.

PLAN No. 48. MAKING HARNESS DRESSING

Every farmer will buy a good, reliable waterproof harness dressing, and if you know how to make it, you can sell it rapidly.

A young man who had spent most of his life on the farm found himself stranded in the city, and when a

friend gave him the recipe for such a dressing, he bought the materials with his last few pennies and began selling it to the farmers. He realized such a good profit from his first sales that he was soon able to make it on a much more extensive scale, and started on a trip through the country, where he sold it to farmers he called upon. Here is the formula:

Petrolatum, 4 pounds; Burgundy pitch, 4 ounces; rosin, 2 ounces; ivory black (dry), 60 ounces; beeswax, 4 ounces.

He melted the rosin, pitch and beeswax together, then added the petrolatum, and when melted, he stirred in the ivory black, stirring it until cold, when he put it up in tin boxes and pasted a printed label on it. This preparation is applied with the fingers or a soft cloth, and rubbed well into the leather, on both sides and edges, after thoroughly washing the leather with softsoap and water, and letting it dry. It imparts a nice black appearance to the leather, but not a high polish, and renders the leather soft and pliable. Used as a shoe dressing, it makes shoes waterproof, so that one does not need rubbers.

To test it, he would, after applying it, soak the leather in water for a few hours, weighing it both before and after soaking, and thus prove that no water had been absorbed.

PLAN No. 49. BOOK THAT COSTS NOTHING SELLS FOR 98 CENTS

This man clothed an old idea in a new dress, greatly improved upon it, and made it a permanent, paying business.

He got twenty merchants, in different lines, to pay him $5.00 each for a page ad. in a book, and spent

the $100 thus received in having 2,000 copies of it printed. Then he sold the 2,000 copies for 98 cents each, or a total of $1,960. But who is going to buy a book with nothing in it except twenty pages of ads, do you ask? Answer: 2,000 people. Why?

Every advertiser in that book has agreed to give a certain discount on every item he sells to the person who has bought that book—the furniture man giving 10 per cent off, the hardware man 5 or 10 per cent, the dry goods man 12 or 15 per cent, the grocer $2^1/_2$ per cent, and so on—every one offering a discount that in the aggregate means a saving of $100 or more a year—to the buyer of the book. And the book that entitles these people to so great a saving on their purchases costs only 98 cents! Will people buy the book? Does 98 cents look bigger to most people than $100, or possibly $200? Of course the books sell, every last one of them, and the enterprising publisher gets nearly $2,000 net out of it, the merchants get a whole year's splendid advertising among people who want to buy from them, for $5.00 each, and the printer gets $100 for putting out the book.

PLAN No. 50. TYPEWRITING SHORT STORIES BY MAIL

In these days of an ever-increasing demand for short stories by hundreds of old and new magazines, when thousands of aspiring young authors are reaching out for fame and fortune, it is but natural to assume that but few of them are familiar with the form in which manuscripts are required to be submitted.

In practically all cases manuscripts must be

typewritten, and young people all over the country who do not own typewriters, and could not use them if they did, are always glad to have this done for them.

A young lady who was a skilled typist realized this fact, and at once inserted a few ads. in a small number of papers reaching this class of people, to the effect that she would do this work for them at reasonable prices, and turn out her work in the high class manner required by publishers.

She excelled in spelling, punctuation, paragraphing, etc., and felt certain of her ability to do satisfactory work.

She received many replies to her advertisements, and in a few months had established a pleasant and profitable business of her own besides having placed many ambitious young authors in a position to present their manuscripts to publishers in acceptable form, thereby greatly increasing the chances of acceptance.

Any young person, man or woman, who possesses the ability of this young lady, can do equally well by following the same plan of doing satisfactory work at fair prices.

PLAN No. 51. OPENING A GIFT SHOP

A widow, who was left with some very good furnishings and about $200 in cash, resolved to make an opportunity of her own and improved it to such excellent advantage that she made a satisfactory living by following a definite plan and the exercise of an unusual amount of good taste.

Renting a small but attractive down-town store room, she fitted it up with the furnishings of her

home, imparting to the place a decidedly cozy effect, and she printed some 500 cards, which she sent out by mail, paying regular letter postage on each. These contained an invitation to visit her "Many Happy Returns Shop," where rare gifts, suitable for all occasions, could be purchased at prices ranging from 10 cents to $10 each. She further intimated that an inspection of her wares would prove extremely interesting even to those who did not come in to buy.

Living only a short distance from New York, she went to the city and, visiting the Italian and Syrian districts, she purchased many pieces of old brass, trays, pots, lanterns, etc., while in the Japanese quarters she bought odd bits of china and lacquer, in all fifty articles, costing her $30.

She also asked her friends to bring in odd or rare articles for her to sell on commission, and arranged everything very tastefully for her opening day, when large numbers of people visited her store and many of the novelties were sold at good prices. Her first day's sales netted her $7.66, and by constantly adding to her stock of rarities and other attractions, she enjoyed a steady and substantial income.

PLAN No. 52. COUPONS TO AID SALES

"A friend of mine," said a successful merchant, not long ago, "was making and selling—or trying to sell—three preparations of great merit, but with such indifferent success that he decided to give it up.

"I knew the value of his preparations, and concluded that his failure was due to himself rather than to them. I, therefore, outlined a plan for him that I thought would bring success, and loaned him the money with which to make another try at it.

"I had 1,000 circulars printed, to each of which were attached twenty coupons of the face value of 5 cents each. I then got ten merchants to agree to accept one of these 5-cent coupons at its face value on every dollar's worth of merchandise purchased for cash, and gave the names of these merchants on the circular, with their agreement to accept the coupons as above stated.

"The regular price of my friend's preparations was 50 cents each, but I told him to offer the three for $1.00, and give each purchaser $1.00 worth of the coupons besides.

"The way the buyers went for those preparations, when offered in this way, was simply amazing, as they got the three preparations for nothing, since the various merchants gave them back the dollar they had paid for the coupons, and the merchants themselves were well pleased with the effective advertising the plan had given them, since it brought each of them many new patrons.

"But the best part of it was that my friend not only sold this first $1,000 worth of coupons, but a good many thousand more, and gladly repaid my loan in a day or two. Besides, it established his remedies permanently, as people had found out in this way how good they were."

PLAN No. 53. WOMAN PACKS TRUNKS

A woman left totally unprovided for by her husband, a commercial traveler who died suddenly, had to provide for herself and family.

Discussing with her friends what she could do to make a living, one suggested that she pack trunks for people who did not know how. She had always

packed her husband's trunks.

She acted on this suggestion, and made arrangements with a large hotel to pack trunks for its guests. She furnished bonds to amply protect guests against loss.



Plan No. 53. Her Husband was a '

There are many hotels and travelers throughout the country that would be glad to avail themselves of such assistance.

PLAN No. 54. VEGETABLES BY PARCEL POST

Our friend the suburban gardener, lives several miles from the city, where he has about three acres of ground in cultivation, and knows how to make it pay—via parcel post.

He knows that the city man likes nice, fresh, crisp vegetables, right from the soil the day he gets them, and that he will pay a good price for them, besides saving the unwilling tribute he pays the city middleman for dried up, shriveled and often spoiled market stuff, that may be a week old. And the gardener gets more for his produce when he sells it direct to the city consumer. So he runs a small ad. in the city papers, stating what he has for sale, that they are strictly fresh, and the prices he asks.

From one or two regular customers at first, he gradually increases his list of patrons, until he has more than a hundred upon whom he can depend as steady buyers of his products. He plays fair with them, gives them exactly what he advertised, with prompt delivery that assured their arrival in fine condition—so he builds up a business.

Three times a week he sends postal cards to his customers advising them that tomorrow it will be fresh, crisp radishes, or sweet, juicy young onions or tender, luscious asparagus or rhubarb, or any other of a dozen or more delightfully appetizing things grown in the garden, with the price of whatever it is, to be sent by parcel post so as to reach the city customer the same day. Who wouldn't buy from a man who did business in that way, and rendered the service that everyone appreciates.

But the supply of the suburban gardens is never greater than the demand, and thousands more can find health, plenty and happiness in this pleasant and profitable occupation. Why not be one of them

yourself?

PLAN No. 55. FARMERS' SUPPLY BUREAU

This young man lived in a city of about 7,000 inhabitants, where there were several wholesale houses, as well as a large number of up-to-date retail stores. The town was in the midst of a prosperous farming community, where the farmers were kept busy at home looking after their crops, and had but little time for coming to town.

One day this enterprising young man had an idea, which proved to be a good one, for it enabled him to make a good living.

He secured the name of every farmer living on every rural route running out of the city, and sent him a well printed circular letter, offering to make purchases for him of anything he might need in town, and send it out to him by parcel post the very day the order was received. He added that no charge would be made for this service, but that the farmer would get exactly what he desired, at the same price he would pay if he came to the city himself.

He then arranged with wholesale and retail merchants to pay him a commission on all articles sold for them in this way, besides paying the postage, and inside of three months he had one hundred well-to-do farmers on his list who, instead of coming to town for what they wanted, phoned their orders to him, and they were filled so promptly and satisfactorily that the farmers placed absolute confidence in him and allowed him to make practically all their purchases for them. He proved a good shopper, and built up a profitable business by just thinking out a feasible and legitimate plan.

PLAN No. 56. A SUPERB TABLE RELISH

The very best table relish it is possible to make is prepared from the following formula by a woman living in the country, who has created for it a demand far greater than she can supply. Here are the ingredients:

Ripe tomatoes, 9 pounds; onions, 2 pounds; cider vinegar, 3 pints; cayenne pepper, 2 teaspoonfuls; black pepper, 4 ounces; brown sugar, 6 ounces.

She mashes the tomatoes thoroughly, peels and grinds the onions in a vegetable grinder, then places all the ingredients in a porcelain vessel and boils them briskly for about two hours. Then she places them in short half pint water bottles, costing about half a cent each, cuts off the corks close to the bottles and seals with sealing wax.

One taste of this relish invariably creates a demand for more, and she can sell it as fast as she can put it up, and have many calls for more. There is a fine margin of profit in it, as she raises practically all the materials herself, and by making use of the parcel post she has been able to come out over $1,000 ahead each season since she began operations. Lately she has been enlarging the scope of her activities, with the assurance of a much larger income from year to year.

Just try this yourselves, you mothers who want to make some money with very little outlay.

PLAN No. 57. MONEY FROM A STEREO CAMERA

A newly married couple decided to spend their honeymoon in a small Ohio town surrounded by beautiful scenery, and having a stereoscopic camera among their possessions, took it along, as it might

come in handy. And it did.

They happened to know that they could obtain from a Chicago firm, for 80 cents per hundred, any number of the colored views shown in stereoscopes, and which agents usually sell for $1.50 to $2.00 per dozen, and they ordered twenty sets of 100 each, paying $16.00 for the lot.

Then they used their stereoscopic camera in taking a number of views in that vicinity, together with pictures of noted persons, groups of children, grounds and residences of leading citizens, and other objects of local interest.

When all was completed, they made a personal canvas of the town exhibiting the colored views to the people, through an ordinary stereoscope, and in this way created a most favorable impression as to the superior character of the work.

The sets of 100 colored views were offered at $5.00 each, and, as a premium, six of the local views were added, but they made an extra charge when views of some subject of special interest to the families were ordered taken; and where people had no stereoscope, they ordered one, which made them a good profit.

Their work became a popular fad in the town, and they received and filled so many orders that in two months there they cleared over $500.

It is not necessary to buy a stereo-camera—an ordinary camera will do. Print two pictures from negative, paste these two on cardboard cut down to proper size, and your picture is complete.

PLAN No. 58. A RENTING BULLETIN

A young man made use of the following plan to get

started in business:

Living in a western town of about 10,000 inhabitants, he noted the various cards of “For Sale,” “For Rent,” “Furnished rooms,” “Board and Rooms,” etc., and decided he could help these people get what they wanted, and at the same time make a little sum for himself.

He called at each of the places where cards were displayed, explained that he was about to begin the publication of a renting and business bulletin, and would insert an ad. under the proper heading, to remain until the particular want was supplied, and distribute free a certain number of these bulletins all over town each week, all for $1.00 for each of such notices, to be paid in advance.

As most of those he approached knew him to be reliable, he had no difficulty in securing a little over 100 subscriptions of the kind desired; then he went among the merchants of the town and contracted for a sufficient amount of advertising to pay the cost of printing the bulletin, leaving him the entire amount received for publication of the “for rent” and other notices as clear profit.

He faithfully distributed the bulletins from house to house, in hotels, reading rooms, and barber shops. This gave him a start. He continued to solicit advertisements and worked faithfully at his little publication which gave returns sufficient to make his living.

PLAN No. 59. MAKING HENS LAY IN WINTER

That grasshoppers, which have been the scourge of many sections of the country for many years, can really be made to serve a useful purpose, and so

utilized as to pay at least a part of the damage they do, was proven by the experience of a Kansan woman who had found great difficulty in making her hens lay during the winter months.

The grasshopper pest had been unusually active in her part of the country that year, having destroyed practically every growing thing within reach, and her hens were about the only available source of revenue that remained. But how to feed them was the problem she could not solve.

Suddenly she became impressed with the fact that the hated grasshopper was an ideal chicken food and tonic, and as other foods and tonics were too expensive for her slender purse, she decided upon laying in a good supply of grasshoppers—but how? They must first be caught.

She bought a piece of screen wire 4 feet wide by 20 feet long, bent it lengthwise in a circular form, and fastened the edges with large-size hooks and eyes, with circular doors, working on a single hinge, at each end, fitting the edges closely. She then constructed a frame of 4-inch pine sheathing, 4 feet high and 20 feet long, back of the trap, and covered it with white oilcloth, slanting it in such a position that when the grasshoppers struck the oilcloth they would slip down into the trap. These they carried out into the wheat field one evening in August, placed them in position, and started driving the swarms of grasshoppers toward the pitfall thus prepared for them. The white oilcloth shield proved a great attraction for the hoppers, and in forty-five minutes they had driven four bushels of the insects into the trap. Beneath this they placed a formaldehyde generator, covered the trap with muslin made to fit over it, and soon had it full of dead grasshoppers. These they carried to the barn loft, spread them out

to dry, and put them away in sacks. Altogether they got over eighty bushels of dried hoppers, and those hens laid that winter as they had never laid before.

PLAN No. 60. MAKING POLISHING CLOTHS

A polishing cloth would seem an insignificant thing in itself, and it is, but often it is the little things that make good profit and a man in a western city, who understood this fact, made thousands of dollars by giving it practical application.

He bought a bolt of outing flannel of the cheaper grade, and from this he cut a few hundred small pieces of the proper size for samples. These he immersed in a solution which he had made, as follows: One-half pound of castile soap, shaved fine and melted to a jelly. When thoroughly dissolved, he added a gallon of soft water and 4 ounces of powdered pumice stone, coloring it with tincture of red analine. This gave him a polishing cloth that worked wonders with silverware, brass and other bright metals, imparting to them a lustre that but few of the high-priced polishes can give, and doing away with the mussy method of using a powder with an ordinary cloth.

Securing a number of good canvassers, he gave each of them 100 of the small samples, 100 full sized polishing cloths, and 100 imitation type-written letters addressed to “The Lady of the House,” asking her to use the small free sample which the agent would leave with her, and note its many points of superiority over polishing powders, etc.

Nearly every housewife would use the sample, and be so well pleased with it that when the agent called a couple of days later, with the full-sized cloths, at

25 cents each, it meant a sale in almost every case. The man who made the cloths gave the agents half the proceeds of all sales, and the other half he retained for himself which was practically all profit. By extending his sale to other towns, he developed a big business.

PLAN No. 61. SELLING LISTS OF NAMES

We know of a man who averaged $40.00 per day through the sale of mailing lists to advertisers all over the country. But they were good, reliable lists of live people, who for years had not been flooded with a tidal wave of advertising circulars.

These names he procured from county, town, and other officials, from certain directories, and from private individuals in different parts of the country. In some cases he advertised in country papers, asking for replies from those willing to furnish lists of bonafide names, usually offering some small inducement to secure this service, and the lists thus obtained consisted largely of well-to-do farmers, which proved the most salable of the lists.

The various magazines and metropolitan dailies gave him the names of advertisers anxious to reach the class of consumers who comprised his lists, and he sold them for prices ranging from $2.00 to $10.00 per thousand, though in some special cases his charges would be considerably more. Indeed, in one case, where he had secured the names of 5,000 speculators and investors, patrons of the stock exchanges, he asked, and received, $80 for the list, and sold it to many advertisers in various lines. He had his lists typewritten with as many as ten carbon copies to each page, and the expense of supplying

them to numerous customers was very trivial, while his receipts netted him a good living each year.

PLAN No. 62. THE PROFESSIONAL MAN SHOPPER

An elderly man who lived in a small eastern town had formerly been a merchant in the city, but had failed through the dishonesty of a partner, and was obliged to make a humble living by any legitimate means.

Being familiar with all the details of buying and selling, as well as with the quality of various kinds of merchandise, he decided to become a professional shopper, and succeeded beyond his expectations.

He distributed cards throughout the little town and its vicinity announcing that he would make daily trips to the city, and for a small charge would purchase such articles as might be desired by local people from the big city stores, particularly those advertising “bargain sales.”

As most people in a small place know of these bargains, through the columns of the city dailies reaching their places, and would like to take advantage of many of them, yet cannot afford the time and expense of making these frequent trips themselves, they were very glad to have this service so promptly and satisfactorily performed for them by one they knew to be reliable. The elderly shopper soon had all he could attend to. Outside of his fare, his expenses were nothing, and while his charges were so reasonable that it saved his patrons many dollars in railroad fare, as well as a great deal of valuable time, it made him a very comfortable living. He not only received a small sum for his service to

each customer, but he received a special discount from the store that filled the order.

PLAN No. 63. A THERMOMETER PLAN THAT PAID

The vagaries of the weather have never been regarded as affording a living for anyone except the "local forecaster," but here is the experience of a man in Iowa who thought otherwise, and made money out of the plan.

He paid $40 for a large thermometer, all complete, the same being about six feet high, mounted on a frame 3x8 feet, and containing space for fourteen advertisements. These he readily sold to merchants of the town, at $15 for each space, bringing his receipts up to $210, or $170 after paying for the thermometer, and many times he sold the entire fourteen spaces in one day's work. To be sure, he was obliged to buy the thermometers in quantities, in order to get them for $40 apiece, but as long as he could realize a profit of $170 on each, he could well afford that. As his business increased, his orders for thermometers grew larger and their cost correspondingly smaller, so that he soon found himself on the road to success. He did not give this advertising service in towns of less than 5,000 people, and even if he only sold three thermometers in a week, his income was very good.

PLAN No. 64. LETTUCE GROWING, $100,000 A YEAR

Some ten years ago two brothers went to a North

Carolina town, in the fall of the year, rented a piece of ground near the outskirts, carefully laid it out in large beds, and planted it in lettuce, to be sold to northern markets during the winter months.

The inhabitants of the town ridiculed the idea, declaring that the lettuce would freeze when the weather got cold, and even if it grew, it could not be sold at a profit, but the brothers said nothing, for they knew what they were doing.

The lettuce, after planting, came up nicely and made a rapid growth, but it wasn't allowed to be touched by frost. Covers to fit over all the beds were made from coarse cotton sheeting, and held in place by hooks fastened to rings in small stakes driven at the corners and edges of the beds. These covers were taken off when the sun was shining and replaced over the beds at night, when there was frost in the air.

Soon the people of the town went out to see how the lettuce crop was growing, and were so astonished at its marvelous growth, and the fabulous prices it brought in the northern cities, that large numbers of the people took up lettuce growing as a regular business. It was not long before the receipts from the lettuce in that town were $100,000 a year, and everybody was growing it; the men in the fields, the women in their gardens, and all making money at it, for the variety was of the best, the soil just right, and all conditions were adapted to its culture.

Usually two crops were grown each year, one in the late fall, the other in the early spring, and it was shipped up north in board baskets, where it brought from $1.25 to $3.50 per basket, according to its grade and the condition of the market at the time of its arrival. The people in that town do not laugh any more when lettuce growing in the winter is

mentioned, for winter time is harvest time down there.

PLAN No. 65. A FUTURE IN SALAD DRESSING

An enterprising woman in a western state has made money in home-made salad dressing and peanut butter. She started demonstrating the superior quality of her products in a little corner grocery. She now owns a large building on a prominent street in a city, and sells her produce all over the Northwest.

She not only knows all about making the very best salad dressing and peanut butter that anyone could possibly imagine or wish for, but she insists upon a high degree of cleanliness and care in the preparation of her products. Her corps of assistants and employes are selected with a view to maintaining the excellent standard which formed the basis of her own success in the beginning.

Other women have excellent recipes for making good things to eat, and, though all of them may not make large incomes from the knowledge and skill they possess, yet they may at least add largely to the family income by making such articles to sell at a good profit, and, at the same time, benefit the consumers as well.

PLAN No. 66. COUNTRY PAPER ADVERTISING

A young newspaper man perfected a plan under which he took over the advertising of all the weekly papers published within a radius of 100 miles or more from his home town, including those having

"patent insides" supplied by the branch of a prominent newspaper union in his town.

Arranging these various publications in groups of forty or more, he established a rate for each group that not only offered the advertiser a very great reduction from what it would cost him to deal with all these papers separately, but still left him a good margin of profit. He soon became the head of a prosperous business which yielded a net income of $600 a month.

This plan can be worked to good advantage by capable men in other localities, as it requires but little capital to start it.

PLAN No. 67. WORKED HER WAY THROUGH COLLEGE

It isn't every girl who feels competent to work her way through college, when her people are not able to pay the expenses of her course, but this one did, and proved it by paying all her bills and having something left besides.

Being very proficient in embroidery work, she organized a class of fifty of her fellow-students, to whom she gave a course of twenty embroidery lessons, at $5.00 each for the course, while several of the girls who wished instruction in difficult stitches were each charged $1.00 a lesson. She also took subscriptions for a periodical devoted largely to embroidery and needle work, and received a commission of 25 cents on each subscription she secured.

The faculty gave her shopping privileges two afternoons each week, and she improved these occasions by executing commissions at the various

stores for the other girl students. She had excellent taste in the matter of selections, and her purchases were not only highly pleasing to those for whom they were made, but she received a discount from each of the merchants thus patronized, and this netted her a neat little sum, her commissions alone in nine months amounting to $260.

She also added $90 to her income through the sale of copies of articles contributed to the college journal, and her total earnings for the year were $662.50.

The income she derived from these various activities not only relieved her parents of all expense for her education, but gave her a valuable insight into practical business principles and methods, while developing a spirit of confidence in her own abilities, as well as a feeling of independence.

PLAN No. 68. $4,800 FOR FIVE CALVES

The old saying that “pigs is pigs,” might with equal propriety be applied to calves, particularly if they are of Holstein-Friesian stock, if one is to judge from the experience of a breeder of blooded stock in New York state.

From one cow, nine years old, this man has sold five calves for $4,800, has another for which he has refused $500, and still another of her progeny is owned by a man who wouldn’t sell it at any price.

This man started as a poor boy, who was obliged to work as a hired hand on a farm, at $10 per month. But the farmer employer did not always have the $10 when the month was up, and really couldn’t afford to keep a hired man, or a boy, though he needed one.

However, he did own a pure-bred Holstein calf and

the farmer offered this calf to the boy for two months' work on the farm. The boy had a keen eye for good points of an animal, and accepted the offer, keeping the calf in a small pasture on his employer's farm until fall when he took it with him to his own humble home and gave it the best of care.

Well, that calf was the mother of the nine-year-old cow that was the mother, of the five calves which the "boy" has sold for $4,800, and still has a calf worth more than $500.

PLAN No. 69. NIGHT PATROLMAN IN SMALL TOWN

A husky young Irishman, who lived in a town too small to maintain a regular police officer, and too large to be entirely without protection from hold-ups, burglars and fires, especially at night, called upon the principal merchants of the place and arranged to give such service as was needed, on a basis of 25 cents a night from each one.

Fifteen merchants readily agreed to these terms, and, by remaining on duty every night including Sundays, he was able to earn $26.25 a week.

The third night he was on duty he captured a man in the act of stealing. Needless to say, that after this, the other merchants in the town quickly added their names to the young Irishman's list of protected firms, and his weekly pay-check soon became much larger.

PLAN No. 70. HE RAISED DUCKS AND GEESE

A small farmer, living a few miles from a city, derived a very handsome income from the raising of

ducks and geese.

From a long and careful study of various domestic fowls, he had learned that, while ducks and geese are much more rare than chickens, and that many people prefer them as table birds, they eat much less than hens, and the feathers of the geese are always in demand, at top prices.

Both ducks and geese are much more hardy than chickens, and not nearly so liable to disease, therefore the losses are not so great. By keeping "Indian Runner" ducks, he got an almost unlimited supply of eggs, which always brought good prices, while during the holiday season the demand for ducks and geese was second only to the demand for turkeys, which are expensive to raise.

When he figured up his receipts at the end of the year, he found that each goose had brought him a net profit of $5.75, while the ducks averaged considerably higher, owing to their greater egg-laying capacity. Both classes of birds, when fattened just before Thanksgiving, brought fancy prices, and involved a great deal less labor and expense in their raising than would be required in the case of hens.

PLAN No. 71. COLLECTION AGENCY

That a smile, a pleasant word and a liberal amount of good humor will succeed better in the collection of accounts than the bullying method, was the idea of a young friend of ours who decided to make Collections a regular business.

About all he had with which to make a beginning was a desk, three chairs, a small rug, a second-hand typewriter, and $50 for some printed matter and a month's office rent.

He had arranged with a young lawyer friend of his to attend to whatever litigation might be necessary, and the attorney's name appear on his letter heads as counsel for the agency.

Then he called upon the leading merchants and solicited their accounts, on a basis of 5 per cent on the fairly good ones, and from 24 to 50 per cent on others.

In every case where it was possible, he called upon the debtor personally, and possessing a most pleasing and sympathetic manner with which to meet the usual "hard luck" stories he encountered, he was able not only to impress the fact that he was the debtor's friend but to compel a recognition of the creditor's rights and equities in the matter.

As a result of this method he collected many old accounts that were regarded as hopeless, and made his business pay.

In those cases, however, where the debtor was defiant and inclined to not to care he dealt with them judiciously.

PLAN No. 72. MAKING AND SELLING RAG RUGS

You probably have no idea how many people would pay for rag rugs, to be used in their bathrooms, bedrooms, dining rooms and elsewhere if only some one would make them and sell them from house to house.

An old lady in Illinois, who knew all about making rag rugs, as well as rag carpets, and who needed a little money very badly, concluded to use her knowledge of rug making and make a few dollars in the only way she could think of.

Her only available resources were a quantity of

clean bits of cloth of various hues and textures, some needles and thread. The pieces of cloth she tore into strips of the proper width, and sewed them together, so as to form combinations of blue and white, brown and white, red and black, grey and old rose, etc. and, having no loom with which to weave them, she made them into three-strand braids and sewed them together in oval shape, until she had completed a mat about $2^1/_2$x$3^1/_2$ feet.

Some of these she sold from house to house, at very good prices, while others she displayed in a department store window, where they sold rapidly, though she was obliged to pay the storekeeper a small commission for selling them.

She made a very good living at it.

PLAN No. 73. PHOTOS AT 39 CENTS A DOZEN

It seemed impossible, but here's the story of a man who did it, and made a good living out of it, also kept four men on the road working at this novel but legitimate plan:

He had been a traveling salesman for several years, and on one of his trips had gone into a grocery store, but found another traveling man ahead of him.

This man was showing the grocer the details of a plan whereby he could have a photo enlarged for anyone buying a $5 punch-ticket, good for that amount in merchandise, and paying $1.25 additional.

Our enterprising friend saw it was a good plan, but believed he could improve upon it, and proceeded to do so.

After a long search he finally found a photographer who would make copies of any

photograph for 50 cents per dozen, when a large number of orders was given. Then he had several thousand punch-tickets printed, calling for $5 worth of merchandise, and these he sold to merchants at $5 for 500, while the merchant, in turn, would sell the $5 punch-ticket to a customer.

Later the originator of the plan opened a small studio of his own, and thus reduced the cost of the photos to 39 cents per dozen, leaving him a profit of 11 cents per dozen, and it was then that he quit the road himself and put four good men on as many routes, while he remained at home and managed his business.

PLAN No. 74. REAL "FRESH ROASTED COFFEE"

Everybody loves the aroma of fresh roasted coffee, but it is so seldom they have an opportunity to inhale it when it is fresh, that, when they do, it comes as a most delightful sensation, and makes them want coffee—real, genuine, fresh roasted coffee.

A coffee-roasting machine, almost automatic in its action, has been perfected to such a degree that it retains all the aroma and flavor of the coffee, and places it, freshly roasted, in the hands of the consumer, who thus "gets all the good out of it."

A young man purchased one of these machines, rented a small corner in a meat and vegetable market, where no groceries were kept for sale, bought a few pounds of the best green coffee, and started his machine, which was run by electricity, and gas for fuel. In the window he placed a neatly painted card, saying: "Fresh Coffee, Right Out of the Roaster," and awaited results. Soon the delicious

aroma pervaded the entire establishment and was wafted to the crowds on the sidewalk.

The smell of good coffee is an excellent advertisement and brings customers. But this enterprising vender of fresh roasted coffee realized that even the best brands of coffee would prove a failure if not properly made, so he put every pound he sold into a paper sack containing the following directions, plainly printed, and urged every purchaser to pay particular attention to it.

"Use one heaping tablespoonful of the ground coffee to each cup of cold water, not warm or hot, and let it steep in the cold water for five minutes or more, as this greatly improves the flavor. Then put over a slow fire and slowly bring it to the boiling point, boiling it for just three minutes, but no longer. Take off the fire and let it stand for four or five minutes before serving, and you'll find you have the finest flavored cup of coffee you ever drank. But always use fresh coffee, never using the grounds more than once."

The plan was successful.

PLAN No. 75. COLLEGE LAUNDRY AGENCY

A young man, attending college in a small town, secured the agency for a leading laundry in a near-by city, and in that way made enough to pay for his entire course. The laundry company paid him 40 percent for all the work he sent in, and one-half of the express charges besides, so that he was at practically no expense in conducting the business.

He soon demonstrated that he was representing a laundry that did good work and made prompt deliveries, and it was an easy matter to secure orders

from all the students. The city laundry did better work than the local concern, and the prices were also lower, so most of the students, and many residents of the town as well, were glad to have their work done where satisfactory service was assured. In order to overcome the feeble competition offered by local barber shops and store agencies, the young man further strengthened his claim to patronage by offering a premium for each $10 worth of laundry work sent in through him, and by that means came out ahead in the volume of paying business secured.

It took but little of his spare time and did not interfere with his studies, and at the same time gave him a good income.

PLAN No. 76. CO-OPERATIVE STORE

A former merchant in a small town, who had lost his entire stock by fire, and had been unable to collect the insurance, conceived the idea of starting a co-operative store, without capital, and the plan worked so well that in a few years he was in a better condition financially than before the fire.

Fully realizing that the average store in the small town charges higher prices for inferior goods than the city stores ask for the better grades, and knowing the people of his community would be glad to be better served at a lower cost, he visited a wholesale house in the city, made arrangements for purchasing groceries and kindred lines at wholesale prices, when taken in considerable quantities. He then formed a sort of club or co-operative society of from 75 to 100 members, among his acquaintances and former patrons, agreeing to supply them with the better grades of goods at prices considerably less than those

charged by the local stores.

He opened a little store room in the town for the distribution of these goods, each member paying cash for every item purchased, and, there being no necessity for bookkeeping or collections, he made a good profit on everything sold in this manner, suffered no losses, and in a short time controlled practically all the grocery trade in his town and the surrounding country. He often remarked that the fire which destroyed his former store was the best thing that could have happened to him, besides the benefit it brought to those in the community who co-operated with him in his enterprise, while he started on nothing.

PLAN No. 77. STARTING A HOSPITAL IN A SMALL TOWN

It was a doctor's wife who, with a husband broken in health and purse, originated a plan that was successful and put the couple financially "on their feet".

The husband, an able physician and surgeon, in a western city, with failing health, decided to move to a country town. His finances were at a low ebb, it soon became necessary for him to resume his practice in this rural community. But he was not physically able to make calls at long distances from town, especially at night and in bad weather, and his wife decided to carry out her long-cherished plan of opening a hospital, even if it had to be done on a small scale.

The house next door being vacant, the doctor's wife engaged it at a low rental, paying for the first month in advance. Then, when a telephone call came

for the doctor from a farmer whose wife was ill, the wife told him the doctor was not able to go, but suggested that the farmer bring his wife to town, where his wife would have a pleasant room, the care of an experienced nurse, and the medical services of the doctor.

The doctor himself was astonished when he overheard this conversation, and entered a vigorous protest, but the wife told him not to worry.

Having engaged the only nurse in the town, which was herself, with the assistance of a couple of farmer's boys she moved the furniture from the three upper rooms of her own residence into the next house, where she fixed up three rooms very comfortably, and awaited the coming of results.

Early in the afternoon the farmer brought his wife and she was installed in one of the rooms, under the care of the nurse. Later others came, and it soon became known all over the community that the "new doctor," having more patients than he could visit, had fitted up a nice place in town where his patients could come to him, and where women from the country could "stay over night," or as many days and nights as were necessary, and where they could be nursed and "doctored" in a proper manner. It was not long until further rooms had been tastefully fitted up, another nurse engaged, and the doctor was kept busy with his patients every minute of the day.

With the assistance of a maid, the doctor's wife served meals to the patients in their own rooms, and the charges for all these accommodations, room, board, nursing and treatment, were very reasonable. The people of the town and vicinity soon saw the advantages afforded by this plan, and the patronage increased until there was a long waiting list. The reception or social room that had been fitted up was

supplied with magazines, newspapers, and other means of entertainment for the patients and their friends who called upon them, and was a much appreciated resting place for country women who came to town with their husbands.

The rent of the building was $15 a month, the nurses were paid $1.00 a day and board, $3 for taking care of a patient at night, and farm produce was purchased at very low prices, or taken as part payment for services.

At the end of the first year these people had cleared $5,000 over all expenses, and on the fourth anniversary of the launching of the plan, the doctor, now restored to health, handed his wife a check for $8,000, to repay her, as he said, for "thinking of such a splendid plan."

PLAN No. 78. MAKING A SODA FOUNTAIN PAY

She was a druggist's wife, and had some excellent ideas of her own, besides, she knew how to put them to practical use.

While the prescription business of the store was large and profitable, the soda fountain, a fine large one with every modern feature of equipment, was not making good, and there were seven other soda fountains in the town of some 2,000 inhabitants. Here was the wife's opportunity.

The drug store was a large and attractive place and she decided upon the following plan of action: She installed four private booths, covering the partitions with green burlap, with burlap curtains on the outside. Putting wire over the top of each booth, she covered them with paper flowers, which she made herself. The covering of one booth was of yellow

roses, one of American beauty roses, one of pumpkin blossoms and one of lilies. In the center of each booth she placed an electric light, with a shade to match the flowers of the ceiling, also an electric bell.

This novel and attractive arrangement proved very popular, and rapidly brought a large number of patrons who preferred to have sodas and ice cream served in the privacy of the tastefully decorated booths rather than to sit at tables in the open store. However, she was continually planning on some new feature to make the place talked about, and she turned her attention to the fountain itself. She built a large canopy over the fountain, and covered it with 300 crepe-paper oranges and 3,000 leaves, which produced a very striking and pleasing effect. To still further stimulate interest, she issued neatly designed and printed circulars, particularly when she had some novelty to give away, and thus kept it constantly before the public.

That the idea was a good one, is shown by the fact that, whereas, the receipts from the soda fountain had formerly ranged from $6 to $10 a day, the carrying out of her new plan increased its revenue from $18 to $30 a day, and placed the store far in the lead of all the other drug stores in the town.

PLAN No. 79. MOTION PICTURE THEATERS

A husband and wife had lost their money and all they had left was $500 in cash, a moving-picture camera, and a good supply of courage.

Selecting a location in a prosperous residence district they opened a moving-picture theater with a seating capacity of 400 people.

The city every year had a local fiesta or carnival,

lasting about two weeks, and the wife suggested the idea of taking daily motion pictures of the parades and showing them on the screen as an additional attraction. This greatly increased the attendance for a time, but when the fiesta was over there was a "slump" in the receipts. The wife then suggested that the husband present films of local interest.

Whenever such a picture was taken, they would advertise: "Come and see yourself and your friends in the movies," and it brought good returns. In fact, this plan proved so popular that they were obliged to enlarge their hall, all of which was due to the working out of an original idea—that everyone wants to see himself or herself on the screen.

PLAN No. 80. FROM CLERK TO SUPERINTENDENT

Every man who is a clerk would be very glad to be promoted to superintendent. But it isn't every clerk who has a wife with the energy and the initiative to assist him.

With the arrival of the second baby, the husband began to realize that he must have more money, but how to obtain it was the question. He could not ask for more salary, because he was already the best-paid shipping clerk in the establishment.

Although without practical experience in the conduct of a large business, his wife intuitively realized that the difference between employer and employe was not because the employer did more work, but because he knew more about the business itself and how to direct others to do it to the best advantage of the employer.

It was a hard thing to do, but after long and

earnest reasoning with her husband she maintained that if he left more of the details of the work to his assistants, and devoted more of his time to planning improved methods, it would mean the recognition of his ability and his consequent advancement.

He accepted his wife's suggestion, acted upon it at once, and greatly profited by it, for he began to see the work through his employer's eyes. Gradually the idea grew upon him, until he evolved a plan for the complete reorganization of his department in such a manner as to entail less cost and labor and yet bring better returns.

In a dispute with the man next in authority over him, he won the approval of the general manager, because he was right. From that time on his advancement was rapid, and today he is superintendent of the entire business, due largely to his wife's forethought.

PLAN No. 81. MAKING OVER OLD HOUSES

A lawyer in a western city had only a small practice but his wife possessed good business judgment. They had just cash enough to purchase a small house, with a good-sized lot, in a modest side street occupied mainly by the homes of working men. This lady possessed good taste in the matter of furnishings and decorations, and exercised her talent in this direction by turning this property into an attractive little home. By a most skillful arrangement of the furniture, and not having too much of it, she gave all the rooms the appearance of being much larger than they really were, while dotted Swiss curtains admitted sufficient light to impart a most cheerful atmosphere. Everything was made to

contribute to the coziness of the place, and give it a homelike air that was very inviting. In a few months they were offered $350 more than the property cost them, and they accepted the offer.



Plan No. 82. Industry has its

They next bought an older house, that was badly in need of repairs, gave it two coats of white paint, added green shutters, and the wife improved the interior with home-made book-cases, window seats and kitchen conveniences of many kinds, and put blue and white lace paper on the pantry shelves. A

retired farmer and his wife, who wanted to move to town, was greatly impressed with the pattern of that paper as well as with the large back yard, where quantities of garden products could be raised, and readily paid them $500 more than the cost of the place.

They then bought a nine-room house, converted it into two apartments, that rented for $45 a month each, and a little later sold it at a profit of $1,150, making their total profits in two years $2,000.

PLAN No. 82. CULTIVATING OTHER PEOPLE'S BACK YARDS

Thousands of men and women who complain of "hard times" and bemoan the fact that they "can't get anything to do," could live comfortably by following the plan which an almost invalid husband and his wife so successfully carried out, at a time when everything looked very dark.

They were in debt, through the illness of the husband, a mill worker, whom the doctors had told to get into some line of work that would give him plenty of outdoor exercise.

In the residential section of the city, near by, were many back yards either sown in grass or covered with weeds, and utterly neglected and uncared for.

The wife visited many of the homes where these conditions prevailed, and offered to give their back yards thorough cultivation during the season, for one-half of what might be grown on them. Some of the people refused the offer but enough agreed to the proposition to keep both the wife and her husband constantly employed.

They raised a great deal more of all kinds of

garden produce than both the families of the owners and the renters could use, and one-half of the excess they sold at good prices in the city, even selling some of it to the people who had refused them the use of their ground.

The next year they had offers of more back yards than they could cultivate, but their three boys helped them with the work, and together they succeeded so well that they not only lived better than they ever had before, but were entirely out of debt and had a bank account besides.

PLAN No. 83. FROM CLERK TO HYDRAULIC ENGINEER

The husband in this case was a combination of stock-keeper and shipping clerk in a large machinery house, knew the details of the business thoroughly, and uncomplainingly shouldered the constantly increasing burdens and responsibilities that were placed upon him, with no intimation of a corresponding increase in salary. Finally he rebelled, and said to his wife that if he had a certain amount of capital he would go into business for himself.

His wife remarked that he did not need any capital, if he would write to a number of manufacturers of the lines with which he was familiar, detailing his experience, and giving other important data, he would no doubt be appointed manufacturer's agent in that part of the country; and being of good presence and pleasing personality, he could soon create a volume of sales that would pay him well.

He acted upon the suggestion immediately, wrote several manufacturers, and was appointed resident

agent by a number of them, on liberal commission basis. He resigned his position and went to work with not a dollar of capital invested. For a time he made his home his office, where his wife, having learned typewriting, proved a willing and valuable assistant.

That was seven years ago. Today the husband has a big office, with plenty of help, in a down-town office building, and is recognized as one of the best hydraulic engineers in the state.

PLAN No. 84. PROGRAMS FOR "MOVIE" THEATERS

A man who had considerable experience in theatre-program advertising decided that if some money could be made from publishing one program a great deal more could be made with several programs. The following experience proved his reasoning was right:

Visiting the managers of five leading motion-picture houses, he offered to furnish each with an attractive program twice a week, free of charge, provided he could have the bill three or four days in advance. He was to have all the money received from advertisements in the programs. They all accepted his proposition, and he called upon the printer, who usually set up his matter. He explained that there would be two editions of each program every week, those containing the bill for Thursday, Friday, Saturday and Sunday to be distributed at the various theatres on Wednesday, while that for Monday, Tuesday and Wednesday was to be distributed on Sunday, that all ads. were to stand for at least one month, while the bill was to be changed twice a

week, and this, of course, enabled the printer to name a very low rate for the printing.

He gave each theater twice as many programs for each day as there were seats in the house, so as to reach both the afternoon and evening crowds, and added 200 or 300 to that number for distribution on Sunday, the big day of the week.

He selected the five theatres as near each other as possible, as most of the advertisers were in that vicinity.

He usually ran about sixteen pages of ads., though during the holidays he would have as much as twenty-four pages most of the time; and as he printed about 20,000 programs a week, he had no difficulty in securing good prices for the ads. The advertisers soon found it was well worth all it cost, and the originator of the plan realized many thousands of dollars from it.

PLAN No. 85. MESSENGER SERVICE

It was a woman who originated the plan of establishing a messenger service to meet the needs of a large number of people who are not regular patrons of the larger messenger agencies and who often have special messages or articles requiring prompt and trustworthy delivery.

At a total cost of less than $30, she fitted up her kitchen as an office and as headquarters for the boys whom she engaged for this service, circulated a few hundreds cards, with her address and telephone number, among the class of business people she wished to reach, had blanks printed for the names and addresses of those to whom messages were sent, with space for their acknowledgement of the receipt

of whatever was delivered, and inserted a few ads. in the local paper, announcing the beginning of her new enterprise.

She adopted a schedule of prices a little lower than those charged by the larger companies, and engaged the services of two good reliable boys of her acquaintance to make deliveries.

Patrons soon found the service satisfactory and her business grew with amazing rapidity. Within a year she was enjoying an income far in excess of what she anticipated. She is now more than pleased with the success of her novel plan for making a comfortable living.

PLAN No. 86. WATCH FOBS FOR 5 CENTS EACH AT COLLEGE

Selling watch fobs for 5 cents each, and yet realizing a profit of $1.50 from the sale yourself, looks like one of those things that “can’t be done” and yet it is easily accomplished. This plan helped pay part of his college expenses.

He procures a quantity of ribbon representing the colors of the local football or baseball team and bearing a small nickel or silver-plated ornament, such as a horseshoe or football, and the one who gets the fob was entitled to have his name or any design engraved upon it free of charge.

The plan is usually worked in a cigar store, or pool hall as follows: Two fobs are attached to a card with the label “Win a Watch Fob for 5 cents,” and the game is played with dice in a set of five. Three throws for 5 cents is the charge, and the spots are counted and recorded with each throw. The highest possible throw in three shakes is 90, the lowest 15.

The limit of entries of 60, and the highest and lowest scores in the series each receives a fob.

Sixty entries at 5 cents each is $3.00, and as the cost of the fobs do not exceed 25 cents each, the profit is $2.50. After settling with the clerk who keeps the tally and the middleman who placed the outfit, the originator of the plan realizes at least $1.50 on each transaction, and his profits are limited only by the number of games played.

PLAN No. 87. STARTED SHORTHAND SCHOOL

A man who was state agent for a concern that failed, was left without money, and there were no positions open for him. In earlier life he had been a stenographer, while his wife had taught school for a number of years before their marriage. As a traveling man he had noted the incompetency of many stenographers, especially their ignorance of business principles, and often commented on this to his wife.

In their dilemma, the wife suggested the establishment of a shorthand and business school combined, but they had no capital as a basis upon which to begin operations. The husband still had the small office he had used as state agent, in which were two desks, a few tables, chairs, etc., and the wife suggested that these could be used to begin with in a small way. She at once began taking shorthand lessons from her husband, took up typewriting at which she made rapid progress.

They secured two or three students by personal solicitation, and the wife began teaching them shorthand and typewriting, though she was only one lesson ahead of them, a fact of which the students remained blissfully ignorant. The husband took

charge of the practical business course of instruction, and the pupils made rapid progress, for they were being taught along right lines.

In the meantime, the wife did her own housework, took care of the children, sewed, cooked, and performed all the household duties, while looking after the progress of her pupils, attending to her husband's correspondence, etc. By using practical methods of instruction, they turned out very competent classes, and soon found it necessary to increase their facilities by moving to larger quarters and adding to their equipment, besides hiring additional teachers in the various departments. Today they have a prosperous business and shorthand school.

PLAN No. 88. OPENING A MENDING SHOP

A young woman in an eastern city, being in poor health and having an invalid mother to support, decided to open a shop for mending and fine sewing, as she was very skillful in the use of the needle.

She rented a small ground floor apartment in a good location, and put out a neat sign announcing the opening of a "Mending and Darning Shop. Fine sewing of all kinds." She made a specialty of fine damask, hemming table cloths and napkins and darning old ones, and did her work so neatly that her services soon became in great demand among the housewives of the community. She distributed her business cards throughout the neighborhood, and these brought her in a great many orders.

Finally a large department store offered to add a mending and darning department to its activities, and place her in charge at a good salary. She

accepted the offer, and has made such a success that she is now the head of this department, with several girls doing the greater part of the work under her personal direction. Just a little plan of her own, but it brought her independence.

PLAN No. 89. HOME WALL-PAPER AGENCY

A California man who had formerly been in the wall-paper business and found himself entirely wiped out by a fire, decided to make another start by using his home as the basis of operations for supplying his patrons with wall paper at very much less than the usual prices, the profit in that community being sufficiently large to permit great reductions in even the best grades.

A large manufacturer gladly sent him a book of samples of all kinds of wall paper, and with this he visited hundreds of homes, where he exhibited the various styles. The prices he named were far below those of the down-town stores, as he had no rent or clerk to pay. He took a surprisingly large number of orders, and realized a handsome profit on each sale. Many of his customers felt they could put on the paper themselves, but in those cases where he did this work for them, he charged a fair price, and soon found he had all the work he could possibly do. As his patronage increased, he found it necessary to employ a young man to do the papering in those cases where it was required, while his entire time was devoted to the taking of orders. He had excellent taste in the matter of harmonious decorations, and made many sales through showing the housewives the artistic effects that could be produced by selecting the design best adapted to the furnishings

of the home.

At the end of the first year, he found his profits were much greater than those of any year he had conducted his store, and this without the investment of a single dollar.

PLAN No. 90. CATERING FOR LODGE PEOPLE

A young woman living in a town of a few thousand inhabitants, where there were many fraternal societies, all having large memberships, found she had an opportunity to make a good income by catering to these societies.

She was not only a very skillful cook, but had excellent taste in the preparation and arrangement of repasts, and at the same time possessed an exceptionally pleasing personality.

She distributed among the officers and members of all the lodges in her town a number of handsomely designed and printed cards announcing she was prepared to serve light luncheons for their social meetings, at a certain price per plate, and would assume full charge of the entire entertainment.

Her first engagement was for a large gathering of lodge people, on the occasion of a visit from one of the supreme officers of the order, and so well did she carry out the elaborate program, and so exquisite was the luncheon and its service, that this gave her a good reputation for this work. After that no social affair of the fraternalists was considered without first engaging her to take charge, and the income she derived from this source made her a good living each year.

PLAN No. 91. GROWING MUSHROOMS

If you have a cellar that is not in use, you have the foundation for a good living in the growing of mushrooms.

Dig up the space you desire to use for this purpose, digging it deep, and pulverize the earth thoroughly. Then add a quantity of fine, black dirt, rich in phosphates, with a liberal amount of some good fertilizer. Then water the prepared bed thoroughly, and put in the spawn, which you can buy very cheaply almost anywhere. Your mushrooms, when well started, will produce a crop every month, but from September to May is the season when they bring the highest prices, ranging from 75 cents to $1.50 per pound, at hotels, cafes, etc. Give them considerable attention, especially at first, keeping them well watered and giving them plenty of air, but not too much light, and keep the temperature at from 60 to 70 degrees the entire time.

One person we know of, from a bed of 4 feet long by 3 feet wide, and three bricks of spawn, eight weeks after starting, produced two and one-half pounds of mushrooms every two days, or about nine pounds a week. At an average price of $1.00 per pound, this brought an addition of $9.00 a week to his regular income, and required but a few hours of his spare time in the growth of the product. By doubling his space, he could have doubled his profits from this source, and $18 a week from a “side line” is a sum not to be despised, especially when it involves so little labor and time, requires no capital and carries with it no risk of any kind.

PLAN No. 92. BASKET MAKING

Basket making is one of these simple, easily-learned, easily-operated and profitable occupations, so well adapted to women, that it is a wonder more of them do not engage in it.

The country women at Aitken, S. C., make thousands of pretty and useful baskets from pine needles, and sell them at good prices.

A lady who was visiting there learned the art of making these baskets, and later her sister moved out west, where she learned how the Indians made the baskets for which they are so famous. Some of the materials used, including certain kinds of grasses, she sent back to her sister at home, and these were made into baskets of various pretty patterns, which sold readily, at good prices, to florists and others. In fact, her basket-making business grew into such proportions that she was obliged to employ a number of girls to assist her in turning them out as fast as they could be sold.

The beauty of it is that her expenses are next to nothing, as her home is her factory, the material is not expensive, no advertising or printing of literature is necessary, and the proceeds of the output, aside from the wages of the girls, are practically all profit.

As this lady lives in a city, she also derives a very neat income from teaching the basket-making art to other women, and these in turn, make a good living from their work, without glutting the market, for as long as florists have calls for flowers, they need these pretty baskets to put them in—and that means an additional profit on the flowers.

PLAN No. 93. POTATO CHIPS AND DOUGHNUTS

With a husband who was sick and without money,

a new England woman, living in a small city, found it incumbent upon herself to do some planning to supply the family with food.

Having an intimate knowledge and special aptitude for making exceptionally fine potato chips and doughnuts, she decided that if she could once succeed in getting people to try her products she would be assured of a ready sale for them, and immediately went to work to prepare a small quantity of each, put up in her own style. Packing them neatly in a clean, new basket, she called at a number of well-to-do homes and asked the lady of the house to try a sample order. Nearly all these ladies were willing to do so, and were so greatly delighted with the superior manner in which they were made that upon her next call she was given a large number of orders to supply families regularly with what they regarded as positive delicacies.

In nine weeks she had made a net profit of $80 on her potato chips and $90 on her doughnuts, and from that time on she was so busy filling orders that she was obliged to employ a boy with a bicycle to make her deliveries.

There are thousands of other women who can do just what this woman did, and rise from a condition of actual want to one of plenty, and without asking favors of anyone. If they will make it a matter of strict business, they may succeed as she did.



Plan No. 94. A Happy G

PLAN No. 94. POULTRY RAISING FOR A BOY

As a means of educating a boy regarding business principles, and teaching him practical ways of making money, nothing is better than the raising of poultry in a small way, but according to correct methods.

A man in Ogden, Utah, gave his 10-year-old boy $5.00 and told him to invest it in whatever enterprise best suited him, and what promised the

best returns upon the investment.

The boy, who was healthy, energetic and enthusiastic, bought a young rooster and two pullets, all pure-bred fowls, and turned them into the back yard of his home.

During February, the two pullets laid twenty-nine eggs, which he put into an incubator, and on March 22nd, he had twenty lively young chicks. He kept these until August, taking the best of care of them, when he sold four pullets for $1.50 each, and four roosters at $2.00 each, making him already $9.00 ahead of his original investment, with five pullets and three cockerels left, besides the three he started with.

His first two pullets laid thirty-two eggs in March, and these he sold for hatching purposes, at 15 cents each. In the next month he got only twenty-three more eggs, as one of the pullets had become broody, and those that were laid in April and May he put under scrub hens for hatching, while his two blooded pullets were kept laying. The boy was learning, and his father was giving him valuable advice in business methods.

On December 1st, the boy figured up the results of the season's operations, and found that his expenses had been $30.73, of which $19.25 was for feed, and that his cash receipts and stock of chickens on hand amounted to $141.15, so that he had made a net profit of $110.42 on an investment of $5.00 a few months before.

And where is the boy, if he is of the right sort, and tries, who cannot equal this record?

PLAN No. 95. WATCH INSURANCE

You may think you have heard of all kinds of insurance, but have you ever heard of watch insurance? This Pittsburgh man never had, but he figured out a plan of insuring watches against breakage, loss or theft, and thought it out with such perfect precision and detail, that he soon had a profitable and permanent business of his own.

In the policy he issues he agrees that in case the watch insured is broken, he makes complete repairs by sending it to some jeweler, to be selected by the assured, upon receipt of a full statement of the nature and extent of the breakage, and to pay all the costs of such repairs.

In case of the loss of the watch, he is to pay the assured, or owner of the watch, one-half its value, as stated in the policy if the watch is not found again, and the same amount if the watch is stolen and not recovered.

The policy holder is required in all cases to send full details concerning the breakage, loss or theft of the watch, and if upon investigation it appears that the watch is not, or cannot be found or recovered, he sends his check for one-half of its value as above stated.

His charges for insuring watches vary from $1.00 to $5.00 per year, according to the value of the watch, the greater the value the higher the premium; and, being a man of good standing in his community, he finds most people willing to pay the small amount required to guard them against the damage, loss or theft of their favorite timepieces. He has made it a good-paying business, and many others can follow the same plan with profit.

PLAN No. 96. COLLECTING OLD WITNESS FEES

In the office of clerks of the court in the United States are thousands of dollars in unclaimed witness fees, and this offers an opportunity for thousands of men all over the country to collect them for the parties on a large percentage basis——say, one-half the amounts collected.

A man living in a county seat in a western state made a small fortune in this manner, because he hit upon the right plan.

All public records are open to the inspection of any person, and his method was to make a thorough examination of these records and obtain a list of all witness fees paid in but not called for by the parties, who had probably forgotten all about them, or, after calling for them several times, found the records were not completed, so that their witness fees could not be paid. He noted the title of each case, the date of the trial, the name and address of the witnesses, the number of days of attendance and the amount of the fees due him.

Then he would call upon or write to the former witnesses, stating that a certain amount was due him, which he had failed or forgotten to call for, and that he would collect the same on a 50 per cent basis, as he was in a position to make the collection. He enclosed, or handed to the party if seen personally, an order on the court clerk as follows: "You are hereby authorized to pay to (collector's name here) the sum of ——— dollars and ——— cents, the same being due me as witness for ——— days attendance in the case of ————— vs. ————" with blank for signature of the witness. His letter bore the names of several well known men in his town as references, and in most cases the paper came back duly signed, the money was collected, one-half sent to the former witness, and

the balance belonged to the man who thought out the plan.

PLAN No. 97. DOUBLING THE BUSINESS OF HOTELS

A young man who owned a small printing office, had a reputation for the skillful and artistic manner in which he did the work that came to him, dropped into a hotel that ran a café in connection, and said to the proprietor: “Would you like to have me double your business for you, at but very little cost?” “I certainly would,” replied the hotel man, “and if you can do that you are the very man I am looking for.”

“All right,” said the printer, “I am ready to show you.”

He went into the café, secured the menu for the various meals of the following day, together with the general or short-order menu, and hurried back to his printing office. There he proceeded to work out an attractive design in border and type effects that would draw attention anywhere, and took them to the hotel, where he submitted them to the proprietor.

The hotel man was delighted with the artistic appearance of the cards, and suggested that they be taken into the café at once.

“No,” said the printer, “only enough of these to be placed at each table are to go into the café. The others are to be put up in the guest rooms, one of each to every room in the house, and see how it works.”

The proprietor had never thought of that, but realized at once the value of the plan, and right there gave the printer a standing order to print all the

menu cards the house could use in the manner suggested, willingly paying a good round sum for the service. The young man extended the plan to the other hotels of the town, and was soon the busiest printer in the town, for it really doubled the business of each house.

PLAN No. 98. A CHURCH PAPER

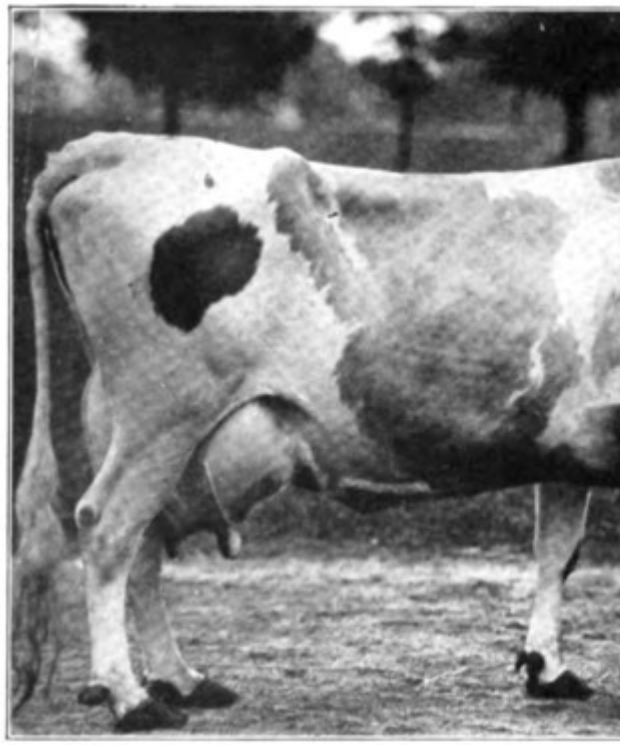
That churches, as well as commercial and other enterprises, could derive great benefits from the publication of a weekly paper devoted to the interests of all the churches in a community, was the firm conviction of a young man living in a western city, and having had considerable newspaper experience, he concluded to try it and see if it would prove a success.

He attended a meeting of the ministerial association and submitted the plan to them. Every one of the ministers, representing all the various denominations, at once became very much interested in the proposition, and each promised it his hearty endorsement and support.

Each pastor in the city agreed to furnish the news, as well as the various announcements of his particular church each week, so there was comparatively little in the way of editorial work for the young man to do.

Having made arrangements to have the paper printed in an attractive form, on a good quality of paper, the young publisher called upon a large number of business men, particularly those belonging to the various churches of the city, and soon had enough subscriptions and advertisements to more than pay the cost of printing the paper.

The Y. M. C. A., the Y. W. C. A., the W. C. T. U., and other religious organizations, all contributed to its columns and helped to increase its circulation, while pictures of the churches and portraits of the pastors and leaders in religious work gave it a most attractive appearance.



Plan No. 99. Now I have a Cow—Everybod

PLAN No. 99. PHOTOGRAPHING ANIMALS FOR SALE

Next to having a prospective purchaser come to your place to see any animal you may have for sale,

the best means of giving him a good idea of it is to take a good photograph of the animal, properly posed, and send it to him by mail, or use it in advertising.

A farmer's wife, who had bought a camera for pleasure, soon learned to adapt it to business purposes and made many sales of valuable animals through this means alone.

This lady had three pure-bred collie dogs, from which she sold about $400 worth of puppies every year, and she found that a majority of those sales were made to persons to whom she had sent photographs which she made easily and cheaply with her camera.

She knew the secret of having an animal correctly posed in order to show it to best advantage in a picture, and knew exactly how best to attract its attention at the critical moment of opening and closing the shutter. The result was that the fine points of the animal were made very prominent.

Her husband was so impressed with the results of her skill in this respect that he asked her to take the pictures of some pure-bred Berkshire hogs he had for sale, and readily disposed of them by this means. Horses and cows were also photographed with equal success, while many of the best animal photos were sent to agricultural papers, and were in most cases accepted at good prices.

The use of the camera in this way not only paid its first cost many times over, but brought in a good revenue each year, besides the pleasure it afforded the family when used for other purposes.

MONEY-MAKING PLANS FOR WOMEN

A lady living in a small western town was the mother of two boys to whom she wished to give a good start in life. She had very little money, but many original yet practical ideas, and from these she formulated some excellent plans for earning the money she needed for her boys and herself.

One after another she adopted a number of good plans, made a success of them, and was thus enabled to bring up her boys in the manner she desired. Her plans are here given in separate detail, and it should be noted that each and every one of these plans could be used with great profit by any other woman who wishes to use either one or all of them, as she chooses.

PLAN No. 100. HOME-MADE STICK CANDY

Well knowing the predilection of most people for sweet things, her first efforts were directed toward making and selling a very superior grade of stick candy, according to the following formula: Over a hot fire place a kettle containing a quart of water, ten pounds of white sugar and one teaspoonful cream tartar. Let it boil until it will snap, then put it into cold water and pour out on marble slab or tin cooler, well greased. As it cools, turn outer edge to center, and when cool enough to handle, pull it until it is white as snow. Leave a small piece unpulled, and color this red by adding a few drops of cochineal. Now roll your batch of candy into a ball, pull the red candy into a long strip, cut in three or four pieces, lay them on top of the white and roll it out, commencing at one end, pulling and rolling it at the same time, which throws the stripes in a twist around the stick. Keep rolling until hard enough to prevent sticks from flattening out, then tap the sticks lightly with the edge of a knife, and break them into

any lengths desired.

In making this, as in all her products, she used only the purest ingredients, so that the candy was perfectly safe for children, and she sold great quantities of it, because it was “so good.”

PLAN No. 101. HOME-MADE TAFFY CANDY

This taffy candy, which proved an excellent seller, yielding large profits, she made as follows:

White sugar, 10 pounds; water, 3 pints; cream tartar, one teaspoonful, and when nearly cooked add one-fourth pound of butter. Add any kind of flavor preferred, by pouring it on while rolling. This candy should be cooked to the snapping point, but do not stir while cooking, or the sugar will granulate.

PLAN No. 102. HOME-MADE MAPLE CREAM CANDY

This was one of her most popular products, and was made as follows: white sugar, 5 pounds; best maple syrup, one pint; water, one pint; butter, 1 tablespoonful; cream tartar, $^1/_4$ teaspoonful. Cook same as in making above described taffy candy, and put in one teaspoonful extract of vanilla while pulling.

PLAN No. 103. HOME-MADE PEANUT CRISP

This was also a great favorite with the children, and she sold a great deal of it, as well as her other candies, by visiting the different schools during the noon hour or at recess, on certain days of each week. The peanut crisp she made as follows: White sugar, 5 pounds; water, $1^1/_2$ pints; cream tartar, one-half teaspoonful. When nearly cooked, add one pound parched, hulled peanuts and one tablespoonful soda.

Cook until it will snap.

She employed many ways of selling the above and other specialties. She took pains to learn of approaching anniversaries, such as birthday, wedding, etc., and a few days preceding the event she would send an attractive letter of congratulation, incidentally suggesting a box of her home-made candies for the occasion. This made many sales.

PLAN No. 104. EXTRACTING ATTAR OF ROSES, ETC.

In addition to her candy-making enterprise, this lady likewise engaged in the making of perfumes, and so well did she succeed that her income was more than doubled. She developed a method of extracting the attar of roses and other flowers, which enabled her to make a great variety of the most delightful as well as lasting perfumes, and the ladies soon came to know of their exquisite fragrance.

To extract the attar of any flower she procured a quantity of the petals, which she placed on thin layers of cotton, afterwards dipping them into the finest Florence or Lucca oil, then sprinkled a small quantity of fine salt on the flowers alternately, until an earthen vessel or wide-mouthed bottle was filled with them. Then she tied the top of the vessel closely with a piece of parchment or rubber cloth, and laid it in the heat of the sun for fifteen days, when a fragrant oil, equal to the highest-priced essences, and very valuable in the making of various kinds of perfumes, could be squeezed from the contents thus treated.

PLAN No. 105. A CHEAP HOME-MADE COLOGNE

Many people who cannot afford the high-priced perfumes are very well satisfied with some cheaper

kind, and to meet this demand, the lady put up a home-made cologne that gave very good satisfaction. This she made as follows:

To one gallon spirits of wine, add a teaspoonful each of the oils of lemon, orange and bergamot; with 40 drops of extract of vanilla. Shake until the oils are well cut, then add one and one-half pints of soft water.

This made a very fair grade of perfume, and, though it could be sold at a low price, it yielded a fair profit to the lady who produced it.

PLAN No. 106. MAKING ROSE JARS

Very few are the boudoir accessories that are dearer to the feminine heart than a rose jar, properly made, and most women will pay almost any price for one of that kind. This lady knew exactly how to make a perfect rose jar, and added this to the already long list of her profitable industries.

She dried rose petals in salt for two weeks, then cleansed the salt from the petals and put them in a jar. She would leave the jar open for a few days, then put in 2 tablespoonfuls each of cloves, allspice and cinnamon, and added 10 grains of powdered musk, letting it stand a few hours. She then added 5 cents worth of oil of lemon verbena, and 5 cents worth of oil of lavender. This she let stand three days, added 15 cents worth of oil of rose geranium, and had a rose jar that would sell for just about any price she had the temerity to ask.

PLAN No. 107. MAKING ALMOND PASTE

This preparation she found in great demand by the ladies, as it proved a wonderful beautifier of the complexion, and a fine remedy for chapped hands, rough skin, etc. This is the formula she used for

preparing it:

To 4 ounces of blanched almonds she added the white of one egg, after beating the almonds to a smooth paste in a mortar, then add enough rose water, mixed with its weight in alcohol, to give it the proper consistency. She put it up in 2-ounce jars, pasted on a fancy label, and sold it at 25 cents a jar. Its actual cost to her, jar, label and all, was less than 7 cents.

PLAN No. 108. HOME WORK THAT PAYS

Having suffered her full share of the losses and disappointments that fall to the lot of so many victims of the fraudulent "home-work" schemes through which many become well-to-do at the expense of poor women who are seeking to make an honest living a California woman perfected a really meritorious as well as profitable plan that can be carried out by other women with as great profit as it brought to her.

Instead of dealing with that class of utility articles which can be purchased ready made for less than the ordinary woman can buy the materials, she decided to specialize in something that appealed to the vanity of women who could afford to gratify individual taste, and chose as her particular specialty those dainty ribboned sachet puffies for the handkerchief case, shirt-waist box or bureau drawer, also those made in heart shape with beauty pin attached, which girls wear inside their waists, presenting a beautiful appearance, yet easy and inexpensive to make, and affording a nice profit at 10 cents each. In fact, the entire cost of the material, including the beauty pin, is only one and one-half cents each and the making is

but a minute's work.

Few people really know how to use sachet powder. They generally use entirely too much, and the scent is too strong, or it is adulterated with something like orris root and the scent is uneven. But this lady did know, and she placed fluffy cotton, or wadding, inside the bag, and sprinkled it lightly with the sachet, which gave an even, delicate and lasting perfume. She made up the bags of silkalene of various colors, using baby ribbon of colors to match for "drawing" the puffie. The silkalene will cost 10 cents per yard and one yard will make twenty-eight of the bags. Less material is required for the corsage puffie, but the beauty pin evens up the cost. Any woman who can sew can make one hundred of the puffies a day, at a cost of $1.50, and she can readily sell them for $10, and even more, thus making a profit of $8.50 a day for very light, pleasant work.

Having made up several hundreds of the puffies, in various styles and colors—the larger ones are round or oblong and the corsage puffies heart-shaped—she decided upon the "trust" plan as the best means of selling them. She sent out a number of boys and girls to sell them at 10 cents each, paying them $2.00 for each one hundred sold, and even at this figure she made a profit of $6.50 on each one hundred puffies. And they sold, too, for almost every woman or girl who saw them bought at least one and in some cases as many as half a dozen, so the sales were easy and rapid.

Having made so great a success in her home town, this lady extended it to other towns, and after covering the territory thoroughly she offered to sell complete instructions, with patterns for making them, for $1.00. To those purchasing this information she supplied the materials, which she

bought at wholesale, and made a good profit in that way, so that in a few months she was enjoying a steady income equal to that of many other merchants in her town, yet she had only a few dollars—and a good plan—to start with.

PLAN No. 109. SHARP SAWS FOR BUTCHERS

An enterprising young man in San Francisco, who knew that the saw blades used by butchers require frequent sharpening and also knew that it costs the average butcher about $3.00 a month to keep them sharpened, figured out a way to save more than half that expense, and make a good thing for himself at the same time.

He heard of a firm in New York that manufactured a machine for automatically sharpening hand- and meat-saws, at the rate of two hundred and fifty blades a day.

He ordered one of these machines at a cost of $60 and set it up in the family woodshed. He also bought 600 new saw blades at 20 cents each, or $120 more, a total investment of $180. Then he started out to round up the butchers of the city, and when he showed them that he could supply each of them with twelve sharp blades a month, at 10 cents each, or $1.20, instead of the $3.00 a month they had been paying, everyone of them gave him an order.

At the shop of each patron he left twelve sharp blades, taking twelve dull ones in their place and collecting $1.20, so that his first month's receipts from fifty shops amounted to $60. In three months he had his entire investment back, and after that his $60 a month was all profit, but by doubling the number of his patrons he doubled his net income,

and so on in proportion to the increase in the number of his orders. All the dull blades collected were re-sharpened and taken to his customers in exchange for more dull ones each month.

He also made considerable money through supplying his customers with new saw frames, knives, steels, etc., and in a few months had built up a profitable business of his own.

PLAN No. 110. SELLING FLAGS BY MAIL

A patriotic young lady in the East, realizing that many people do not have a flag, when every home should possess one or more of these emblems of liberty, decided upon a plan by which she believed she could supply this need, and do so at a neat profit to herself, especially as there are national holidays requiring the flying of the colors almost every month in the year.

She wrote an eastern manufacturer, asking the lowest wholesale prices on flags of all sizes and materials, together with collapsible flag-poles that can be sent by parcel post, rope holder, etc., all packed in a neat box and shipped direct from the factory to such patrons as she might secure in her city and neighborhood, leaving her nothing to do but to get the orders.

The prices quoted being satisfactory, she prepared a circular letter, to be sent to those who answered a small ad. in the local paper offering flags for sale at extremely moderate prices, and several hundred of these, tactfully written in a patriotic vein, were mailed out all over the country, giving full description, quoting prices, etc. In response many orders for flags were received, and these she sent,

with the wholesale price of each, to the manufacturer, who shipped the complete outfit direct to the customer, under the young lady's own label. This plan was successful, not only in furthering a good and patriotic cause, but brought her a neat sum in the way of profits.

PLAN No. 111. FREE MOVIES FOR CHILDREN

Nothing else you can offer a child appeals so strongly as does a free ticket to a motion picture theatre, and when you offer a dozen or more of these free tickets for a few hours' work children will almost go through fire and water to get them.

A Portland man who had been a boy himself—long before the day of the movies—having made up a large amount of an exceptionally good silver polish, for which he had not found a very ready sale, concluded to let the boys and girls of the smaller towns sell it for him, and believed that free tickets to the motion-picture theatres would prove the most acceptable of all premiums to offer them for their activities.

He advertised in a number of small-town papers, asking for the names of all children who would like to see the movies free of charge, and received so many names that it was only a matter of selection from the great number replying.

To each of these he sent twenty packages of the silver polish with instructions to sell them at 10 cents each and remit the money to him, when he would send each boy or girl an order on the theatre manager for twelve tickets to a 5 cent house or six to a 10 cent house. He had previously sent the manager a draft sufficient to cover the cost of all the tickets,

and in most cases it made it easy for him thereafter to secure tickets in quantities at great reductions, thus adding considerably to his net profits.

His sales under this plan netted him over $5,000 the first year.

PLAN No. 112. LIVE ALLIGATORS FOR BOY AGENTS

A young man in Salt Lake City made money by giving away live alligators.

A certain man in Florida where alligators of a hardy and harmless kind are numerous captures these young alligators by the hundreds and sells them at 40 cents each, in lots of a dozen or more.

This young fellow was making and selling—or trying to sell—a number of small articles, such as sheet bluing, silver polish, and some other things, but his sales were slow, and he realized that he must do something to boost his business.

He sent for twenty-five of these little alligators, and advertised in a number of country weeklies that any boy who would sell a certain number of his specialties, at 10 cents each, and remit the entire receipts to him, would receive free a real live alligator as a premium for his work. In a week he received many inquires, and as fast as the names of boys came in he sent packages of his goods to them to be sold. The boys must have been good salesmen or unusually enthusiastic, for inside of two weeks more the remittances began to arrive and to each boy so remitting a live young alligator was sent by express, charges collect; and, as they made very interesting little pets, absolutely safe to play with, every boy who received one became the envy of the

neighborhood, so that every other boy wanted one too, and a little effort soon brought him one of his own.

PLAN No. 113. DESK ROOM IN A CITY OFFICE

A New York man who had a nicely equipped office was asked one day by a western customer how much he would charge for the privilege of having some of his mail come to his address, as he wished to place on his stationery the words, "New York office, No . . . . Building." He thought it would add prestige to his business standing.

The New York man named a small amount, and then this idea came to him: Why not make the same arrangement with a lot of other out-of-town people, none of whom would be in the office more than once or twice a year, and all he would have to do would be to forward any mail that came for any of these various parties?

Afterwards he bought small, cheap desks at auction, installed them in his office and advertised desk room for rent at $1.00 to $5.00 a month. Many people called, to whom he explained that $1.00 a month would entitle a man to call once a day for his mail, while those who transacted any amount of business there each day would be charged $5.00 a month.

He also advertised in leading western dailies that persons could have their New York address at his office for a certain amount, and the plan worked so well that the rentals so obtained much more than paid his own rent and all his other office expenses besides. But he insisted upon references in every case, and never let anyone have this privilege unless

he proved to be honest and reliable.

Other men in various eastern cities have since adopted this plan with success.

PLAN No. 114. READY-TO-MAKE DRESSES, ETC.

"Knock-down" furniture and picture frames are an old story, but "knock-down," or ready-to-make wearing apparel is "a new one" to most people.

A Chicago woman who was an expert cutter, and who knew that most women and girls would like to make their own clothes if they could only be assured of a perfect fit, saw an opportunity here to not only save these women at least half on the cost of their apparel, but to make money as well, out of the business of supplying their needs.

She arranged with a popular pattern house for the loan of current illustrations with which to publish a monthly fashion bulletin, featuring those particular patterns, and with a wholesale dry goods house for the regular discounts on dress materials, trimmings, etc., securing a line of small samples of each piece of goods in most demand.

Then she began advertising that for $6.50 she would furnish all the material for a certain dress, ready cut, ready to sew together, that would cost, made up, at the stores, $15, and other goods in the same proportion.

To women answering these ads. and asking for particulars, she would send a small sample of the goods desired, together with a copy of her bulletin, illustrating each pattern, and showing the difference in the price when cut to fit by her, as compared with the same dress bought at a store, and usually requiring extensive alterations. She was soon obliged

to employ a number of skilled assistants, in order to turn out the work that came to her.

The pattern selected by the customer was used for cutting the garment, then sent to her with the material and it was an easy matter to complete a perfect fitting dress, at a great saving in cost.

PLAN No. 115. BECAME A SECRETARY-BY-MAIL

Being a secretary by mail is a man's-size job, and few there are who can fill a position so exacting and often so delicate in the performance of its manifold duties. However, a Denver young man, of literary tastes and a lot of good business sense, felt that he could do it, and found that he could.

He began by catering to the mail-order merchants who wish to keep posted on new advertisements and schemes, and answered all such ads. for his clients, sending them the replies received. He wrote attractive business-getting letters for mail-order and other people who were poor letter writers themselves, but who knew the value of good ones. He attended to business matters in his city for his clients, occasionally made collections for them, and performed many delicate forms of service that proved of great value. In short, he did the work of a regular secretary, but did it better than most of them are capable of doing, the main difference being that he was secretary for some 200 men or firms, instead of for only one; and, though his charges in each case were very small, they amounted to a good deal in the aggregate, and brought him a nice income for comparatively little effort.

It was a successful combination of the right man and the right plan.

PLAN No. 116. FREE MOTION-PICTURE TICKETS

A Seattle man worked out the following plan.

He called upon the managers of half a dozen or more of the 5 cent motion-picture houses and told them if they would sell him tickets at one-half the regular price, to be paid for in cash, in lots of 500 or more, he could greatly increase the attendance at their theatres, as the tickets would not cost the holders anything, and everybody who had free tickets would be sure to come.

Practically all of those approached accepted this offer, and then he had several thousand coupons printed, at a cost of 50 cents per 1,000, and used a special tint of paper to prevent counterfeiting.

Thus armed, he next called upon a number of merchants with a proposition that, for $1.25, he would give them 100 of these coupons, twenty-five of the 5 cent admission tickets, and an attractive show-card calling attention to the fact that he was offering his cash customers free motion-picture tickets. The twenty-five tickets alone, at their face value, were worth the amount he asked for the entire outfit.

Most merchants were glad to give a discount of 5 cents on each $1.00 cash purchase, as it had a tendency to convert many credit customers into cash buyers, and the favorable publicity it gave was worth a good deal. He gave one coupon with each 25-cent cash purchase, four for a $1.00 purchase, and these four coupons entitled their holder to a free 5-cent theatre ticket. He gave out, on an average, 100 of these coupons and twenty-five tickets each day, with cash purchases amounting in all to $25.

The young man’s profit on each 100 coupons, accompanied by twenty-five of the 5 cent tickets,

was 40 cents, or $2.40 a week for each merchant giving out 100 coupons a day. This amounted to $124.80 a year. Twenty-five merchants therefore netted him $3,120 a year, while fifty merchants as regular customers would net him $6,240, and 100 merchants, $12,480.

PLAN No. 117. SWEET POTATO SLIPS BY MAIL

"I had always believed that only a resident of a big city could engage in mail order business," said a successful Eastern Washington farmer, the other day, "but I have learned from my own experience that this is not true.

"Last spring I began to realize what a great demand there is for sweet potato slips, and believed there would be money in supplying this need, so, in February, I bought and "bedded" 100 bushels of sweet potatoes, and in May the first lot of slips was ready for the market. Between that time and July 1st I disposed of 500,000 slips, at an average price of $1.50 per 1,000, and then realized that if I had specialized on a certain brand of potatoes, besides the regular line, my profits would have been much larger. When it is considered that only a few months' work was involved, I regard the returns as very satisfactory, for my net profits on the entire transaction were $540. By enlarging my scope of operations next year, I expect to do very much better, and then have the greater part of the year left, to devote to other purposes. I believe thousands of other men can become successful mail order operators by specializing on some similar line."

PLAN No. 118. DESIGNER FOR U. S. SEE PLAN No. 217

PLAN No. 119. ELECTROTYPES FOR COUNTRY MERCHANTS

A mail-order man back east hit upon a new plan of making money, and received $321 during the first three weeks.

From an electrotype company he purchased 200 mounted electrotypes of different subjects, all suitable for advertising in weekly newspapers, for 10 cents each.

Then he had printed 2,500 circulars, 24x36, showing the 200 cuts, and mailed the circulars to that number of country merchants whose names he had obtained by sending for sample copies of weekly newspapers within a radius of 250 miles from the city in which he lived.

Now, country merchants are always glad to use cuts in their ads., if they can only get them at low rates, and when they were offered to them at 20 cents each by express, or 22 cents if sent by mail, postage paid, they were very glad to get them, and the orders came in rapidly.

As the orders were received, this man forwarded them to the electrotyping company to be filled, enclosing 10 cents for each cut ordered, and retaining the other 10 cents as his profit. Some merchants ordered from five to fifty of the cuts, and after the mail-order man had had several thousand more circulars printed, he used the 200 cuts he had bought in filling orders, and thereafter all orders were filled direct by the company making the electrotype cuts.

Extending his field of operations to cover more territory, the mail-order man found it so profitable that he made it a regular business.

PLAN No. 120. GREASE AND OIL REMOVER

A young Denver widow, whose husband had been a druggist, but had left her practically destitute at his death, decided that a formula she had successfully used herself for quickly removing grease, paint and oil spots from wearing apparel, carpets, silks, laces, woodwork, etc., besides being an unequaled shampoo for the hair, could be made a source of considerable revenue if properly presented to the public.

The formula for making this magic annihilator is as follows:

For making one gross of 8-ounce bottles, take aqua ammonia, one gallon; soft water, 8 gallons; best white soap, 4 pounds; saltpetre, 8 ounces. Shave the soap fine, add the water, boil until the soap is dissolved, let it get cold, then add the saltpetre, stirring until dissolved. Now strain, let the suds settle, skim off the dry suds, add the ammonia, bottle and cork at once.

This will not injure the finest texture, and its chemical action is such that it turns any oil or grease into soap, which is easily washed out with clear, cold water. It is excellent for cleaning silver, brass and copper, and is certain death to bedbugs, if applied to the places frequented by them. Used as a shampoo, with an equal amount of water and a stiff brush, it produces a lather that removes grease and dandruff, while a cloth wet with it will remove grease from doorknobs, window sills, etc. To remove grease from

clothing, pour on a quantity of it, rubbing with a clean sponge, on both sides of the article to be cleaned. For carpets and coarse goods, use a stiff brush and wash out with clear, cold water. One application is sufficient for fresh grease spots, but where old and dry, apply again, if necessary. For cleaning silverware, etc., mix with an equal amount of whitening, and rub briskly with a rag.

Pasting a neat label, containing the directions, upon each of the 144 bottles, she started in business by selling it from house to house, but as the demand increased, she employed canvassers, placed it on sale at the various drug stores in the city, and later advertised it with excellent results.

Although the cost was a mere trifle, she found a ready sale for it at 50 cents per bottle, and it has proved so profitable that she has greatly increased her facilities and is to-day enjoying an income considerably larger than her late husband ever derived from his drug store.

PLAN No. 121. DINNERS FROM COUNTRY BY PARCEL POST

A man who had held a good position in the city decided to move to the country and raise chickens. He bought a small home, besides a number of hens, and started in business. But the hen project was a failure, and he was about to return to his old place in the city. But he had a bright, enterprising wife, who had some ideas of her own, and she vetoed the plan of going back to the old drudgery of a clerk's position, which had almost ruined her husband's health.

Having read a good deal concerning the value to

farmers of the parcel post, she decided upon a plan of action. She wrote a catchy ad. offering to furnish dinners to city people; everything, even to the floral decorations, being complete, and delivered by parcel post on the day desired. This ad. she sent to each of the city papers, and in a day or two the first order arrived.

The dinner she sent consisted of one pint of shelled peas, a few young potatoes, one broiler, a pint of strawberry preserves, a pint of cottage cheese, a quart box of cherries, fresh from the tree, a loaf of home-made bread, an angel food cake, one-half pound of fresh, sweet butter, and a number of sweet, old-fashioned roses. All were neatly packed in a strong container and the postage prepaid. It was sent in the morning, and arrived that afternoon.

For a dinner like that she charged $2.00, which was considerably less than it would have cost in the market for stale stuff, but which cost so little to produce that it yielded a very good margin of profit.

The family to whom the first dinner was sent promptly placed an order for two dinners each week, to be varied according to the season, and their example was followed by so many others that both husband and wife were kept busy as bees in putting up parcel-post dinners. But they were making money —more than the husband had ever earned before.

PLAN No. 122. LUNCHES FOR FACTORY WORKERS

A widow lady who lived near a large factory, and who had done some sewing for the wife and daughters of the superintendent, was told by that official that she could make considerable money by

bringing small box lunches to the factory doors at noon every day, and that if she cared to try out the plan she could have the exclusive privilege of doing so.

She thought the matter over carefully and decided there might be something in it, so she procured a hundred small, cheap, paper boxes, and filled them with light, simple lunches which she could sell at a profit for 5, 10 and 15 cents each, and from the very first she found a ready demand for them. Many of the operators, especially the young women who had previously brought their lunches from home, preferred to buy these, as they afforded a variety which, though limited, was something of a change, and the lady found her time fully occupied in planning and preparing them for service while the net profits amounted to something over $2.50 each day.

PLAN No. 123. A CURRANT FARM

An Indiana farmer devoted six acres of his land to currant culture and in a year or two began to realize that he had quite an undertaking on his hands.

From these six acres he usually picks 1,000 crates which sell at $1.35 per crate, and it is necessary for him to hire a large number of boys and girls to do the picking. To these he pays good prices, and after all expenses are paid, he generally comes out about $600 ahead. As this is much more than can be produced by any other crop, he has about decided to plant his entire farm of 160 acres in currants, and thus clear $16,000 a year from a crop that requires but a few months each season to look after.

By using a two-horse cultivator, he need spend but

little time or labor in raising the currants, while no planting is required after the first year, and the picking can be let out so as to furnish employment to a large number of boys and girls, as well as those men and women who are not otherwise engaged and are looking for work.

PLAN No. 124. SHOPPING FOR FRIENDS

Many women dread the shopping it is necessary for them to do every little while, for to them it is the hardest kind of work, and most of these women would be glad to pay someone to do it for them. But here was a woman who positively delighted in shopping. She loved it for the variety, the excitement and the adventure it afforded.

She called first at the homes of a number of the women whom she knew could not afford to spend much time in shopping, being thoroughly occupied with the numerous duties and responsibilities of their own households. Besides, they did not like to shop anyway.

To these women she made a proposition to attend not only to all their local shopping, but to help them make selections from the catalogs of big mail-order houses, and order whatever goods they wanted from those sources, as well.

For these services she named a rate of compensation that seemed surprisingly low to those for whom they were rendered, but when these small sums were multiplied by 100 or more, they amounted to considerable in the aggregate, so that the arrangement was eminently satisfactory to all parties concerned. Besides, it gave the woman who loved shopping an opportunity to do so without any

limitations to her favorite pastime, and it made her a good living.

PLAN No. 125. THE MILK DIET

Ever since the dawn of civilization many men and women have endured various forms of stomach trouble, usually as a result of abusing that delicate and sensitive organ, yet often arising from causes over which the sufferer has no control. And in practically all these cases every known means has been employed in an effort to find a remedy for this distressing affliction.

All sorts of "cures" have been foisted upon these people from time to time, and fortunes have been made from the miseries of the human race, for nowhere else are there such fertile fields for heartless exploitation as among the hosts of the afflicted, who would gladly give all they possess to be restored to that robust health so easily promised by those who profit upon the sick.

It has remained, however, for Father Kneipp, a well known scientist, to discover and perfect a method of curing stomach trouble that, for its simplicity and effectiveness, has never been equaled, and which is now being used with great success in this country and Europe. Several large sanatoriums have been established in various European countries, where this treatment, which is nothing more nor less than a perfect milk diet, is administered with astonishing results.

A young American, who had been a patient at one of these sanatoriums, succeeded in obtaining the exact method or formula for giving this treatment, and believing he could bring untold benefit to

thousands of stomach sufferers in this country, and at the same time derive a good income himself from sending them full printed instructions for taking the treatment in the proper manner, devised the following admirable method of procedure:

Through an advertising agency, he inserted the following advertisement in a list of newspapers within a few hundred miles of his home town:

"The world's most successful treatment for the regeneration of shattered, weak and disordered stomachs and for all chronic ailments of the digestive apparatus, that make life miserable for those so affected. Builds up thin, ill-nourished people, and reduces the superfluous weight of fat people. Relieves and heals disorders of the liver, kidneys, bladder, the circulation, etc. Restores rheumatic sufferers to health, strength and happiness. Milk, which you can take in your own home, is nature's own sanative, but you must know how to take this diet. Obtain complete instructions, fully describing the method of taking it, by writing us today for the great two-course treatment, and learn how, if you would be well."

A surprisingly large number of inquiries were received in answer to the above ad., and to every inquirer he sent a circular letter substantially as follows:

"Dear Friend: I have your inquiry relative to the principles of rejuvenation through the Milk Diet, and take pleasure in referring to the really wonderful work it has accomplished for those suffering from ailments of the stomach.

"That famous scientist, Father Kneipp, who recently discovered certain priceless principles of bodily rehabilitation through the medium of the Milk Diet, was so greatly impressed with the marvelous

results obtained, that he opened a sanatorium in the Tyrol mountains, to which thousands of wealthy Europeans suffering from stomach or other intestinal disorders are flocking every year, and from which in from two to six weeks they emerge rejoicing in regained health and a new lease on life, the result of a simple and delightful course of treatment. Indeed, patients who are able to pay the expenses of so long a journey are going there from all parts of the world.

"But there are unnumbered thousands everywhere who are suffering equal tortures from disordered stomachs, yet who cannot afford so expensive a trip, and it is now made possible for these people to obtain the same wonderful benefits right in their own homes, through being given the proper instructions for taking this simple yet powerfully effective treatment. Even so great a boon as is the Milk Diet would avail but little unless taken according to the established method adopted by Father Kneipp as the result of years' of experiment and research. Every good result depends upon knowing how to take the Milk Diet, and those instructions I am prepared to supply for the merely nominal payment of one dollar, which but little more than defrays the cost of printing and mailing. I am offering the two complete courses for this small amount, and am willing to refund even this if you are not more than satisfied with the results of the treatment, when taken according to the instructions I furnish."

In case this letter failed to bring an order, one or two "follow-up" letters were sent, emphasizing the need of the treatment in all forms of stomach derangement, and again calling attention to the curative qualities of milk when used as a diet in the proper way. He referred to the fact that Americans

are particularly subject to stomach difficulties, as a result of improper food, especially hot bread, pies and pastry, and reminded the recipient of the letter that the Milk Diet was easy and pleasant to take; that it was the first natural food of mankind, gives the stomach a much needed rest, and enables it to rebuild under Nature's beneficent ways; that his course showed anyone exactly how the treatment should be taken, to obtain the desired results and regenerate the entire digestive system, and offered to leave the decision of the case to the party's own family physician, provided he was a good doctor, and an honest man.

In his third letter he offered to send the course on approval, if desired, expressing full confidence that the patient would remit the $1.00 promptly after having thoroughly tested the merits of the treatment.

The first letter usually brought an order, accompanied by the $1.00 asked, and so uniform was the success of the treatment that not one person ever asked to have his money refunded. On the contrary, dozens of others sent in their dollars after seeing the wonderful results the treatment accomplished.

In the meantime he had had the instructions governing the taking of the treatment neatly printed in an attractive little booklet, the cover containing the words, "The Milk Diet, Nature's Greatest Remedy for the Relief of Those Suffering from Stomach Troubles, Indigestion, Dyspepsia, Constipation and all Intestinal Ills," and below this was the picture of a fine cow of high-class stock, contentedly browsing in a green, shady pasture, with trees and a running stream. In this booklet were printed complete instructions, as follows:

PLAN No. 126. COURSE No. 1. THE BUTTERMILK DIET

"In order to restore the digestive and assimilating processes to a condition whereby they can perform their functions properly, the first requisite is to give the stomach a complete rest, by providing it with food that will not tax the stomach and digestive organs, yet will nourish the body.

"Scientists have discovered that Buttermilk, used to the exclusion of all other foods for a stated time, is the ideal food for that purpose as it contains all the elements of nourishment, and is free from indigestible butter fat; that it thoroughly cleans out the system, eliminating all the toxic poisons and fermented contents of the stomach, which having entered the circulation, upset the whole system and produce disease. It expels the bile, mucus and acids produced by incorrect digestive action, cleanses the stomach and intestines, the liver, pancreas, kidneys and blood, enabling the system to throw off every trace of toxic poisons, and bring a speedy return of the normal appetite and renewed energy.

"The element in buttermilk scientifically known as lecithin, acts on the system as a tonic, which clears the complexion, brightens the eyes, and imparts the glow of perfect health to the entire body.

"But one fact must be kept constantly in mind while taking the Milk Diet, if success is to be assured: A strict adherence to the rules as herein laid down. To take it in a haphazard fashion, on and off as the notion strikes one, will do no good, and a lapse from the regular program will set you back to where you were at the beginning. Therefore, do exactly as the course prescribes, without the deviation of a hair's breadth from its positive and plainly-stated rules.

"Before taking this course, give the system a

thorough purging, with castor oil or saline laxatives, to carry off the contents of the intestines and prepare the stomach for the beneficent action of the buttermilk.

"The Buttermilk Diet Course is divided into three periods: the first two of four days each, and the third until a satisfactory condition is obtained, which should be in from four to ten days.

"During the first four-day period, take one-half pint of fresh, pure buttermilk every two hours during the waking hours, beginning at 7 A. M. and continuing until 9 P. M., or 11 P. M., if preferred. This amounts to from 2 to $2^1/_2$ quarts of buttermilk a day for the first four days. Should this produce vomiting, as it may in a few cases, do not be alarmed, for it simply indicates that the system is taking notice of what is being done for it, and is trying to expel some of the poisons it is unable to get rid of through the intestines. Keep on taking the buttermilk, even increasing the quantity, until the vomiting ceases and the stomach accepts it without protest.

"In the second four-day period, the amount of buttermilk taken should be increased to one-half pint every hour and a half during the waking hours, or nearly three quarts of buttermilk a day.

"After the eighth day, take half a pint of buttermilk every hour, and continue this until you feel that you have been restored to a healthy condition. This feeling will be manifested by a sensation of complete ease, bodily and mentally, and an active desire for solid food—a desire which will have disappeared almost entirely after the second or third day of the first period, and does not return until the system is once more balanced and healthy.

"If unable to get absolutely pure, fresh buttermilk

take pure, fresh milk, draw off the cream or butter fat which rises to the top of the bottle, and add buttermilk tablets, which can be procured at all drug stores and many grocery stores, with directions for use on the package. Buttermilk made in this way is far better than poor grades of real buttermilk that is not fresh.

"The buttermilk should be taken lukewarm—not iced, chilled or hot—and sipped slowly, not gulped down.

"If, while taking the course, you suffer from hunger or thirst, do not allow yourself to either eat or drink anything—not even water—but always take some more of the buttermilk, as this will relieve the hunger and satisfy the thirst.

"While taking the treatment, always keep the bowels open, and enemas, or internal bathing, are advised for this. In taking the enema, or rectal injection, use a two-quart bag with syringe, having the water blood-warm, or just so you can hold your hand in it. To a two-quart bag of this warm water, add half a cupful of pure glycerine, shaking it up thoroughly, and, lying on the floor on one side, with the legs doubled up, inject the entire contents of the bag into the rectum. Hold this in for ten minutes, then evacuate it naturally and thoroughly. This internal bath should be taken every day during the first four-day period, then every other day during the second period, and after that twice a week, until you are having two natural passages every day. Make an effort at these times, whether the desire exists or not.

"In taking the enema, regulate the flow so that it will not be too violent. Hanging the bag of the syringe from $2^1/_2$ to 3 feet above the floor will give the correct impetus to the flow. These internal flushings remove the secretions from the lower

intestine, where they are prone to lie and ferment, and are a great aid in preserving the general health, as they assist nature in eliminating waste and poisonous matter.

"After completing the Buttermilk Diet, as directed herein, use caution in taking solid nourishment for awhile. For a few days reduce the supply of buttermilk, and substitute light, easily digested foods, such as eggs, boiled, poached, or creamed; chicken, broiled lamb chops, small quantities of rare roast beef, broiled steak rare, boiled fresh fish, rice, macaroni cooked in milk until tender, fresh vegetables that do not contain starchy elements, and ripe, wholesome fruit. Also eat dry toast, or whole wheat bread in place of fresh bread made from white wheat flour. This course has, no doubt, broken you of the coffee habit, so avoid coffee in future, and use milk or buttermilk instead, as it will be much better for you. Resume the eating of solid foods by eating only one meal a day, about noon, taking the milk or buttermilk for your morning and evening meals, as well as during the day when hungry or thirsty.

"Thoroughly chew your food after returning to a solid diet, and thus avoid many stomach troubles, while obtaining more nourishment from your food. Besides, by eating slowly, you will eat much less, and feel all the better for it."

PLAN No. 127. THE MILK DIET

"Because people are inclined to eat more for the pleasure it affords them than for the necessary nourishment of the body, they usually eat too much, and suffer from stomach disorders and derangements in consequence. Especially is this true in the United States, where high living is the rule, rather than the exception, and it is here that so many thousands are

suffering untold agonies from various forms of stomach and intestinal complaints.

"But Nature herself has placed within easy reach of all a safe, certain and pleasant remedy for the myriad maladies caused by improper eating, as well as sufferers through inherited tendencies. And that supreme and sovereign remedy is—milk.

"The efficacy of the Milk Diet is now so thoroughly and firmly established that thousands have been the beneficiaries of its marvelous healing power, while still unnumbered thousands are earnestly longing for the blessings it will bring them when properly brought to their attention.

"Milk possesses certain properties that heal and anoint those organs of the body which digest and assimilate the sources of nourishment, and pure milk will counteract many ailments which no other seems able to reach. The systematic drinking of milk, under certain well established rules, if persistently adhered to, will practically restore the shattered and disordered stomach to that condition of health and strength which is its natural birthright and inheritance.

"The first requisite in the use of milk as a remedy for stomach ailments is that it be absolutely pure and fresh. It must not be taken cold, but cool enough to be palatable, though preferably blood-warm, as it is then easier to digest and is more quickly assimilated. It must be taken from healthy cows, must not be skimmed, and must be sipped slowly, not gulped down.

"In taking up the Milk Diet, you must give up all kinds of food and drink—except milk—and it is best to rest the body as much as possible during the period of the treatment, so as to conserve all your energies for renovating and rejuvenating your

system. Complete physical relaxation during the first ten days is highly advisable, lying on the back as much as possible, and making no unnecessary effort along the line of physical activity. Afterwards, however, light work or moderate exercise is desirable.

“Taking into consideration the rich elements of milk, it is best at first to take only small quantities, and repeat often. Half a glass every half-hour will do to begin with, and the quantity can be increased gradually, until the stomach will retain a full glass every half-hour. Keep this up during the first ten days, keeping your body relaxed meanwhile, and after that a half pint should be taken every hour during the working hours, and a pitcher of milk be kept within reach to drink during the night. In a thoroughly well ventilated room the milk will keep sweet all night except in the hottest weather, and is good in case of sleeplessness.

“Some people become bilious when taking nothing but milk, the biliousness being evidenced by the regurgitation of the milk, by acid eruptions from the stomach to the mouth, and even by vomiting. But do not be discouraged. Keep on drinking the milk, for these manifestations are merely nature’s protest against the condition of the stomach, and not against the milk. Soon the vomiting will clear out the accumulations of bile and mucus from the stomach, the milk will cease to distress you and will be easily and quickly digested. If milk does not lie quietly on the stomach, it is because the stomach is not in a fit condition to receive it, that is all.

“As the milk begins to be absorbed by the circulation, it permeates all parts of the system and cleans them out, for the cleaning power of milk is very great.

"Some persons, after taking the milk for awhile, begin to loath it, and in these cases the juice of a lemon may be substituted for a short time, but only occasionally to overcome the feeling of nausea. A little lemon juice is also advisable following the vomiting incident to the biliousness that sometimes occurs.

"In taking either the milk or buttermilk treatment, the patient will experience, at first, great hunger, and a longing for solid food. In all such cases, drink milk, plenty of it, and it will be both food and drink for you. After the third day, the craving for solid food generally disappears, though it is best to keep away from food and avoid temptation for a few days and soon you will have no craving.

"Before beginning the Milk Diet, a good dose of castor oil is advisable, though not so essential as in the Buttermilk Diet. But after the course has started, no drugs should be used for keeping the bowels open. If constipation develops, as is likely, flush the rectum with the enemas, as in the case of the Buttermilk Diet, doing this every day for three or four days, then one every other day for the next four days, and after that once or twice a week, so as to keep the bowels moving regularly, assisting nature in having regular passages every morning and evening. Always add half a cup of glycerine to the two quarts of warm water used as an injection, as this acts as a lubricant and softener of the inner tract, and water alone will dry out the colon, which is dangerous. If the patient is suffering from piles, use a soft catheter or rubber in taking the injections. The internal bath conquers looseness of the bowels and diarrhea, as well as constipation, and when used with glycerine is a sedative to the irritated colon or intestines.

"How much time should be given to taking the

Milk Diet? That depends entirely upon the person taking it. Many who know its great benefits advise that it be taken at least once every year, especially by hearty eaters and high livers, who should take it for two or three weeks each spring and fall, as by doing so they can always be perfectly healthy.

"Relief in chronic ailments due to indigestion, stomach or intestinal troubles, and derangement of the kidneys and bladder, varies with the aggravation of the case, and nature itself will show when the regeneration is completed. But the safe rule is to continue the treatment until you know you are well, though your judgment may not always be infallible.

"Fat people who take this treatment to reduce their weight, and thin people who take it to build up their wasted bodies, will know when to stop, and by using proper care in the selection of foods, will be able to maintain a normal condition, but even then it is better to continue it a little longer than to stop too soon, and not resume hearty eating too quickly. Observe the same rules in preparing the system for the taking of solid foods as are prescribed in the Buttermilk Diet, beginning lightly and gradually increasing the quantity taken. A few people are affected strangely by the results of the Milk Diet upon the nervous system, where it has been badly run down by excesses in eating or the ailments that follow them, but this condition is only temporary, and will soon pass away through perservering in the diet, and the nerves will be greatly strengthened and renewed by the rich new blood that is the natural result of the Milk Diet.

"To only one class of persons is there any danger in taking the Milk Diet. People who have organic heart trouble are liable to find the flow of new blood too strong for a weak heart, and should be guided by

the advice of a reputable physician before beginning it, so as to avoid serious consequences.

"The Milk Diet should be taken only by adults; as children are rarely to be found suffering from stomach trouble and their strong young systems require solid food for proper development.

"Nor should the Milk Diet be taken by anyone without first flushing the system by the use of the enema, as above set forth.

"Above all things else, take absolutely no food or even a drink of water, while taking the Milk Diet, as this will undo all the good that has been accomplished and make it necessary to begin all over again.

"Fat people usually lose two or three pounds a day when they first begin taking the Milk Diet strictly according to the instructions herein given, while thin people commence to gain in weight, for it brings real health, instead of merely artificial relief, such as is given by drugs. And after the treatment is taken, practice simple living, eating plain but substantial food, and you will find yourself completely restored to perfect health. In the meantime, keep the bowels regular, by an occasional enema if necessary, and your troubles will be over. However, you can bring them all back, by again abusing the delicate organism of the stomach.

"Sleep enough, but not too much, in well ventilated rooms. Exercise moderately and thoroughly masticate your food before swallowing it."

Within a month after inserting the advertisements, several hundred people had ordered the course, remitting the $1 requisite, and almost without exception those who completed the treatment according to the instructions sent, began sending

testimonials to the marvelous effects of the Diet in their individual cases. The enterprising citizen had no capital invested, carried no stock, and had only to mail the printed instructions for taking the treatment, and the patients gladly did the rest. And he not only made a good living for himself but brought health and happiness to a host of suffering people.

PLAN No. 127B. MAKING ORCHARD AND GARDEN PAY

A farmer's wife in Iowa, who wanted to make some money of her own, instead of feeling that she had to ask her husband for every dollar she received, started in a systematic manner to have a bank account of her own.

The family lived within twenty miles of a large city, and the farm contained an extensive orchard, as well as over an acre devoted to gardening purposes, and in these the wife found a broad field for her activities.

She thoroughly understood the many tempting ways in which fruits, vegetables and other orchard and garden products can be put up, and she knew the city people would pay for the products of her skill, so she entered upon an extensive campaign of canning, pickling and preserving, any one of which lines will furnish any energetic woman with a way for making money, even though she may adopt only one of the profitable plans. She could not begin to supply the demands of the city people.

PLAN No. 128. PICKLED PEACHES AND PEARS

There are few things that have a more delicious

taste than pickled peaches or pears, especially when pickled the way this farmer's wife pickled them.

Take one-half cup of vinegar and one-half pound of sugar to a little over a pound of the fruit. Place the sugar and vinegar over the fire until it comes to a boil. Add a layer of fruit, and cook until soft enough to run fork through it; then remove the fruit and fill the same way until all are done. The syrup needs no more cooking. Stick cloves in the fruit before cooking, and add cinnamon to syrup, if desired.

When she sent these to the city, she soon had calls for more, and the prices they brought were a source of much pride as well as profit to the energetic housewife who put them up.

PLAN No. 129. PICKLED APPLES

Apples, especially those of the choicest varieties, are very good without pickling, but a great deal more so when they are pickled the way the farmer's wife prepared them, as follows:

Take ripe, hard, sweet apples. Peel evenly, and if the apples are perfect, leave them whole, otherwise cut in quarters. To a peck of apples, take about two quarts of vinegar and four pounds of sugar, half an ounce of mace, half an ounce of cloves, and the same amount of allspice, all unground; one teaspoonful of mustard seed, a few pepper grains and a little salt. Heat the vinegar and sugar together to the boiling point, skim well, put the spices in a thin muslin bag and add the vinegar, then put in the apples. Place over the fire, and stew slowly until the apples are soft. Then take out the apples, let the vinegar boil down, and pour in over the fruit. Cover and put away.

Of course, in making large quantities, she increased the amount of the ingredients accordingly,

yet maintained the proportions named.

PLAN No. 130. PICKLED CHERRIES

The cherry trees were full that year, and she made good use of cherries by using this recipe:

To every quart of cherries, allow a cupful of vinegar, one-half cupful of sugar, one dozen whole cloves, half a dozen blades of mace. Put the vinegar and sugar on to heat, with the spices, boil five minutes, turn out into a covered stoneware vessel and let it get perfectly cool. Strain out the spices, fill small jar three-fourths full of cherries, then fill up with cold vinegar. Cork or seal tightly. Leave the stems on the cherries.

Besides filling several shelves in her own cellar with these, she sold large quantities to her city customers at “top” prices.

PLAN No. 131. PICKLED PLUMS

It would hardly seem possible to make a plum any better than it is when ripe and right off the tree, but this Iowa woman did so as follows:

To seven pounds of plums, take four pounds of sugar and two ounces each of stick cinnamon and cloves, one quart of vinegar and a little mace. Put in the jar first a layer of plums, then a layer of spices; scald the vinegar and sugar together, and pour over the plums, and when the jar is full, scald all together. They are then ready for use at once.

But she didn’t use all she put up. She sold to city people who liked her other products so well.

PLAN No. 132. SWEET CUCUMBER PICKLES

People like cucumber pickles, so this woman catered to their taste as follows:

Take ripe cucumbers, cut in two, scrape out the seeds, cut into strips and soak over night in salt water. To every quart of vinegar add one pound of sugar; boil and skim. Boil the strips in vinegar until tender and quite transparent. Take out the pickles, strain the vinegar, put it over the fire with a small muslin bag of mixed spices, boil two hours, pour over the pickles, cover and put away.

She sold these pickles at a good profit.

PLAN No. 133. INDIAN CHUTNEY MAKE

This will be something new to many people, but it is so good that almost any woman could derive a good living from making and selling this and nothing else. Here is the way the Iowa lady made it:

Pare, core and chop in small squares pieces half a pound of sour apples, and to them add half a pound each of tomatoes, brown sugar, stoned raisins and salt, a quarter of a pound each of cayenne pepper and powdered ginger, two ounces each of onions and garlic, one quart of lemon juice and three quarts of vinegar. Mix all well together, and put in a closely covered jar. Keep in a warm place, and stir every day for a month, being careful to see that it is kept covered; strain through a sieve at the end of this time and bottle. The liquor may be used as a sauce for fish or meat, and imparts a flavor seldom equaled.

PLAN No. 134. SPICED CURRANTS

Any one should be able to obtain any quantity of currants desired in their season, and make extra money by spicing them as this Iowa lady did, as follows:

Three pounds of white sugar, five pounds of ripe currants, one tablespoonful each of cinnamon, nutmeg, cloves and allspice. Boil currants one hour,

then add sugar, spices and one-half pint of vinegar and boil one-half hour longer.

This was one of the best sellers she put up.

PLAN No. 135. TOMATO PRESERVES

With tomatoes as plentiful and cheap as they are almost every year, and with so many people who like them, it is a wonder that thousands of women do not make a living by preserving, according to the following recipe, which this lady used:

Peel the tomatoes, and to each pound add a pound of sugar and let stand over night. Take the tomatoes out of the sugar, and boil the syrup, removing the scum. Put in the tomatoes and boil gently twenty minutes. Remove the fruit again, and boil until the syrup thickens. On cooling, put the fruit into jars and pour the syrup over. The round, yellow variety of tomatoes should be used, and as soon as ripe.

It is hard to imagine a more delicious preserve, or one that will bring a better price.

PLAN No. 136. CRAB APPLE JELLY

While thousands of bushels of crab apples are allowed to go to waste every year, and cost nothing but the picking, hundreds of women could be earning considerable money by gathering them, as they make the best jelly in the world, and it can be sold at almost any price one may ask. This Iowa lady used her surplus stock of crab apples as follows:

Wash the fruit clean, put in a kettle, cover with water, and boil until thoroughly cooked. Then pour into a sieve and let it drain. Do not press it through. For each pint of this liquor, allow one pound of sugar. Boil from twenty minutes to half an hour. Jellies can also be made from quinces, peaches and Porter apples in the same way.

Even with all of this she could make, the lady was unable to supply the demand.

She secured customers for her products through a few short ads in the city papers.

PLAN No. 137. GLASS POLISHING PASTE

Nothing affords the housewife more pleasure or pride than to have her glassware, mirrors, window panes, etc., show that brilliancy and lustre so universally admired, but it is difficult to obtain.

A young man in San Diego, California, who had the formula for one of the best of these polishes, but very little else, anchored his hopes of making a living on supplying all the homes he possibly could with the means of keeping their glass surfaces shiny and clean. Therefore he made up as much of the preparation as he could afford for a starter, from the following formula:

Prepared chalk, 9 ounces; jewelers' rouge, $^1/_2$ ounce; white bole, $^1/_2$ ounce; alcohol, 3 ounces; water, 5 ounces. Mix into a stiff paste.

To use, moisten a cloth with alcohol, place a small quantity of the paste, not larger than a pea, on the glass, and rub over the surface with the cloth until dry, and until the powder is completely removed. The result was good.

Not having sufficient capital to advertise his preparation, or to make it in sufficient quantities to employ agents or supply it to the drug stores, he made up a small amount at first, and introduced it into various homes by asking permission to polish up some glassware or a window, and the lustre it left was so brilliant that he sold some of it at most every house in which he demonstrated, and as the profit

was very large, he soon had enough capital to make it on a larger scale. Then he placed a crew of agents in the city and surrounding towns and thus created a demand for the product which the druggists were glad to supply from the stocks he had left with them for sale.

In a short time he was able to advertise it thoroughly, and in the course of a couple of years he had built up a business that is today netting him a very good income.

But his success need not exclude others from this field, and there is still room for hundreds of other young men who wish to follow his example.

PLAN No. 138. HAIR DRESSING AS A PROFESSION

A young lady in Denver, the possessor of a pleasing manner, neat and attractive, felt the need of making some money to help support her invalid mother. She had been employed in a hair-dressing establishment for some time, and had learned all the secrets of the business, so she put her knowledge of the business into practical form and made a success of it.

She was personally acquainted with a number of women in her section of the city, who, though not regular patrons of the leading hair-dressers, liked to have their hair done up in proper form, and could afford a reasonable price for such service. She therefore had some neat cards printed, announcing that she would do all kinds of hair-dressing for ladies at their homes, at very reasonable rates, and, calling upon these women, she left her cards, with a request that she be allowed to dress the hair of each one as a

sort of demonstration of her ability, also asking the ladies interviewed to hand her card to some lady acquaintance.

She was surprised by the large number of “trial orders” she received, and she performed the service so well that practically all the women, after having her dress their hair once, insisted upon paying her rates, which were not considerably less than regular hair-dressers’ prices.

In a short time she had all the permanent patrons she could serve, and the reward of her tact and skill came in the form of a good living.



Plan No. 139. Woman in B

PLAN No. 139. CLIPPING BUREAU

There are clipping bureaus, big and little, in all the cities and towns in America, but a short time ago there was one town of 6,000 people, in a western state, where there was no clipping bureau, so an enterprising citizen of the place started one.

He was on a friendly basis with the newspaper men of the town and was allowed the use of

exchange papers.

Next he interviewed a number of contractors, builders, architects, supply houses, manufacturers, men prominent socially and politically, and many others and arranged to furnish them with all the news items of interest within a radius of 200 miles, for $3.00 a month and up, depending upon the character and number of subjects clipped.

Then he rented a small office in a quiet street, hired a girl for $35 a month to do the reading, clipping, pasting and classifying. He solicited the business. His receipts for the first month were $100, the second month $150, the third month $200, and on up until it reached $300 a month, with no additional expense. He also read, marking the articles to be clipped and mailed by the girl assistant.

His bureau is still running and is making him a good living.

HOW A WIFE HELPED HER HUSBAND

The wife of a young man who had been incapacitated for heavy work by injuries received in an automobile accident assumed the duties of bread-winner for the family by carrying out a number of plans which she had always regarded as "life-savers" in case of emergencies. Each of these in itself would prove a means of earning a livelihood by any one other woman similarly situated.

PLAN No. 140. STARTED A HOME STORE

This couple lived in a small western city of about 25,000 inhabitants, some of whom were well-to-do, and it occurred to her that by utilizing her large front room and opening a little store in which all the

articles offered for sale were made at home, she could keep it stocked with many articles which she could make herself, and soon build up a profitable business.

Possessing extraordinary taste and skill, by odd jobs she earned some money to be used as working capital for the store. First, she bought a ham, sliced it thin, laid some sprigs of parsley around it on a number of plates, and set this in her front window. She also made some artificial honey from a recipe she found in an old cook book, and arranged this display so tastefully that her supply was soon sold. Then she displayed a variety of vegetables, fresh from her garden, and these also sold readily, at good prices. To this display she added plants of many kinds, then delicious pastry of her own cooking, preserves, sweetmeats, fresh laid eggs from her own hens, and finally branched out into a complete line of home-made goods, for which she found a steady demand the year round.

With the little help her husband could give, she was soon earning more money than the family ever had before.

PLAN No. 141. HAS A FLOWER BED

Never before had she realized the immense profit to be derived from a well-kept flower bed, but the insistent call for plants and cut flowers of all kinds gave her a new idea, and she turned this also to excellent account. Her own personal care of the flower bed was the only capital she found it necessary to invest, and she was pleased to learn that the large returns she received from this source represented just that much clear profit.

The more common plants, such as pansies, geraniums, etc., were always in demand by those

who had failed to plant flowers of their own, while the rarer kinds, such as orchids, etc., were wanted, at fancy prices.

She possessed the artistic taste necessary to arrange her flowers and plants to the best possible advantage, and this arrangement no doubt brought many patrons.

To keep her flowers fresh, she wet them thoroughly, put them in a damp box and covered them with wet raw cotton or wet newspapers, then placed them in a cool place. To preserve bouquets, she put a little saltpetre in the water.

PLAN No. 142. HOME-MADE CHRISTMAS GIFTS

During her spare time she made a great variety of Christmas presents, such as sofa pillows, pin cushions and trays, jewel trays, lamp shades, chair cushions, tidies, book-marks, catch-bags, and work-baskets. The latter she made of a few cents' worth of light drilling covered with ruffled net, and when made they were fully equipped with the necessary needles, thread, etc. Some cheap yet substantial material was used as a base for these baskets, and when tastefully adorned, as she so well knew how, they, as well as all the other holiday articles she made, sold quickly.

PLAN No. 143. HOME-MADE LACE

The prices which home-made lace commands in the cities would surprise those not familiar with this rare industry, but when it is known that $15 is considered cheap for a simple point lace handkerchief, some idea may be gained as to its possibilities. Of course, many cheaper articles can be made of lace, and sold readily at good profits, and procuring a book that gave complete instructions for the making of lace of all kinds, this lady devoted

considerable time to making many things which she sold at good prices.

PLAN No. 144. SCHOOL CHILDREN'S NEEDS

As her little home store was near a school, she decided to make up a number of needed articles for the use of the pupils, and had no trouble in selling them. These articles consisted mainly of school-book bags made of stout linen, with fancy stitching and a strong linen strap; also pen-wipers, sleeve-protectors, school aprons, etc. These she made in pretty colors, with neat stitching, and they were very handsome as well as useful.

Sometimes she arranged with a bright boy or girl to sell these in school, paying a small commission for such services, either in cash or goods selected from her store.

That she made a success of her venture may be judged when it is stated that her profits are larger each year than those of some of the regular merchants of her city.

PLAN No. 145. ARTIFICIAL MAPLE SYRUP

The following plan was adopted by a farmers' grocer who had located in a southern state for his wife's health and it proved more profitable than had his former big store in a northern city. His plan was the making of artificial maple syrup, a healthful staple product that cost but little and brought excellent returns. He made the syrup as follows:

Take one bushel of clean, fresh corn-cobs, place them in a large kettle, pour in five gallons of clear water and boil for two hours, or until it boils down to about two gallons. Then remove the cobs and

strain the water. Then add five pounds of New Orleans sugar and boil for thirty minutes, and strain and seal in glass or tin cans, with proper labels. The corn-cobs give it the maple flavor, which makes it very palatable, though it can be sold at very much less than the genuine article.

By increasing the quantities of the ingredients, he was soon able to make forty to fifty gallons a day, at a cost of about 12 cents per gallon. The cans cost him 20 to 30 cents per dozen, and the labels about $2 per 1,000, the entire cost of one dozen gallon cans being about $1.75, while he retailed it at $1.00 per gallon. At first he sold it through agents, paying a commission of 25 per cent, and his net profit on one dozen gallon cans was therefore $7.25. Later, however, he wholesaled it to grocers at 50 cents per gallon, and this netted him $4.25 per dozen cans.

It was so good an imitation that it could not be detected from genuine maple syrup, and those who bought it once insisted upon having it again, and the maker soon had a long list of regular customers which insured him a good living.

PLAN No. 146. CARBOLIC FACE CREAM

A young woman in Vancouver, B. C., who had noticed that most ladies gladly pay from 25 cents to $1.50 for a two-ounce jar or bottle of widely-heralded “face cream,” decided that she could make some just as good as the best of these, and realize a profit of 700 per cent. She took ten pounds of oatmeal and boiled it thoroughly in clear water, afterward straining it through a cheese cloth, squeezing the meal through the cloth with a motion like that of milking a cow. When well strained, she

diluted three ounces of carbolic acid with a quart of water, then mixed it well with the meal, adding enough water, where it was too thick, to make the consistency of cream. She put this in two-ounce jars, attractively, and sold it readily at 25 cents per jar.

This made enough to fill 500 jars of the cream, which sold for $125, while the total cost of the same, including materials, jars and labels, was not over $15, so that from this one "batch" of cream her profits were $110.

It became a very popular product, as the oatmeal softens the skin and the carbolic acid removes blemishes, and these results, coupled with a fancy name on an artistic label, sold the cream as fast as she could make it.

The directions for use were as follows: After bathing the face thoroughly in tepid water, dry well, dip tips of fingers in cream, and rub on face until dry, which helps to efface all impurities of the skin. Bathe the face again, and dry with a soft towel.

How much money do you suppose that girl made out of this simple face cream during the first year? Exactly $2,500.

PLAN No. 147. WOMAN DRESS AND STYLE ADVISER

A preacher's daughter, thrown upon her own resources, and feeling that she could not enter any of the ordinary occupations, owing to the unreasonable opposition of her late father's parishioners, decided to adopt the novel profession of toilet adviser to her lady friends.

Having excellent taste in such matters, and having long been looked to for counsel in the matter of

dress, she had no difficulty in securing a very considerable list of permanent patrons, who paid her reasonably well for the services she rendered.

She opened a little “office” in her home, and those who came for consultation concerning matters of dress or personal adornment she charged $1.00 an hour, while her rate for accompanying her patrons on shopping expeditions was 50 cents an hour.

She advised her customers how to dress their hair becomingly, the colors they could wear to the best advantage, the style of gown appropriate to each occasion, the propriety of neckwear, hat, bonnet, etc., and as her taste in these matters was faultless, her services were so thoroughly appreciated that her time was taken up with these duties. She had the firmness to insist upon her decision being accepted as final, and yet possessed the delicacy to do so without injuring their feelings, and made a much better living for the family than had her father.

It isn’t every girl who is qualified to render this service, but every town and city offers a great field for its performance.

PLAN No. 148. NURSES’ BUREAU

A middle-aged widow in St. Louis, who owned a large house and grounds in a good residential district, but who was short of ready money, evolved a plan for establishing a nurses’ bureau in her own home.

From physicians, hospitals, city directories and friends, she obtained the names of nearly two hundred nurses, and from the greater part of these she secured permission to place their names upon her list, with their addresses, telephone numbers,

wages asked per week, etc., and with the understanding that they were to pay her a certain amount as commission for obtaining positions for them at any time they were not engaged. They were to keep her informed when they were engaged, with the length of time so employed, and the means of reaching them quickly when necessary.

She then advertised in the classified columns of the city papers to the effect that she was prepared at all times to supply nurses at any time, and notified the doctors and the hospitals of this fact.

She further utilized several of the unoccupied rooms in her home, as well as the aid of one servant, by taking a number of the nurses to board with her, so as to have them ready for sudden calls, and in this way offered facilities not theretofore enjoyed by either the nurses or those needing their services. Within a few months she was enjoying a living income from her novel venture, and rendered excellent service to nurses and patients alike.

PLAN No. 149. DRESS-CUTTING SCHOOL

Almost any woman who wants to learn dress-cutting can do so by using one of the numerous systems now on the market, and it is an easy matter to get one of the charts that give complete instructions.

Some women learn quickly, while others are slow. But here is one who made a good living out of it. Having thoroughly mastered the chart, and being naturally gifted in matters pertaining to the fitting of garments, she proceeded to open a school for teaching the dress-cutting art to others who wished to learn.

To each pupil one of the charts is supplied, together with personal instructions needed in most cases, and for these services and supplies she makes a moderate charge. The first lesson she gives is on garments belonging to the pupils themselves, and as others come in with dresses to make she names a reasonable charge for making these, and even then her prices are much less than those of regular dress-makers. The pupils do the main part of the work on these dresses, as part of their instructions, while the lady gets the pay for the finished dress.

She not only gets paid for the tuition of the girls and the dresses they make but also a commission on each chart sold to her pupils, and in this way makes a very comfortable living. After she became well established, she also gave employment to some of the more apt and dextrous of her finished pupils, and thus enabled them to make good wages for themselves.

PLAN No. 150. ETIQUETTE AND DANCING SCHOOL

A young society woman in a western city had recently been reduced to comparative poverty by sudden reverses which overtook her father, and being of an energetic and resourceful nature, she started a class in dancing and deportment, to earn something with which to assist her now almost dependent father and mother.

She sent out circulars to a long list of her acquaintances, announcing that her class would begin on a certain evening, and invited their patronage. She was so well known that she had no difficulty in securing a large class from the very

beginning, as even those mothers who did not favor dancing were anxious to have their daughters properly instructed in social laws and customs from so competent and trustworthy a teacher.

She also gave private lessons in both dancing and deportment for the benefit of a number of families whose early advantages had not been such as to fit them for the places in society to which they now aspired. These lessons paid well.

PLAN No. 151. WOMAN'S EXCHANGE

Women's exchanges, as usually conducted, consist of a number of women who form a sort of syndicate, have a board of managers, rent a suitable building, employ the necessary help to carry on the work, and pay annual dues of a stated amount each.

But an Omaha woman, who had only a very few dollars, and had a taste for that kind of work, concluded to start one all her own, and she made it a success.

Lacking the capital with which to rent a store room she used her parlor for that purpose, and succeeded so well that in a short time she was able to move to larger quarters, more centrally located.

She issued some neat circulars, inviting the women of her own and other neighborhoods to bring any articles they had for sale, and she would make an effort to dispose of them, or exchange them for other articles they desired, on the basis of a 10 per cent commission on all sales or exchanges made. As nearly every woman has certain belongings which she wishes to sell, or exchange for something else, there was a hearty response to the invitation, and her parlor was soon filled with a motley array of

miscellaneous merchandise.

Every article was labeled with the name, address and telephone number of the owner, the price asked for it, or the goods for which it would be exchanged, and the parlor was thronged every day and evening with women patrons, who nearly always found something they were glad to buy at the marked price, so that the lady's commissions began almost at once to assume very good proportions. Later she served lunches in her dining room, and these also were liberally patronized, so that she made a very good living from her exchange idea, and finally became the owner of a regular store.

PLAN No. 152. SHOPPING AS A PROFESSION

A San Francisco woman who had excellent taste and judgment, and large experience in buying, decided to adopt shopping as a regular profession, and found it a most pleasant and profitable occupation.

After making arrangements with several large stores in the city, carrying different lines of goods, for a straight commission of 10 per cent on all purchases she should make, she asked and obtained the consent of a number of well-known business men of her acquaintance to use their names as references in launching her enterprise.

She had several thousand circulars printed, stating that she would carefully and satisfactorily attend to orders she received from outside parties for doing all kinds of shopping, and that she would make no charge whatever for the services so rendered. These circulars contained the names of her references, and stated the experience she had had in buying

merchandise of various kinds.

Then she advertised in a number of papers that circulated largely throughout the rural districts and country towns, asking inquiries regarding her method of free shopping. These ads. brought hundreds of letters asking for complete information, and in answer to these she sent her circulars. She also obtained many names of people in small communities from seed dealers, agricultural implement men, and others having a large country trade, and sent circulars to these also.

The fairness of the offer, and the standing of the lady herself, as evidenced by her references, brought many orders, and, as she had announced that where cash did not accompany the order the goods would be sent C. O. D., she sustained no losses. The idea of having a competent and reliable person do all their shopping, without charge, appealed to them and they became her permanent patrons.

PLAN No. 153. DRUGLESS TREATMENT FOR CONSTIPATION

A western man who was strongly opposed to the use of drugs, and who had cured himself of prolonged constipation by a process of self-massaging of the abdomen, was anxious that other sufferers might also receive the benefit of his experience, and felt that the information given them was worth paying for. He therefore had some circular letters printed, fully explaining the method, and advertised in a large number of papers, offering this drugless treatment upon receipt of 50 cents.

The advertisements seemed to have created a decidedly favorable impression, for hundreds of

answers, with enclosures, were received, and to each of these he sent a copy of his circular letter, as follows:

"The causes of constipation are many. Often it is an insufficient supply of bile, or may be due to digestive troubles, and always follows sedentary habits.

"Cathartics are injurious, and make the bowels dependent upon artificial means for their movement, and this in time may lead to paralysis, with consequent loss of control.

"To teach the muscles of the abdomen to bring on a natural peristaltic movement, at least twice a day, is the purpose of these instructions.

"Once each day or night always at the same hour stand erect and place the palms of both hands directly over your intestines. Then, with no clothing over the abdomen, with a circular motion from right to left, begin gently to massage the same, not rapidly, but slowly and with a gentle pressure, giving your hands a rotary motion over the flesh. Continue this for five or ten minutes.

"Starting in at the right side of your abdomen, work your hands in a circling motion, from right to left, gradually taking in all parts of the abdomen, but do not pound or strike yourself.

"If satisfactory results do not come the first day, or even the first week, do not give up, but keep at it until they do, and go through with it at the same hour each day or night, as you choose.

"Within a few days you will find your bowels beginning to move more regularly and freely, but do not stop the massaging, though you may reduce the time given to it. In a few weeks the massage will require but one minute a day.

"Many kinds of food tend to produce constipation.

Crackers, cheese and too much white bread are particularly bad, so that less rich food, but more coarse foods, as meats, potatoes, vegetables, light puddings, etc., are necessary. A raw apple once a day is highly beneficial and so are oranges. Eat regularly, and take plenty of time to thoroughly chew your food before swallowing.

"Constipation causes the waste to ferment in the intestines, producing dangerous poisons that are absorbed in the blood, and waste gas in the stomach and bowels.

"Give the abdominal muscles plenty of exercise, especially through deep breathing while lying on your back, also by bending over, swinging from side to side, and other simple exercises that give stamina to the muscles of the abdominal tract. Take no cathartics, but where artificial aid is needed, use an enema of a quart of warm water, in which you have placed at least an ounce of glycerine. But even this will not be necessary after you have established regular habits through the continued use of this natural, drugless treatment, which costs you nothing, no matter how long you keep it up."

This course of treatment produced the best results, and thousands of them were mailed out to persons remitting the 50 cents each required for the instructions. Many of these people afterwards sent in unsolicited testimonials as to the benefits they had received from it, and these, as well as the financial returns brought by this plan, afforded its originator a great deal of satisfaction and profit.

PLAN No. 154. RAISE A FEW SHEEP

A city man who had inherited a 40-acre tract of

pasture land from his father's estate, and whose failing health rendered it necessary for him to get out into the country, concluded that about the only use he could make of this land was to raise a few sheep.

He therefore built a cabin on the tract, together with a shed for sheltering the sheep, and bought twenty head of well-bred animals, which he placed in the pasture. This pasture was well seeded in grass, was all fenced and had a fine stream of water running through it from a spring that came out of a small hill upon which the cabin was built. It also contained several shade trees.

He had a few hundred dollars in cash, but the living expenses of himself and wife were light, so that his small savings were sufficient for a year or two, especially as they had planted a fine garden with berry bushes, besides plants and shrubs of various kinds, and had also bought a cow and a few dozen chickens, so that the greater part of their living was taken care of.

In the meantime their flock of sheep increased rapidly, and the cost of raising them was small in money and labor. This man and his wife were agreeably surprised at the end of the third year to find that their little flock had earned for them over $1,500. That amount has been greatly increased with each succeeding year, and has brought them a larger yearly income than would the highest salaried position in the city. And their health has also been completely restored through the out-door life they have led.

PLAN No. 155. MAKING COZY CORNERS

Not one woman in ten thousand would ever have

thought of the plan which this talented woman living in an eastern city thought out and adopted as a means of earning a very comfortable living, when confronted with the necessity for doing so.

Possessing artistic tastes and tendencies, she began by arranging delightful cozy corners for people who were able to pay good prices for the charming effects she designed and produced, yet who lacked the originality to plan them with the delicacy and harmony that characterized her designs.

Many of these she originated, while others were taken from the homes of her friends.

These she photographed, arranged them in a large album, and carried them from house to house. In most of the homes visited, these designs created a profound impression, owing to their originality and beauty, and when she submitted estimates of the cost of duplicating these, or where desired, of making a special design, which of course included her own services, she usually received an order at once, and soon found she had all the work she could possibly do, at prices that in the aggregate brought her a revenue of several thousand dollars a year.

When the cozy corner was finished, she would impress upon the lady of the house the satisfaction it would afford her to have the same photographed, so she could send pictures of it to her friends, and as she was herself an expert with the camera, she earned many extra dollars by making these photos.

PLAN No. 156. BRIEFING THE BRIEFS

A middle-aged man in a western city, who had practiced law for some years in the middle west, but later drifted into the newspaper business, for the

double reason that he liked it better and was more adapted to it, finally took up general publicity work as a profession and soon became recognized as a leader in his line.

Although he wrote a great many advertisements for commercial houses, medical specialists, dentists, etc., all of which were rendered usually attractive through their originality of design and their concise and forceful style, he later began to specialize on booklets, prospectuses, etc. He was engaged to prepare the matter for a number of books about to be published, in which field his ability to extract all the salient points from subjects that are often laboriously and voluminously treated, and to condense a long tiresome story into a short and interesting one, found full scope.

One day a lawyer friend of his suggested to him that he could find a fertile field for his talents in re-writing the long and tedious briefs which most attorneys submit to the supreme court for review when taking cases before that tribunal on appeal; that lawyers, as a rule, are poor writers and waste much time and effort in the preparation of their briefs, with the result that they are not apt to receive the consideration from supreme court justices that would be accorded a condensed yet accurate statement of the facts, with properly arranged citations of authorities, etc.

Profiting by this suggestion, the publicity man called upon many of the lawyers in the city and, after explaining why he believed he could greatly improve their briefs, was given a number to remodel and prepare according to his own ideas both as a lawyer and as a newspaper man. These proved so satisfactory, that he was given much work in that line by several of the leading law firms, and found

his time profitably occupied.

Several rising young lawyers with political aspirations also engaged his services in the writing of newspaper articles through which their names were brought and kept prominently before the public, with the result that their progress toward a coveted goal was rendered much more rapid, and a number of them are now holding important public positions as a consequence of this well-directed publicity.

PLAN No. 157. MAGAZINE CIRCULATING LIBRARY

A lady in a western state who had considerable literary ability, yet who had not been successful in having very many of her magazine articles accepted for publication on a cash basis, concluded to try another way of making a little money out of these same periodicals.

She offered several of her manuscripts to various publishers in payment for subscription to their magazines, and these offers were as a rule gladly accepted, so that she was constantly in receipt of the latest publications. She had many neighbors who also liked to read magazines, but did not feel able to subscribe for as many as they wanted, and most of them would not borrow them from her.

This afforded her an opening to launch her pet scheme of starting a circulating library with her surplus stock of magazines. So she had a number of circular letters typewritten, announcing that for a small monthly rate she would loan all her periodicals to the members, rotating them so that each would have an opportunity to read them all during the month. As the charge was very reasonable, and the

benefits to be derived from the plan so great, practically every family within a radius of twenty miles promptly subscribed.

The enterprising originator of the plan was thus able not only to bring pleasure to her neighbors, but considerable profit to herself as well, besides the satisfaction of having her neighbors read her own contribution to a number of magazines.

PLAN No. 158. MADE MONEY FROM MENDING

Capable seamstresses suffering for the lack of work are to be found almost anywhere, yet if they would do as these four western girls did, they could have all the work they wanted, and be well paid for it, too.



Plan No. 158. A Stitch in Time

All these girls were fine needlewomen, who could do all kinds of sewing and mending, on all classes of wearing apparel, yet each of them specialized in some particular line. One made a specialty of putting new facings and bindings on dress skirts; another did the mending on underwear; another coats, suits, cloaks, dresses and men's wear, while the fourth mended laces, gloves, fine table linen and dainty things that women usually throw away when torn, because no one seems able to mend them.

The girls roomed together, and they had cards

printed, setting forth the class of work they did, and these they took turns in distributing in various parts of the city, often bringing back considerable work as a result of these expeditions. They were not only polite, pleasant and obliging in their manner, but they did the mending so skillfully, and yet so reasonably, that work came to them quite rapidly, so that they soon had all they could do, and in time they set up a regular dressmaking and mending establishment, which grew into such proportions that they were obliged to hire other girls to help them do their work.

PLAN No. 159. BEAUTY BAGS FREE

A lady who knew how to make a simple, cheap yet very effective beauty bag, advertised in a number of papers that for 25 cents she would send complete information for making the same, and also send one of the beauty bags free. She received hundreds of answers, enclosing 25 cents each, and to these people she sent the following formula, together with one of the bags complete:

Get a package of Quaker oats and a yard of cheesecloth; cut the cloth into pieces, $2^1/_2$x5 inches, and with each of these make a little flat pad, by doubling, once, and overcasting or loosely button-holing two of the three open sides. Fill with the Quaker oats, then overcast the remaining side. On going to bed, fill a basin with warm water and allow the bag to soak a few seconds, or until you see a little milky substance ooze forth. Then use this beauty bag, thus made, as a wash cloth, thoroughly rubbing the face and into every little crevice or wrinkle. Keep moistening the bag as you use it. The

effect produced will be surprising, as it leaves the skin soft and clear. But do not use soap, unless you wish to ruin your complexion. The bag will cleanse your face much quicker and much better.

The orders continued to come, and the enterprising lady was many hundreds of dollars ahead at the end of the first three months. And still the orders came, for the offer is one that appeals to every woman who wants to improve her looks—and where is the woman who doesn't?

PLAN No. 160. DUSTLESS DUSTERS

A Seattle young woman built up a business of her own by making and selling dustless dusters, in two different styles both made of cheesecloth, as follows:

One formula: White paraffin oil, 4 pints; cottonseed oil, 1 pint; a little oil of citronella to give it an agreeable odor. Saturate the cloths in this solution, and pass through a clothes wringer to take out the excess of the oil. Put in envelopes to fit.

The other formula: One quart of gasoline; 8 ounces of whiting, or, what is better, cilica, 8 ounces; oxalic acid, $^1/_8$ of an ounce. Thoroughly mix and immerse the cloths, and hang up out doors to dry. Then place in envelope for mailing.

Dusters made in this way do not soil the hands, and the dust will stick to the cloth instead of flying everywhere. They do not have to be washed out, but simply shaken.

Use the dustless duster the same way as any other duster. It does not injure the finest surface.

A few small ads. in the city and other papers offering to send the dustless duster complete for 25 cents, brought answers, and as they gave satisfaction,

almost every one sent out brought in from two to half a dozen orders, so that in a short time the young lady was doing a splendid business.

PLAN No. 161. COPYING PAD

The following directions for making a copying pad were sent out for 10 cents each by a young man in Chicago, to those remitting that amount to him, in answer to an ad. he inserted in a number of newspapers covering wide territory:

Take white gelatine, 4 ounces; glycerine 20 ounces. Melt the gelatine in water, then add the glycerine, after warming it, and stir until well mixed. Pour into a pan 10x12 inches square and $^1/_2$ inch deep. Write your copy on a sheet of paper with ink made of methyl violet, 1 ounce; water, 7 ounces. Put on the stove and heat until dissolved, stirring often. Add hot water, to replace that which evaporates. When dissolved, add 2 ounces of glycerine. Use a new pen in writing. Lay copy face down on the pad, and let it remain two minutes, then take it off. From 50 to 100 copies may be taken by laying blank paper on the impression, and repeating the operation until as many copies as desired have been made. Clean the pad with a wet sponge as soon as you are through copying, and keep it in a dry place.

He sold several thousand copies of these instructions, at 10 cents each, and most of this, of course, was clear profit.

PLAN No. 162. CLEANING COMPOUND POWDER

A compound that will thoroughly clean clothing,

gloves, carpets, etc., and that can be sold at a profit for 10 cents a package, is something that everyone wants and that anyone can sell.

A young man in Spokane, Washington, who had an excellent formula for a compound of this kind, tried it and found it successful. He put it up with the following ingredients, when making a small amount, and simply increased the amounts of each in proportion as larger quantities were required:

Powdered castile soap, 2 pounds; borax powder, 2 ounces; powdered saltpetre, 4 ounces. Mix thoroughly and put up dry in small envelopes, holding about one teaspoonful each.

Directions for use: Dissolve the contents of package in hot water, leave stand until cool, and apply a small quantity to affected spot, whether of dirt or grease, then clean with a dry cloth. This compound will not explode, but is harmless and safe to use.

Placing a rubber band around either twelve or twenty-four of the packages, he put 500 packages in a small hand-bag, and made a house to house canvass. At each house he would ask the lady if she had any boys or girls. If so, wouldn't they like to make some money or earn a valuable premium? The answer usually was yes, and he would then leave with the lady as many of the packages as she thought her children could sell at 10 cents each, taking her receipt therefor. He would then go on to the next house, and make the same arrangement. In less than half a day he placed the entire 500 packages in homes for sale, and a week later called and collected for those sold, allowing a cash commission of 2 cents a package, or giving some small, inexpensive premium, whichever was preferred. In most cases the mother would have tried the compound herself, and finding it excellent for cleaning goods of all kinds,

she would usually order several more packages.

He also placed considerable quantities of the compound in general stores, where it sold readily, and later made it a mail order proposition by advertising it in a list of good papers.

PLAN No. 163. SEWING LESSONS FOR CHILDREN

Why shouldn't the little girls begin to learn dressmaking as soon as they are able to use a needle and thread? That is what a Seattle lady thought, and she advertises in the daily papers that she will teach dressmaking to children on certain afternoons of each week for 25 cents a lesson.

She already has a large number of pupils, is rapidly enrolling more, and says it is surprising the way the little misses show an interest in the work.

PLAN No. 164. CUCUMBER CULTURE

A young Irishman, who had a wife and two children, was working as a motorman, at $2.00 a day, and his entire future seemed to be limited to that $14 a week, with no holidays or Sundays off, to allow him to get acquainted with his family.

One particular locality on his route impressed him as an ideal place for raising cucumbers to supply the market a few miles away. The prospect looked good to him, but as he had only about $500 in cash, and it would require at least $1,000 to build a greenhouse, the outlook was not especially inviting.

Finally, after many efforts, he succeeded in borrowing $1,000, built a greenhouse, and began the culture of cucumbers. He was apt at the business,

and the first year he made enough to pay back the $1,000, live well, and have a neat little sum saved besides.

Then he borrowed $1,700 more, built another greenhouse, leased more land and at the end of eighteen months was again free from debt.

He increased his acreage, enlarged his greenhouses, and began to grow two crops a year, instead of one.

He now has thirteen acres of ground all under glass, and owns an establishment free from debt, conservatively valued at $50,000.

He made a specialty of cucumber and the marketing of this crop.

PLAN No. 165. PALMISTRY BY MAIL

There are thousands of people who don't believe—or at least pretend they don't—in palmistry as a means of learning what the future has in store, but almost anyone is willing to pay for having the palm of the hand read, either through confidence or curiosity, for "there may be something in it, after all."

Anyway, a lady in a southern city decided it was worth trying, so she sent 50 cents to a New York publisher for a book that revealed about all there is to be known of that science, and made a careful study of this book.

She first obtained an electrotype of a very pretty woman's head,—not her own—and used it on her letter heads, which also bore an assumed but rather fancy name suggestive of the mysterious. She inserted an ad. in several papers, offering to read people's palms for 50 cents each, and received many

answers to this.

She had provided herself with a box of carbon impression paper, and to each person replying she mailed a piece of this about 4x8 inches, with instructions to lay the carbon paper on a sheet of plain white paper, on a hard, smooth surface, such as a table, the carbon side next to the white paper, and press the hand firmly down on the back of the carbon paper, so as to get a clean impression of the palm on the white paper, and, when this was done to send the impression, with 50 cents for a reading.

She was surprised at the large proportion of those who sent the money, but she gave a very good reading of each palm, and no one seemed to be dissatisfied, for she received no complaints. She had previously sent each one a letter, explaining how the ancient philosophers and others had recognized palmistry as a well established science, and this no doubt had impressed the recipients with the fact that it had much value as a means forecasting the future, as well as relating the past.

PLAN No. 166. STARTING A WEEKLY PAPER

The journalistic graveyards are full of monuments to the misdirected energy and zeal of aspiring "newspaper men" who had plenty of enthusiasm but lacked experience, or resourcefulness in the matter of ideas.

The young fellow, however, of whom we are going to speak had ideas and knew how to put them to practical use. He knew very well that a new weekly newspaper that did not have something besides its own merits to amuse and keep up a local interest would be but a short-lived affair in any community,

so he devised a method which he felt sure would create that interest.

He employed a thoroughly competent publicity specialist to write him a small book with a catchy title, which he could offer as a premium with each subscription to his paper. The publicity man turned out an interesting piece of work, which he completed in four days, and for which he charged the prospective young publisher $75.

A printer charged him $250 for 5,000 copies of these little books, and after giving one of each to 500 new subscribers of his paper, he advertised them in his own and other papers, and sold the remainder at 10 cents each. When the supply was exhausted, he had more of the books printed and continued to sell them until he had realized a profit of $2,000 from them.

By this time his weekly newspaper had grown in circulation and advertising value so that it was bringing in a good revenue every year, but he kept on advertising and selling books with good titles, as he found this source of income was well worth the additional effort.

PLAN No. 167. MARKETING A PREPARATION

By a carefully considered plan of furnishing a number of drug stores with free wrappers for their bottles, boxes, combs, brushes, and a host of other articles which every druggist sells, an enterprising young man who had the formula for a preparation of unusual merit, but with no money with which to push the sale of it, succeeded in getting it so thoroughly advertised in his home city that he was soon able to open a handsomely furnished office and

employ a number of assistants to put it up. The preparation was exceptionally good or it would not have brought the "repeat" orders it did.

He began his plan by offering free to each druggist 1,000 circulars setting forth the superior qualities of his preparation, these circulars being the proper size for wrapping all ordinary packages that come from drug stores, that is, about 9x9 inches, but with the printed matter set in a space $5^1/_2$x$7^1/_2$ inches, and at the bottom of each set of circulars the words, "For Sale by," followed by the name of the druggist using the wrappers and having the preparation for sale. The man who owned the formula thus got his preparation well advertised at practically no expense, while the druggists realized much benefit from it.

PLAN No. 168. DEALING IN NUT MEATS

You would hardly think that cracking various kinds of nuts and selling the meats would be much of a business, yet a young lady found that it paid her very well, and brought in many dollars during certain seasons of the year.

She lived in a section of country where nuts of all varieties were very plentiful, and had noticed the waste in shipping unshelled nuts in bulk to the market. She believed it would save considerable in the way of transportation costs if only the meats were shipped. Besides, the difference in the prices would mean a neat profit to anyone doing the work.

Walnuts and hickory nuts were the principal kinds growing in her neighborhood, and these she gathered in great quantities when ripe, removing the outside hulls by pounding them lightly with a stout stick.

Providing herself with a good nut cracker and set

of picks, besides a dozen or so glass jars, she began cracking the nuts, aiming to extract the meats in halves or as large pieces as possible, and placing them in the jars which, when full, she covered tightly with tops so as to exclude air and dampness, and found that in this way they brought the highest prices in the market.

She previously had arranged with a number of bakers and confectioners in the city to take all the nut meats she could supply, and could have sold many more had they been available. To help meet the demand, however, she purchased a few barrels of English walnuts with the shells cracked and packed them as she had done with the others and sold them at profit over their original cost.

PLAN No. 169. STARTED A LUNCHEON CLUB

Living near a large motion picture studio, a young married woman originated what she called a luncheon club for the purpose of serving the members of the company with a dainty luncheon every day at a moderate cost, yet one that yielded a fair profit to herself.

Having obtained the names of the various players from the manager of the studio, she wrote a note to each of them, announcing her plans and inviting them to join her club. The members were to pay a stated price as weekly dues payable in advance, and each could bring a friend at so much per luncheon.

Having a good supply of linen, silver, and all the little accessories for personal comfort, she made her purchases with much care, selecting only such materials as were necessary, and writing out a menu each week, which was varied by many combinations

that prevented any appearance of sameness from day to day. She soon learned the little whims and preferences of each guest, and made it a point to serve each one with what she liked best.

A large number of the girls from the studio joined her club at the very beginning, and each of these members she greeted personally, as a guest, upon her arrival thereby creating a feeling of home-coming that had an excellent effect.

She did all the cooking herself, setting out the lunches on small tables intended to accommodate only two guests at a time, and everything about the place she kept scrupulously neat, clean and inviting.

Her club became very popular and she soon had all the members she could serve during the luncheon hour.

Though she could have charged more, she maintained the reasonable charges established at the beginning and found that the venture paid her a very satisfactory profit.

PLAN No. 170. TWO SISTERS SOLD SPECTACLES

Two sisters, both stenographers in down-town offices, were having their vacation, and being desirous of making some money at the same time they were resting from their regular work, they were induced, through the advice of a well-informed friend, to take up the selling of spectacles, especially after he had assured them that this was a line in which the receipts were practically all profit.

Their friend informed them where they could buy spectacles for about 18 cents a pair, which they could readily sell for $1.00 per pair, and they bought several gross of these, of different magnifying

strength, and various styles of frames, together with a black carrying case and a few testing cards, all of which came with the spectacles. These they set upon a high tripod for making an attractive display of their wares, while one of the girls sat upon a high stool behind the tastefully arranged stock of goods. They had secured a good street location, on the inside of a well shaded sidewalk, and began explaining the merits of their spectacles in a quiet, ladylike way, to all who stopped to inquire about them. Their sales averaged about ten pairs a day, or $8.20 clear profit.

PLAN No. 171. KEEPING BROOD SOWS

"Even $50 to $90 seems a rather big price to pay for a single brood sow," said an old farmer who had made a success of hog raising, "but let me tell you a little story:

"One spring two of my sows farrowed twelve pigs each, and we raised twenty-three of the twenty-four. When they were eight months old, those shoats brought $494.71, but at war-time prices they would have brought a very large sum.

"Suppose a young sow produces seventy-five pigs during her life-time, and she may do even better than that. If this sow were owned by a small farmer, he could raise the pigs for almost nothing, and after he has saved out twelve of the best ones as the foundation of a superior herd, he can sell the remaining sixty-three, when they are eight or ten months old, for enough to make a good-sized payment on his farm, and to pay the cost of raising 500 more pigs, besides.

"The good breeder must be a good feeder, and he

will find that, with ordinary intelligence in the selection and care of his pure-bred stock, he can make more money, and have better meat products, many times over, then he can ever hope for from the ordinary scrub stock.

"If farmers will pay more attention to the raising of pure-bred hogs, they will be better off, and be at much less labor and expense, than from any other branch of farming. Let every farmer encourage his boy to have a few blooded pigs of his own, so that he may have the benefit of all the profit they will bring, and boys will not be so anxious to leave the farm as they are now.

"I've tried it, and I know."

PLAN No. 172. FARM WOMAN'S WAYS OF MAKING MONEY

Unlike most farmers' wives, this woman had plenty of time to devote to various ways of making money, and put a dozen plans into practice, all of which proved productive of good results.

Her first plan was to pick arbutus, which she sent to the store of a friend in the city, fresh each day, where it sold readily for 5 or 10 cents a bunch, nearly all profit.

PLAN No. 173. HOME-MADE CHRISTMAS CANDY

Early in December she made up a lot of nice candy at home, which sold as fast as she could make it for 25 cents a pound, delivered. She made many kinds, and realized a good profit on all of them.

PLAN No. 174. GROWING TOMATO PLANTS

This she found to be a profitable source of income.

She raised the plants from seed, starting to plant about the middle of March, and each 4-cent package of seed produced plants that sold for $4.00.

PLAN No. 175. BAKING FOR BUSY PEOPLE

Most farm women are very busy, and often find it convenient to have some one do their baking, especially when they have company. This lady would either go to different houses, and do the baking for the families, who furnished their own material, for which she charged 35 cents per hour, or would do the baking at home, using her own materials, and sell the bread, cakes and pies she baked, at good prices to those too busy to do their own baking.

PLAN No. 176. TAKING ORDERS FOR DRESS GOODS

She arranged with reliable firms in the city to send her samples of all the new dress goods they received each season, and she showed these to the various women in the neighborhood, taking a great many orders for different patterns, on all of which she was paid a commission that amounted to a considerable sum each year.

PLAN No. 177. TAKING ORDERS FOR EXTRACTS

She makes considerable money each year taking orders for various kinds of extracts, as well as for a popular summer drink, which comes in boxes selling at 25 cents each. The drink is made by dissolving the preparation in water and adding a little sugar. It is a delicious drink, made in a minute.

PLAN No. 178. PICKING CRANBERRIES ON SHARES

As she lives in the country where cranberries grow in great quantities, she earns many dollars each season by picking cranberries on shares, and her share always sells readily at good prices.

PLAN No. 179. GATHERING CHESTNUTS

In the fall of the year she gathers chestnuts, which are plentiful in that vicinity, and these she sells at surprisingly high prices, for everybody wants them.

PLAN No. 180. PLAYS, AND TEACHES PIANO PUPILS

Along with her other accomplishments she is a good pianist. She plays for dances and other gatherings, and gives music lessons to a number of pupils.

PLAN No. 181. PRESERVES FLAGROOT

Flagroot preserves bring high prices in the cities, and she adds many dollars to her income by gathering, preserving and selling this.

PLAN No. 182. MAKING AND SELLING MAY BASKETS

Although May Day “comes but once a year,” she manages to turn this anniversary to good account by making and selling the baskets that are a requisite for its observance.

PLAN No. 183. RAISING AND SELLING POULTRY

But her greatest source of pleasure and profit is poultry raising, her selection and care of birds enabling her to keep only those that produce the most money.

PLAN No. 184. MONEY-MAKING FOR WOMEN

The wife of a farmer living in the middle west has worked out several plans for making money at home, and finds that they all pay her very well.

One plan is to make shades for lamps and electric light globes, of rice and crepe paper, decorating them with water colors, pressed leaves, flowers, holly, etc., and these she sells to her neighbors for 10 cents each as they are very pretty and quite durable, with care.

PLAN No. 185. CROCHET AND OTHER PATTERNS

She designs pretty patterns in crochet edgings, insertions, medallions and initials, and these she sells at six for 50 cents, through ads. in the local and city papers, delivering them by mail in most cases.

PLAN No. 186. HANDKERCHIEFS, COLLARS, CUFFS, ETC.

These she makes with rolled hem and crochet edge, and sells them at 25 cents to $1 each. Pop-corn balls rolled in clear syrup she sells at two for 5 cents, while her potato chips bring 5 cents for a small bag. She makes braided or woven rag rugs, white or in colors, with woven or stenciled borders, and sells them for $1.25 and up, while hand-made place cards, favors, etc., bring $1 per dozen.

PLAN No. 187. ANNUAL SALES IN PARLOR AND HALL

Every year she holds sales in her front room and large hall, and sells pies, cakes, rolls, bread, cookies, doughnuts, plum puddings, fruit cakes, jams, jellies, canned fruits, vegetables, etc., besides her needle-work products, and always clears a handsome sum from these sales. She also takes orders for roast

ducks, geese, turkeys, chickens and squabs, and finds a ready sale for all these from all classes of people, at special prices. Many of these are delivered by parcel post, and prove a good source of revenue.

PLAN No. 188. OPENED A BEAUTY PARLOR

A talented young woman, living in a small western city, wanted to open a beauty parlor, but realizing that she was not familiar with the necessary details of the business, went to a city some distance away and took a course of lessons from a dermatologist in the approved methods of removing wrinkles, moles, birthmarks, freckles, tan, superfluous hair, etc. The course cost her $25.

Before leaving the city, however, she also paid $15 for instructions in manicuring, and $10 for the necessary instruments with which to do this class of work in a satisfactory manner.

Arriving at her home town she sent personal letters to all the prominent women of the place, inviting them to visit the neat and attractively-fitted-up parlors she had opened in her home, and stating her qualifications for doing the work required.

Responses to these letters were numerous, and as the lady did exceptionally good work, her reputation spread rapidly throughout the community, and inside of the first year the net profits she realized from her small-town parlors were greater than those of many similar institutions in the large city. She was both capable and careful in the treatment of her patrons, who became permanent customers and made her plan an unqualified success.

PLAN No. 189. MADE A HAND LAUNDRY PAY

A man who had some experience in a steam laundry in a city moved to a small town of 2,500 inhabitants and established a hand laundry that in a short time became a paying concern.

He had but a few hundred dollars in cash, but found he did not need a great deal. Before leaving the city, he had bought a light collar-and-cuff ironing machine that cost him $50, while $25 more paid for a few little accessories he knew he would need.

He rented a store room some distance from the business center, hired a couple of experienced women, and advertised that he would do better work than the steam laundries of the city could do, and at lower prices, calling particular attention to the fact that the machinery in the big laundries tear the clothes to pieces. He also offered to do mending of men's articles free, and by turning out high-class work from the very first he soon had all the business he could handle.

PLAN No. 190. MAKING INKS AND MUCILAGE

Everybody uses ink, and most people need mucilage at one time or another, so that the making and selling of these necessary articles afforded a man in a small western town a very good money-making opportunity, which he improved with considerable profit.

Books of formulas for making these things can be procured from a number of sources, but the formula for preparing indelible marking ink proved to be one of the most profitable of them all. This ink is made by taking equal parts of green vitriol and cinnabar, powdered as finely as possible, and mixing them

with unboiled linseed oil. When strained through a cloth this makes a fine indelible ink, and he found a good demand for it from laundries, department stores and various other places.

He employed salesmen to canvass near-by towns, and in a few months had established a permanent and profitable business of his own. The ingredients for these articles cost but little, the labels and bottles being the principal items of expense, and the margin was sufficiently large to justify him in paying a liberal commission to agents.

PLAN No. 191. NEWSPAPER CORRESPONDENT

In every town, large or small, there are always news items of more or less interest, mainly local, but often of national importance, and the man or woman who can collect these items, put them in readable shape, and send them to the newspapers in the neighborhood cities, or larger towns, can always derive something of an income from this source. The editor of one of the largest and most influential of western dailies thus relates how he began his newspaper career in this manner:

"I lived in a town of about 1,000 inhabitants, which did not boast of a weekly newspaper, and yet there were many local happenings that would have been of great interest if published in the city paper, which had a rather extensive circulation in the town.

"I wrote to the editor of this paper and offered my services as correspondent from my town. He was glad to secure my services, and offered me a very fair rate of compensation, based upon a certain amount per column.

"I made it a point to write only actual and

dependable items of news, to clothe them in proper and dignified language, with an occasional dash of humor in those cases where it was not only permissible but added to the force and interest of the article, and my letters were all published just as they were written.

"I added other daily newspapers to my list from time to time, and, as these were all sent to me free, I began to absorb the world's news and soon became well informed on current events. Besides, my income grew until I was doing very well indeed, but when I was offered a position as reporter on this paper I accepted the offer, and have risen steadily until I am now managing editor, a position assured to me as long as I care to hold it."

PLAN No. 192. AN EXCHANGE MART

How a man with original ideas established an "exchange mart"—something he had never heard of before—and built up a good business along a novel line, is told by himself as follows:

"Knowing the tendency of people to sell what they have and buy or trade for something they haven't, it occurred to me that I could supply the wants of both classes, and make some money for myself at the same time.

"I rented a store room and bought two blank books, one of which I marked "buyers" and the other one "sellers," and then inserted an ad. in the local paper, asking those who had anything they wanted to sell to come and see me. I ran another ad., to the effect that it would pay those who wanted to buy anything, no matter what, to call upon me.

"Before long I had on hand a large assortment of

articles of every kind that were for sale—books, furniture, tools, musical instruments—almost everything—and each of these I carefully listed in my sellers' book, with the name and address of the owner, and the very lowest price at which it could be sold. A number of people also called to ask for certain articles, and if I did not have them I made a note of what was wanted, in my buyers' book, with the name, address and phone number of the person wishing it, together with the highest price he would pay. Then I advertised for those things to be brought in, and when they came I bought them as cheaply as possible. Next I notified the prospective buyer, who would generally respond promptly and pay the price he had named, or a little more if the article particularly pleased him, and the difference between the seller's lowest price and the buyer's highest price was my profit. And this profit amounted to over $2,000 at the end of the first year."

PLAN No. 193. AUTO AND CARRIAGE POLISH

Of the many thousands of automobiles in use a great many of them have the varnish worn off or scratched, through carelessness and hard usage, and this fact gave an enterprising young Portland man an idea.

He made up a considerable quantity of a fine polish from the following formula: Orange shellac, 30 ounces; Venice turpentine, one ounce; castor oil, one ounce; gum sandarac, one ounce; nigrosine, one ounce; wood alcohol, 9 pints and 6 ounces. These he mixed, and shook them until thoroughly dissolved.

This mixture he put up in pint tin cans, with tight-fitting tops, the same as paint cans, pasted an

attractive label on each can, gave it a fancy name, and was ready for business.

The directions for using were: Remove all dust and dirt with a clean cloth, and apply the dressing to the body of the auto or carriage with a soft camel hair brush, letting it dry thoroughly.

At first he took orders for applying the polish to autos himself, but he later decided he could make more money by employing agents to sell it for him. Each can cost but a trifle, and sold readily for $1, so that, after paying the agents liberal commission, he still had a net profit of over 50 cents per can. Later he began to advertise it throughout the country, and in a few months he had built up a mail order business, that netted him a good living.

PLAN No. 194. SINGING SONGS THROUGH A MEGAPHONE

With a strong, melodious voice, a megaphone, a hand organ in a covered wagon, and a few hundred copies of a popular song, a young man in New York City earned a good living.

This young man, standing up in the front part of the wagon, would stop the horse at a crowded corner, place the megaphone to his mouth and, giving a sign to the man manipulating the hand organ in the covered wagon, would commence to sing one of the latest songs of the day.

When the crowd became interested, as it always did, he would stop singing, offer the copies of the song, words and music, for 10 cents each.

The song sold rapidly, and when the ten minute limit for stopping in one place expired he would start up the horse, move on to another location, probably

in the same block, and repeat the performance.

PLAN No. 195. A SUBSCRIPTION AGENCY

Most magazines, as well as daily and weekly newspapers, are always glad to pay a liberal commission for subscriptions, and some of them offer bonuses besides for good lists of subscribers.

A young man in an inland city of the Pacific Northwest, who had a few hundred dollars, fitted up a neat little down-town office—after securing a subscription agency for a number of leading periodicals, made a list of the same in alphabetical order, with columns for the regular price and the price at which he could supply them. If his commission was $1 on a year's subscriptions, he advertised to send a $4 magazine for $3.60. Where his commission was 80 cents, he deducted 25 cents to his subscribers; if his discount was 40 cents, he would deduct 15 cents from the rate and so on.

He issued an attractive circular showing the various discounts he would allow on each subscription to any of the magazines or other publications listed, and sent these circulars to those answering his ads. in a number of papers covering his territory, and was surprised at the number of subscriptions he received through this system of discounts. While each subscription thus saved 10 per cent or more from regular subscription prices, it still left him a neat profit on each, and as the lists he was thus able to send in were quite large, he received enough in bonuses besides the discounts to himself as agent, to make a very comfortable income.

PLAN No. 196. PUBLISHING PROGRAMS

There is always more or less money to be made in a good advertising plan, and here is one way an elderly newspaper man turned his knowledge of printers ink to good account.

Whenever a church or social organization in his town proposed to give an affair or other form of entertainment he would offer to get out a good program for it free of cost to the parties planning the affair, and this offer was always gladly accepted. Sometimes he even offered a percentage of the proceeds for the privilege, and this too, was acceptable.

He would get the best figures possible from a number of printers, and let the contract to the one who could do good work for the lowest price.

Then he divided the program into small spaces for advertising, which he could easily fill at fair rates, and usually came out with at least 50 per cent profit on the undertaking.

There were so many of these programs to be obtained in his town, that he continued this as a regular business, and made an excellent living out of it.

PLAN No. 197. CHURCH POST CARDS

Any plan that will help to raise money for a church is always gladly welcomed, but a plan that will do this, and at the same time make a fair profit for the originator, must be a “good one.”

A young printer in an eastern city inserted the following ad. in a number of religious papers all over the country:

“To raise money for your church, send us a

photograph of your church or your pastor, and we will send you 500 high-grade post cards, with photo on each card. Sell these at 10 cents each, send us $20, and keep the balance. This is easy, and can be done in a week or less."

The answers came in, the cuts were made from the photos, and the printed cards sent out. The post cards, printed, cost $7, the electro of the photo $3, and the other $10 for each set was net profit.

As from two to ten of these were received each day, one may judge as to the profits of the plan, while hundreds of churches were better off to the extent of $25 to $30 for each 500 cards sold.

PLAN No. 198. MAKING SACHET POWDERS PAYS WOMAN'S COLLEGE EXPENSES

A young lady, who wanted to make some money to help pay for a college course, proceeded to make the money by making sachet powder, her first "batch" amounting to fifty pounds. As a basis for the formula, she used, at various times, powdered starch, fine sawdust, oatmeal, and corn meal, and colored the completed preparation with a small quantity of analine. The powder itself she made as follows:

Wheat starch, 6 parts; orris root, 2 parts. Reduce starch to a very fine powder, and mix well with the orris root, then perfume with attar of lemon, attar of bergamot and attar of cloves, using twice as much of the lemon as of the others. This is really a violet sachet powder, but she gave it a fancy, high-sounding name, which added greatly to its selling qualities.

By advertising it in a small way, she created a demand for it that required help in making up the

powder and filling the orders, and by placing it in a number of drug stores, she succeeded in providing herself with an income far in excess of the cost of a thorough course in the college of her choice.

After her graduation, she continued to make these sachet powders, which were mostly profit, and as they were of unquestioned quality, she received a revenue from their sales that paid all her expenses and gave her a nice bank account besides.

PLAN No. 199. MAKING CARPET CLEANER

A married man, who had endured the horrors of house-cleaning time so often that he knew how that ordeal was dreaded by housewives and husbands alike, felt that he could bring a feeling of peace to thousands of homes, and also bring himself a good income as well, by removing the most formidable of the house-cleaning nightmare, the taking up and cleaning of carpets.

Therefore, having a very fair idea of what would be a good thing to use for the purpose, he proceeded to make a carpet cleaning compound, as follows: Powdered Fullers earth, 4 pounds; common salt, 3 pounds; turpentine, $^1/_2$ pint. These he mixed well, passed through a sieve, and packed in half-pound packages. The entire cost was but a few cents, and the paper boxes and labels added but little to the expense of making it.

He used this preparation by sprinkling over a square yard of the carpet at a time, rubbing it with a stiff, dry scrubbing brush, and going over it a second time with a softer brush, after the dirt was removed. The same powder can be used for several squares, until it is too dirty to use.

He placed an ad. in the local papers, offering to send a free sample of the cleaner to anyone desiring it, and received many requests asking for samples. The assurance that carpets would not have to be taken up to be cleaned, clinched the argument, and as there was enough of the sample to show what it could do, he received calls for more.

Then he employed agents, on a good commission basis, to sell it from house to house, and soon had a demand for it that extended over several states.

PLAN No. 200. THEY PICKED BERRIES

Owing to the failing health of the husband, a man and his wife went camping in the mountains, just about the time berries were ripe and plentiful, and seeing an opportunity for healthful exercise as well as considerable financial profit, they began an extensive berry-picking campaign.

They had taken their bedding, some canvas cots, a stove, and a small tent to use in case of bad weather. They camped near several cool springs, and a mountain stream, from which they caught a great many trout.

Impressed with the immense quantities of berries all around them, they went to the nearest town and bought a supply of jars, cans, and glasses, 200 pounds of sugar and had 1,000 labels printed. Then they began their berry picking, canning, preserving and making jams and jellies of the berries at the same time, and sending them to the city hotels. Their products were carefully packed in apple boxes, and went through in fine shape.

When they figured up their receipts they amounted to $132, while their total expenses were $40, leaving

them a net profit of $92, besides an enjoyable vacation. This proved the possibilities to this work, and this couple continued to put up more berries and received in return for their work a good living.

PLAN No. 201. WROTE A CHURCH HISTORY

A former newspaper man, living in a western town of 10,000 people, became impressed with the importance of a well written church history, and suggested the idea to the pastors of several of the local churches. They approved the plan and promised him their support and co-operation.

Selecting one of the leading churches he interviewed the members, and from them obtained information concerning the history of the organization, past and present, with a complete list of the membership, as well as the names of those who had died since the church's organization. Many interesting personal sketches of the older members were obtained and a review of the early struggles through which the society had passed in its infancy.

Usually a photograph of the church itself, as well as those of the pastor and a number of the more prominent members, were included in the book, while all the auxiliary organizations of the church were given considerable prominence. The book was well printed, and sold readily to the members and friends of the church, at a price which netted the author a good profit.

Having succeeded so well with this church, he proceeded to write histories of other churches in the town, and later extended his work to other communities. It paid him so well that he has made it his business.

PLAN No. 202. A LIQUID GLYCERINE SOAP

He was a $10-a-week drug clerk, in a small Nebraska town, but he had ideas and formulas of much merit, and one of the latter was that for making a superior liquid glycerine soap, as follows:

Best soft soap, $7^1/_2$ ounces; tincture of soap bark, $3^1/_2$ ounces; glycerine, 1 ounce. Put into a vessel and warm gently until dissolved, then add a dash of some selected perfume. Then strain and make up to 12 fluid ounces by adding the necessary amount of warm distilled water. The soap used in compounding this should be the best transparent kind.

A trip to the nearest city revealed the fact that the agents of office buildings, large factories, department stores, etc., were greatly in need of this product, to be used in their sanitary toilet equipment, and would pay good prices for it.

In the course of a week, he took orders for several hundred dollars worth and then placed it on sale in the drug stores, at the same time notifying his patrons and the public in general to that effect.

That was ten years ago, and today that former cheap drug clerk is the owner of one of the best pharmacies in the city.

PLAN No. 203. MAKING AIR PENCILS

Air-pencils used in writing show cards and for other purposes can be made at home very cheaply, and sold at considerably less than the kind one buys at paint stores, and elsewhere, at the same time yielding a good profit, and a young man, who did card-writing for a Minneapolis department store, figured out a way to make them.

At a drug store he bought a white rubber syringe

bulb, No. 3 size, open at one end only, and cut off the neck down to the bulb part. Then he got a small oil can, of the size used for sewing machines, etc., and cut off the screw or thread part of this. He inserted this in the bulb of the syringe, and secured it with a fine wire twisted about the neck of the bulb. He then screwed the nozzle of the oil can into the neck, and the air-pencil was complete.

To fill the air-pencil, he unscrewed the nozzle from the neck of the bulb, pressed the bulb partly together, placed the neck or mouth of the bulb in the lettering mixture, and released his hold on the bulb, thus filling it by suction. Then he inserted the nozzle in the bulb, and was ready to begin lettering.

Whenever he was through using the air-pencil, he rinsed the bulb out thoroughly, with water, as the lettering mixture, if left in, would soon harden and render the pencil useless.

This home-made pencil worked so perfectly that he decided to make a number of them for sale, and did so, getting good price concessions on both bulbs and cans when buying a good many at a time. Having made up about 200 of the air-pencils, he advertised them in a journal devoted to department stores, and sold the entire lot from the first ad. Receiving calls for more, he made them up in larger quantities, and, offering them at about three-fourths the regular prices, sold several thousand of them at a very good profit.

PLAN No. 204. PROFIT FROM AN AIR-PENCIL

A young card writer in Los Angeles, who had bought an air-pencil for doing his work, after becoming thoroughly familiar with its use, concluded

to take orders for various kinds of work from the city merchants, and follow this as a special line.

Aside from lettering show cards and the like, he also did considerable work in objects, done in relief with leaves, flowers, scrolls and other designs. He also did considerable work in home decorations, such as vases, flower pots, panels, picture frames, and other made designs, such as “Merry Christmas,” “Home, Sweet Home,” “Happy New Year,” and other placards, for which he found a ready sale.

The materials used were alabastine, bronze, flitters, diamond dust and analine coloring powders; white and colored cardboard of all sizes; white wood, glass, and metal ware, used to some extent for expensive pieces of work. He utilized many new and original ideas in his work, and showed remarkable taste and talent in execution.

An idea of his profits may be gained from the statement that plain lettered card signs that cost him from 1 to 8 cents to produce, he sold for 15 to 20 cents, while those more elaborately made with diamond dust, flitters, gold and silver lettering, costing 2 to 6 cents each, brought him from 20 to 50 cents each. Mottoes, finely executed, sold for 75 cents to $1 each. In many cases he gave instructions in lettering and sold outfits for doing the work at $2 to $3 each, and made considerable from that source.

For making his lettering waterproof, he used two parts alabastine, 1 part flour, 1 part linseed oil, stirring them well, then quickly adding cold water. For the work thus treated he made an additional charge that paid its cost many times over.

PLAN No. 205. A HOME-MADE WATER FILTER

An old gentleman living in a western town of 5,000 people, unable to do hard work, but obliged to earn his own living, hit upon a plan that brought him a small income upon which he could live with comfort. His plan was to make a simple water filter; and, as the local water supply was not of the best, he sold all he could make.

Taking a small wooden pail, not painted on the inside, he bored a hole in the bottom and covered the bottom of the pail with flannel. Then he put in a layer of coarsely powdered charcoal to a depth of 2 inches, then a 8-inch layer of coarse sand, and on top of this a 8-inch layer of coarse powdered limestone. Setting the pail over a jar, he allowed the water from the faucet to drip slowly into the pail, where it was thoroughly filtered before going into the jar, and was therefore perfectly safe for drinking.

This first filter he sold for 75 cents, and with the profits on this sale he bought several more of the pails and a quantity of the charcoal, with a few yards of flannel, and made these up as before. The people of his town were glad to get so good a filter for that price and he supplied several hundred families, and his net profits were sufficient to maintain him. He is now making filters for other towns.

PLAN No. 206. CONDENSED MILK

A poor widow, living in a small southern city, was practically dependent upon a splendid cow, which gave more milk than she and her few customers could use.

She therefore conceived the idea of converting this surplus into condensed milk that would keep for an indefinite period, and bring good prices when

shipped to city customers by parcel post.

Taking 10,000 parts of fresh milk, 50 parts of white sugar, and 2 parts of carbonate of soda, she placed all in a porcelain vessel, and with constant stirring evaporated by heat of vapor bath at 140 to 160 degrees to the consistence of a thick paste.

Placing this paste in small glass jars, she sold it readily at fair prices, and realized a good profit from its sale. One pint of this paste is equal to ten pints of fresh milk, and being a distinctively country product of assured purity and cleanliness brought a good living to this woman.

PLAN No. 207. A NEWSPAPER MAN'S PLAN

He published a weekly newspaper in a field that was covered by one of the papers of a large city about thirty miles away, and he was very desirous of showing a special service to the people in his community. He made it a point to find out the people who came into the city, and to ascertain this early. So each morning he went to the Water Department of his city and obtained the names and addresses of parties who had water turned on, and from this information, made a statement in his paper concerning each person's arrival. When the paper was published, he sent a boy around to get the newcomer's subscription. When there was a refusal, the boy was instructed to say: "Well, the editor desired you to have a copy anyway, so I will leave this copy." The new arrival, upon reading over the paper, found his name mentioned, and on his next call the boy easily secured a subscriber.

This is an excellent way for a person running a small paper close to a large city to build up his

subscription list. This man succeeded to the extent of seven or eight hundred dollars a year.

PLAN No. 208. PERFUMED BAGS FOR THE BATH

The delights of the bath are increased 100 per cent by the use of a perfumed bath bag, which a druggist friend made up as follows:

Fine oatmeal, 4 pounds; bran, 1 pound; powdered castile soap, 1 pound; powdered orris, $^1/_2$ pound. Mix well together and tie up in muslin bags, of any desired tint, and fasten with ribbon or silk. Each bag contained about one pound of the mixture, and sold readily at 25 cents each. Anyone can make considerable money by making and selling these.

PLAN No. 209. VINEGAR MADE PROM STRAWBERRIES

Thoroughly mash a quantity of ripe strawberries into a paste, and let stand for 24 hours. Then press out the juice and let it stand for a few days, to ferment and to allow the slimy contents to separate. Then filter the juice and put into clean, well-closed bottles, and put in a cool place, where it will keep a long time. Added to good cider vinegar, when ready to use, it makes an excellent flavoring.

It was cheap and easy to make, and profitable to sell.

PLAN No. 210. CANNED FRUIT AND VEGETABLES

While Mr. Farmer devoted his time and attention

to the larger operations of general farming, his wife made a profitable side issue of such subsidiary lines as the orchard, the garden and the poultry yard, in all of which the products were of the highest order.

Buying Mason jars in large quantities, at a practically wholesale price, she utilized these in the canning of fruits, berries and vegetables, as they keep longer and look better when put up in this way, and bring much higher prices.

While her specialty was tomatoes, she also canned peas, beans, carrots, beets, turnips, parsnips, sweet potatoes, squash, pumpkins, sweet corn, shredded cabbage, brussels sprouts, and many other products of that kind, and they retained their original flavor and appearance throughout the entire year, if kept beyond the winter season. Of fruits, she canned peaches, pears, apples, cherries, blueberries, blackberries, raspberries and strawberries, put up in their syrup for making pies and puddings as well as for general table uses.

Hundreds of city people gladly purchased these canned fruits and vegetables, and though she sold them at prices lower those asked for inferior grades in the market, she still netted a good profit from all her products.

PLAN No. 211. PICKLES AND RELISHES PRESERVED

She made immense quantities of the most delicious pickles and relishes. She made these from the very best recipes she could procure anywhere, and the product was so excellent that she was proud to have it known that it was due to her own skill in making everything just right.

The pickles and relishes she made of green tomatoes, and the profit on them even at her reasonable prices were great. Pickled cucumbers, cabbage, celery, onions, cauliflower, beets, beans, and a score of other garden growths, took up a large portion of her time and brought large returns, while chow-chow, pickalillie, and other appetizing relishes were in demand.

Like the famous "Pin-Money Pickles" of a southern woman who started on nothing, Snider's Catsup, which was launched in a small way by a wife, and Heinz's fifty-seven varieties, this farm lady's articles were popular because she turned out only good products.

PLAN No. 212. HER POULTRY PLAN

An Ohio farm woman had learned, through experience, that there is no profit in scrubby poultry; that these birds eat as much as the high grade, and bring only the lowest prices in the market. She therefore weeded out the mongrels and substituted pure-breds. Instead of selling common eggs at the corner grocery for 20 cents a dozen, she was soon selling settings at $2.50 to $6, and had a fine lot of high-grade cockerels which not only matured early but showed greater size and bulk, and brought more per pound than the common ones. She also dealt in the best strains of ducks, geese, turkeys, etc., and these were very productive of cash returns, also.

A few ads. in farm and poultry journals brought many orders for pure-bred poultry and eggs.

PLAN No. 213. SELLS FLOWERS AND GARDEN

SEEDS

This enterprising woman would never plant a seed of any kind except the very choicest variety, and the result was seen in the superior products of her orchard and garden. Not content with even this showing, she was continually experimenting in the cross-breeding of the most select specimens of plants, flowers, vegetables and fruits. For instance, through these methods she developed a climbing tomato vine. This vine was a thing of beauty and a wonderful producer, and she received big prices for a few seeds, as everyone who saw it was anxious to have some of the same kind in their own garden. Her sales from garden seeds alone often brought her as high as $500 in a single year.

PLAN No. 214. BEE-KEEPING

One would think this farmer's wife would be busy enough without adding to her long list of home industries, but she realized that real honey is a luxury, for which people will pay good prices, so she installed a few colonies of bees and, with her usual thoroughness in all matters pertaining to the productiveness of the farm, she gave them that degree of care which is necessary in order to secure the best results. That orchard and garden proved a veritable paradise for the bees, and they well repaid their favorable surroundings with a yield of choice honey that not only supplied all the family needs but furnished several hundred pounds for sale at high prices every fall. As the colonies increased, so did the revenue they brought, and as but little labor or expense was involved in their keep, they returned very large profits.

PLAN No. 215. PICKLED PLUMS

Having a number of plum trees in the orchard that were loaded with fruit, she sold 800 or 1,000 pounds of them at good prices, and still having more of them than she could use, she pickled them, as follows: To every 7 pounds of plums, add 4 pounds of sugar and 2 ounces each of cinnamon stick and cloves, 1 quart vinegar and a little mace. Scald the vinegar and sugar together and pour over the plums. When the jar is full, scald all together, and they are then ready for use. One taste of these always made people want more.

PLAN No. 216. HOME-MADE FIRELESS COOKERS

Only those who have used fireless cookers can have any adequate conception of their practical value, or realize the manifold advantages their use affords. But fireless cookers, as they are made and sold today, are prohibitive in price to many people, costing, as they do, from $12 to $30 each, according to the number of "burners," and thousands who would be glad to have them are obliged to go without.

It was an intimate knowledge of this condition that prompted an enterprising citizen in California to supply these people with fireless cookers which he could make in his own woodshed, and supply them at less than one-third the prices asked for the "boughten" ones. Anyway, he decided to make a few and see what could be done in the matter of sales.

He purchased a quantity of lumber one inch thick, and this he cut up into sufficient lengths to make wooden boxes 18 inches wide, 16 inches deep, and 18, 30 and 40 inches in length, with a hinged cover

of the same materials as the sides, ends and bottoms of the boxes. The 18-inch boxes were for one burner, the 30-inch for two burners, and the 40-inch for 3-burner cookers.

He placed a thick layer of excelsior all around the inside of the box, holding this in place with burlap, long, slender nails being driven through the burlap and excelsior into the wood of the sides and ends, while a thick cushion of burlap and excelsior was made to fit over the tops of the kettles, and cushions of the same kind, made in circular form, to fit closely around each kettle as it set in the box. The bottom of the box was also fitted with a thick cushion of the same material. On this bottom cushion was laid a thick piece of soapstone, upon which the kettles rested, and this, when heated on top of the stove or range upon which the food in the kettles had been partially cooked, completed the cooking and retained the heat for an indefinite period. The air spaces left in the corners next to the circular cushions, he filled with excelsior.

He made arrangements with a wholesale hardware house for a special price on granite kettles of the proper size, in lots of 100 or more, so as to avoid the misfits that would result when housewives attempted to fit their own kettles into the circular spaces made to hold them, and he was thus able to make them uniform in size.

In order to first test the merits of his product, he made one of the 3-burner cookers and gave it a thorough trial in his own home. The demonstration was most convincing, and proved that the fireless cooker which he could turn out at a cost of not to exceed $3, was just as practical and effective as those made by the large manufacturers.

The 1-burner cookers, which cost him $2 to make,

he decided to sell for $5; the 2-burner kind, costing him $2.50, at $7, and the 3-burner ones, that cost him $3, including the kettles, at $8.

He began by thoroughly canvassing his own town, and was surprised at the large number of orders received. The income from this work afforded him a very good living.

PLAN No. 217. CIVIL SERVICE AS A CAREER

Scope of the Civil Service Law

For the following valuable information we are indebted to the Federal Board for Vocational Education.

This article was prepared by Herbert E. Morgan, of the United States Civil Service Commission, at the request of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

The adoption of a career is always a matter of great importance. To the discharged soldier, sailor, or marine who, through force of circumstances, must "begin again," the particular place he will fill in the great army of the world's workers is probably his chief concern. The purpose of this little pamphlet is to inform, in a general way, the men who made sacrifices in order that the world might remain a decent place to live in, as to what the United States Government has to offer in the civil branch in the way of employment for those who seek it, and the conditions under which it may be obtained.

The Government a Large Employer

Our government is the largest employer in the

world. The limits of its activities are those of the field of human endeavor. Before the United States entered the war nearly 500,000 persons were employed in the Federal civil service, about 300,000 of whom occupied positions classified under the civil-service law and rules. Of course the service was greatly expanded to meet the demands of war conditions. In a normal year about 40,000 appointments are made in the classified civil service. About one-tenth of the positions in the Federal civil service are in Washington, D. C., the balance being distributed throughout the country.

On January 16, 1883, Congress passed what is known as the civil service law. This act created the United States Civil Service Commission. The fundamental purpose of the law is to establish in the parts of the service covered by its provisions a merit system whereby selection for appointment shall be made upon the basis of demonstrated relative fitness without regard to political, religious, or other such considerations. To carry out this purpose a plan of competitive examinations is prescribed.

The term “classified service” indicates the parts of the service within the provisions of the civil service law and rules requiring appointments therein to be made upon examination and certification by the Civil Service Commission unless especially excepted from competition; the term “unclassified service” indicates the parts of the service which are not within those provisions and therefore in which appointments may be made without examination and certification by the commission. Under the law, positions of mere unskilled laborer and positions to which appointment is made by the President, subject to confirmation by the Senate, are in the unclassified service. Unskilled laborers in all branches of the service in some

localities and in certain branches of the service in all localities are filled through competitive examination under regulations promulgated by the President.

Included in the classified service are positions in or under the departments and offices at Washington, D. C., the Custodian Service, the Customs Service, the Engineer Department at large, the Freedman's Hospital, the Forest Service, the Government Printing Office, the Immigration Service, the Indian Irrigation and Allotment Service, the Indian Service, the Internal Revenue Service, the Land Office Service, the Lighthouse Service, the Mint and Assay Service, the National Military Park Service, the Navy Yard Service, the Ordnance Department at large, the Panama Canal Service, the Post Office Service, the Public Health Service, the Quartermaster Corps, the Reclamation Service, the Rural Delivery Service, the Railway Mail Service, St. Elizabeths Hospital, the Steamboat Inspection Service, the Subtreasury Service, the United States Penitentiary Service; and the position of fourth-class postmaster, except in Alaska, Canal Zone, Guam, Hawaii, Philippine Islands, Porto Rico and Samoa.

Character of Examinations

Where, in the opinion of the Civil Service Commission, such an examination is practicable and desirable, applicants are assembled in examination rooms in certain specified places, conveniently located throughout the country, for written scholastic tests. In many cases, however, the competitors are not required to assemble for a written examination, but are graded upon their training and experience and, where necessary, upon their physical condition. These so-called nonassembled examinations are given for two

general classes of positions, viz: (1) Mechanical trades and similar positions, and (2) high-grade technical, professional, and scientific positions, and administrative positions which can not adequately be filled by promotion and for which the Government requires men whose fitness is demonstrated in a record of successful experience. In such examinations, competitors are rated upon the sworn statements in their applications and upon corroborative evidence gathered by the Civil Service Commission. In some examinations of this character, these, published writings of the applicant, and the like are considered. Applicants for positions of mere unskilled laborer are given a physical examination only.

In all cases the examinations are practical and are designed to test the qualifications of the applicant for the particular kind of work for which he applies. The commission's system of rating insures a fair and impartial judgment of the relative merits of applicants.

Number and Diversity of Examinations Held

The vast range of the activities of the Government requires employees in many parts of the country and with widely differing qualifications. Examinations are held by the Civil Service Commission for all kinds and classes of positions, from mere unskilled laborer to the highest grades of technical, professional, and scientific positions. It is not practicable to name in this publication all of the hundreds of occupations which exist in the Federal civil service, but the list of positions for which examinations have recently been held by the Civil Service Commission will convey a fair idea of the broad scope of the opportunities offered by the civil

service.

Definite Information Concerning Pending Examinations

There is seldom a time when examinations of less than 100 different kinds are open. Definite information as to the kinds, dates, and places of current examinations may be obtained from any representative of the Civil Service Commission or by writing to "The United States Civil Service Commission, Washington, D. C." In any request for information made by mail the inquirer should state in general terms his desire and qualifications in order that his inquiry may be answered intelligently.

The organization of the Civil Service Commission consists of approximately 3,000 local boards of examiners in every part of the country, reporting to district secretaries in 12 civil-service districts, all under the supervision and direction of the commission at Washington.

The local boards of examiners have their offices in the post office or customhouse in each city in the country that has house-to-house delivery of mail and in some smaller cities that do not have such delivery.

The district secretaries are located as follows:

Secretary first United States civil service district, customhouse, Boston, Mass.

Secretary second United States civil service district, customhouse, New York, N. Y.

Secretary third United States civil service district, post office, Philadelphia, Pa.

Secretary fourth United States civil service district, Sixth and G Streets NW., Washington, D. C.

Secretary fifth United States civil service district, post office, Atlanta, Ga.

Secretary sixth United States civil service district,

post office, Cincinnati, Ohio.

Secretary seventh United States civil service district, post office, Chicago, Ill.

Secretary eighth United States civil service district, post office, St. Paul, Minn.

Secretary ninth United States civil service district, old customhouse, St. Louis, Mo.

Secretary tenth United States civil service district, customhouse, New Orleans, La.

Secretary eleventh United States civil service district, post office, Seattle, Wash.

Secretary twelfth United States civil service district, post office, San Francisco, Calif.

All district and local boards of examiners are supplied currently with announcements of examinations and are fully informed concerning civil service matters generally. Discharged soldiers, sailors, and marines, as well as all other citizens, are advised to keep in touch with the boards of examiners in their respective communities in order that they may be informed as to opportunities for employment. Those who live in communities in which the Civil Service Commission is not represented may obtain information at any time by writing to the nearest district secretary or to the commission at Washington.

Mechanical Trades Positions

Local boards of examiners for certain branches of the service receive applications for some positions, principally mechanical trades and similar positions and positions of unskilled laborer. Local boards of this class are located at navy yards and naval stations, at ordnance plants, at district headquarters of the Engineer Department of the Army, at headquarters of lighthouse districts, at projects of the

Indian Irrigation and Allotment Service, and at projects of the Reclamation Service. Information relative to position which are open in any particular establishment may be obtained by communicating with the secretary of the local board of civil service examiners at the establishment. The locations of the various establishments of the services named will be furnished upon request by any district secretary or by the commission at Washington.

Physical Requirements

The civil service regulations specify certain physical defects which will debar from all examinations and other defects which will debar from certain examinations. These regulations are based upon the requirements of the service as established by the several departmental heads.

The general regulations provide that the following defects will debar persons from any examination: Insanity, tuberculosis; paralysis; epilepsy; seriously defective sight of both eyes which can not be corrected by glasses; loss of both arms or both legs; loss of arm and leg; badly crippled or deformed hands, arms, feet or legs; uncompensated valvular disease of the heart; locomotor ataxia; cancer; Bright's disease; diabetes. Defective hearing will also debar from examination if the duties of the position are such that the defective hearing of the employee would be likely to result in injury to himself or his fellow workers or would otherwise impair his efficiency. Other physical defects may debar persons from certain examinations. Announcements of examinations specify the additional physical requirements if any are provided.

On April 16, 1919, the President authorized, on the recommendation of the Civil Service Commission, an

amendment to the civil-service rules which permits the Commission to exempt from physical requirements established for any position a disabled and honorably discharged soldier, sailor, or marine upon the certification of the Federal Board for Vocational Education that he has been specially trained for and has passed a practical test demonstrating his physical ability to perform the duties of the class of positions in which employment is sought.

Preference in Appointment

An act of Congress, approved March 3, 1919, provides as follows:

"That hereafter in making appointments to clerical and other positions in the executive departments and independent governmental establishments preference shall be given to honorably discharged soldiers, sailors, and marines, and widows of such, if they are qualified to hold such positions."

The foregoing provision applies only to appointments in the departmental service at Washington, D. C.

Section 1754 of the Revised Statutes provides that persons honorably discharged from the military or naval service *by reason of disability resulting from wounds or sickness incurred in the line of duty* shall be preferred for appointments to the civil offices, provided they are found to possess the business capacity necessary for the proper discharge of the duties of such offices.

Section 1754 applies to all branches of the service, in Washington, D. C., and in the country at large. It does not authorize the waiving of physical requirements.

Persons who are entitled to preference under the statutes must qualify for appointment by passing the

usual entrance examinations.

Restoration to Eligible Registers

An act of Congress, approved March 1, 1919, provides as follows:

"That the period of time during which soldiers, sailors, and marines, both enlisted and drafted men, who, prior to entering the service of their country, had a civil service status, and whose names appear upon the eligible list of the Civil Service Commission, shall not be counted against them in the determination of their eligibility for appointment under the law, rules and regulations of the Civil Service Commission now in effect, and at the time of demobilization their civil service status shall be the same as when they entered the service."

Reinstatement in Civil Service of Men Who Left to Bear Arms

An Executive order of July 18, 1918, provides as follows:

"A person leaving the classified civil service to engage in the military or naval service of the Government during the present war with Germany and who has been honorably discharged, may be reinstated in the civil service at any time within five years after his discharge, provided that at the time of reinstatement he has the required fitness to perform the duties of the position to which reinstatement is sought."

An act of Congress, approved February 25, 1919, provides as follows:

"That all former Government employees who have been drafted or enlisted in the military service of the United States in the war with Germany shall be reinstated on application to their former positions, if

they have received an honorable discharge and are qualified to perform the duties of the position."

Some Men Who Have Made Good

In the Government service, as in private employ, unusual ability is rewarded by more rapid promotion. As indicating that opportunity is not lacking in Government offices for those who possess brains and ambition, a few examples, selected from a large number of similar cases, may be mentioned:

In the Department of Labor an employee now receiving a salary of $3,000 a year entered the Government service as a compositor in the Government Printing Office at $3.20 a day. Another, in the same department and receiving the same salary, started as a clerk at $1,000. An assistant to the Secretary of Labor, who is paid $5,000 a year, entered the service in 1906 as a stenographer at $900. This employee, as well as one who was appointed at $1,000 and who now receives $4,000, studied law while in the service, attending the evening classes held by one of the several universities in Washington. A former Chinese inspector, appointed at $1,440 in 1903, also studied law and by successive promotions has attained a salary of $4,500 a year.

The present Solicitor for the Department of State entered that department as a law clerk at $1,600 a year in 1909. His present salary is $5,000 a year.

The Department of the Interior pays $4,000 a year to one of its employees who entered the service as a copyist at $900.

A messenger boy in the Post Office Department, appointed in 1903, now holds a position in another department which pays $5,000 a year.

An employee of the Department of Agriculture

now receiving $4,000 a year started in 1904 as a clerk-stenographer-typist at $1,000. In the same department there is an instance of a rise from assistant messenger at $480 a year in 1906 to assistant to the Secretary at $3,300 a year at the present time.

In the Treasury Department are two employees who rose, one from $720 and the other from $1,800 a year, to positions in that department paying $6,000 a year.

The Interstate Commerce Commission has afforded the opportunity to a number of civil-service employees to secure advancement to positions paying $5,000 a year.

These instances could be multiplied many times. No attempt has been made to cover all the departments and bureaus; the selections have been made from large numbers of equally interesting cases. Aside from the excellent opportunities for advancement in the Government service, many men have received training in Government establishments which has qualified them to hold positions paying as high as $12,000 a year, and even more, in private employ.

It is human to measure success by standards of money, but, of course, pecuniary reward represents only a certain kind of success. Achievement, work well done, whatever it may be, is success. The civil service of the United States offers a wide field of opportunity where individual tastes may be developed and where real constructive work may be done. Its offices, laboratories, and workshops are equipped with modern appliances. Its libraries receive currently the books and periodicals needed by the worker in his effort to keep abreast of his fellows. Its working hours and vacation periods

permit the worker to live while he works, and he works better in consequence. The civil service has much to commend it to the discharged soldier, sailor, or marine, or any other citizen who seeks work.

Partial List of Examinations Held for the Federal Civil Service

The following list of positions for which examinations have recently been held by the Civil Service Commission will serve to illustrate the great number and variety of the occupations existing in the Federal civil service. No attempt has been made to give a complete list, for it would not be feasible to do so in this publication. Practically every occupation is represented in the offices, laboratories, and workshops of the Government.

It should not be understood that examinations are now open for all of the positions included in the list. Definite information relative to current examinations may be obtained from the secretary of the local board of civil-service examiners at the post office or customhouse in any of 3,000 cities or from the United States Civil Service Commission, Washington, D. C.

The entrance salaries named are those which were offered when the examinations were announced. Higher or lower salaries may be offered when the examinations are announced again.

Position	Usual entrance salary
Accountant, Federal Trade Commission—	
Grade I	$2,500-$3,600 a year.

Grade II	$1,800-$2,500 a year.
Accounting, commission-house, assistant in	$1,800-$2,400 a year.
Accounting and office management, investigator in	$2,000-$3,000 a year.
Accounting and statistical clerk	$1,200-$1,620 a year.
Accounts, examiner of, Interstate Commerce Commission—	
Grade I	$2,220-$3,000 a year.
Grade II	$1,860-$2,100 a year.
Actuary	$2,500-$3,500 a year.
Adjuster, sewing-machine	$1,200 a year.
Aeronautical draftsman	$4-$5.04 a day.
Aeronautical engineer	$3,600 a year.
Aeronautical engineering draftsman	$1,500-$2,000 a year.
Aeronautical expert aid	$13 a day.
Aeronautical mechanical draftsman	$1,200-$1,800 a year.
Agent, special, qualified as Latin-American trade expert	$3,000 a year.
Statistical	$1,400 a year.
Agricultural assistant	$1,400-$1,600 a year.
Agricultural economics, assistant in	$1,800-$2,280 a year.
Agricultural education—	
Assistant in	$2,000-$3,000 a year.
Special agent for	$3,000-$3,500 a year.
Specialist in	$3,000 a year.
Agricultural inspector (Philippine)	$1,200-$1,400 a year.

Agricultural technology, laboratory aid in	$720-$1,080 a year.
Agriculture—	
Dry-land, assistant in	$1,200-$2,000 a year.
Scientific and practical, expert in	$2,500 a year.
Agriculturist, assistant	$2,040-$2,520 a year.
Agriculturist in extension work	$1,800-$2,750 a year.
Agriculturist and field agent	$2,000-$3,000 a year.
Agronomy, scientific assistant in	$1,200-$1,800 a year.
Agrostologist, assistant	$1,600-$2,040 a year.
Aid—	
Aeronautical, expert	$13 a day.
Bureau of Standards	$600-$720 a year.
Chemist's	$720-$1,200 a year.
Coast and Geodetic Survey	$1,000-$1,300 a year.
Division of Plants, National Museum	$1,200 a year.
Electrical and mechanical, expert	$6 a day.
Senior	$12 a day.
Electrical, expert	$4-$6 a day.
Field station	$720-$1,000 a year.
Geologic	$1,000-$1,800 a year.
Laboratory, agricultural technology	$720-$1,080 a year.
Lighthouse Service	$1,020 a year.
Pharmacological	$900-$1,200 a year.
Qualified in chemistry	$600-$840 a year.
Engineering	$600-$840 a year.
Radio work	$600 a year.
Radio, expert	$9.04 a day.

Topographic	$480-$900 a year.
Analyst—	
Valuation—	
Grade I	$3,600-$5,000 a year.
Grade II	$1,800-$3,300 a year.
Anatomist	$1,600 a year.
Anesthetist	$1,200 a year.
Animal husbandry, scientific assistant in	$1,200-$1,800 a year.
Apicultural assistant	$1,400-$1,600 a year.
Apple insect investigations, specialist in	$1,800 a year.
Appraiser, land—	
Junior	$900-$1,500 a year.
Senior	$1,800-$2,700 a year.
Apprentice—	
Draftsman	$480-$720 a year.
Draftsman and photographer	$600-$900 a year.
Electrical engineer	$720-$960 a year.
Fish-culturist	$600-$960 a year.
Laboratory	$480-660 a year.
Map printer, assistant	$360 a year.
Map engraver	$1.25 a day.
Plate cleaner	$600 a year.
Plate cleaner, transferrer and engraver	$600 a year.
Shop	$720 a year.
Arboriculture, dry-land, assistant in	$900-$1,500 a year.
Architect—	
Barn	$1,800-$2,400 a year.
Junior	$1,200-$1,680 a year.

Landscape	$2,400 a year.
Senior	$1,800-$2,700 a year.
Artist, botanical	$900 a year.
Assayer, assistant	$1,200 a year.
Assistant—	
Assay Laboratory	$1,200 a year.
Bureau of Fisheries	$2,400 a year.
Electrical	$1,200 a year.
Research	$1,200-$1,800 a year.
Technical	$3.50 a day.
Test	$6.48 a day.
Assistant chief, Office of Markets and Rural Organization	$4,000 a year.
Assistants, research and special agents	$1,200-$1,680 a year.
Attendant—	
Hospital	$180-$360 a year.[1]
Laboratory	$660 a year.
Attorney, Interstate Commerce Commission	$1,200-$1,800 a year.
Bacteriologist	$1,440-$2,500 a year.
Dairy	$1,800-$2,220 a year.
Junior	$1,440-$1,740 a year.
Philippine Service	$2,000-$2,250 a year.
Sanitary	$1,500 a year.
Baker, Indian Service	$480-$600 a year.
Band leader and instructor	$720-$1,000 a year.
Bee handler	$1,000 a year.
Biochemist, assistant	$2,000 a year.
Biological assistant	$1,200-$1,800 a year.
Biologist, assistant	$3,000 a year.

Qualified in economic ornithology	$1,200-$1,400 a year.
Systematic botany	$1,400 a year.
Blacksmith	$1,080-$1,320 a year.
Boilermaker, master	$6.72 a day.
Boilers, local and assistant inspector of	$2,100-$2,500 a year.
Bookbinder	60 cents an hour.
Bookbinder and accountant	$1,000-$1,500 a year.
Bookkeeper	$900-$1,200 a year.
Bookkeeper	$1,800 a year.
Bookkeeper and accountant, radio assistant	$1,200 a year.
Bookkeeper-typewriter	$900-$1,200 a year.
Botanist	$1,700 a year.
Brickmaker, foreman	$1,200 a year.
Builder, automobile body	$1,000 a year.
Business administration, clerk qualified in	$1,200-$1,500 a year.
Business manager, assistant to	$1,800 a year.
Cabinetmaker	$900-$1,500 a year.
Cadet officer	$600-$720 a year.[1]
Car equipment, inspector of	$1,800-$3,600 a year.
Carpenter	$1,200 a year.
Qualified as band leader, Indian Service	$720-$900 a year.
Carrier	
Letter	$1,000 a year.
Qualified as chauffeur	$1,000 a year.
Cement worker	$3.50 a day.
Ceramics, laboratory assistant in	$900-$1,200 a year.

Cereal disease investigations, pathologist in	$2,100-$2,520 a year.
Chauffeur, Post Office Service	$780-$1,000 a year.
Chauffeur-mechanic	$1,000-$1,200 a year.
Checker	$900 a year.
Navy yard	$3.52-$4 a day.
Cheesemaker	$1,200-$1,440 a year.
Chemist—	
Alloy, assistant	$1,620 a year.
Analytical and mineralogist, assistant	$1,800-$2,400 a year.
Assistant—	
Grade I	$1,800-$2,500 a year.
Grade II	$1,350-$1,500 a year.
Associate, analytical	$2,500 a year.
Ceramic, associate	$2,000-$2,500 a year.
Ceramic, junior	$1,200-$1,500 a year.
Engineer Department at large, assistant	$1,000 a year.
Explosives	$3,300 a year.
Fuels, junior	$1,020-$1,200 a year.
Gas, junior	$1,200-$1,500 a year.
Inorganic	$1,400-$2,000 a year.
Junior	$1,200-$1,440 a year.
Qualified in fuels	$1,020 a year.
Qualified in tars	$1,500 a year.
Junior in radioactivity	$1,200-$1,500 a year.
Laboratory and junior	$3.28-$5.04 a day.
Leather, Philippine Service	$1,600 a year.
Metallurgical	$1,800-$2,500 a year.
Ordnance Department at large, assistant	$1,350-$1,500 a year.

Organic	$1,800-$2,250 a year.
Assistant	$1,800 a year.
Organic and physical	$1,800-$2,500 a year.
Petroleum, assistant	$1,800 a year.
Pharmaceutical, research	$3,000 a year.
Physiological	$1,800-$2,220 a year.
Physiological and organic	$1,800-$2,500 a year.
Chemistry, agricultural, biological and physiological, specialist in	$1,500-$1,800 a year.
Classification, assistant to officer in charge of	$2,400 a year.
Clerk	$900-$1,200 a year.
Accountant, qualified as	$1,000-$1,800 a year.
Accounting and statistical	$1,200-$1,620 a year.
Chief, Bureau of Education	$2,000 a year.
Editorial	$1,200-$1,600 a year.
Express rate	$1,200-$1,500 a year.
Forest and field	$1,100-$1,200 a year.
Freight rate	$1,200-$1,500 a year.
General	$900-$1,200 a year.
Index and catalogue	$1,000-$1,200 a year.
Land law	$900-$1,600 a year.
Law	$1,000-$1,800 a year.
Law, stenographer and typewriter	$1,000-$1,740 a year.
Minor	$720-$900 a year.
Panama Canal Service	$1,200-$1,500 a year.
Passenger rate	$1,200-$1,500 a year.
Postal, Panama Canal Service	$1,200-$1,500 a year.
Qualified as accountant	$1,000-$1,800 a year.

Qualified as business administration	$1,200-$1,500 a year.
Qualified as free-hand artist	$1,000 a year.
Qualified in modern languages	$900-$1,200 a year.
Qualified in statistics or accounting—	
Grade I	$1,000-$1,400 a year.
Grade II	$1,400-$1,800 a year.
Qualified as typewriter repairer	$1,200 a year.
Railway mail	$1,100 a year.
Shipping	$1,600 a year.
Statistical	$900-$1,200 a year.
Stenographic	$1,000-$1,200 a year.
Tariff	$1,200-$1,500 a year.
To commercial attaché	$1,800 a year.
Weight	$3.28 a day.
With knowledge of stenography or typewriting	$900-$1,200 a year.
Clerk-bookkeeper	$1,000 a year.
Clerk-carrier	$1,000 a year.
Clerk-draftman	$1,200 a year.
Clinical director	$2,000 a year.
Collector, inspector, and agent, deputy	$5-$7 a day.
Commerce and finance, expert in	$1,800-$2,500 a year.
Assistant to	$1,400-$1,800 a year.
Commissioner, shipping	$1,500 a year.
Deputy	$900 a year.

Community organization, specialist in	$3,000 a year.
Computer	$1,500-$1,800 a year.
Junior	$900-$1,200 a year.
Coast and Geodetic Survey	$1,200 a year.
Nautical Almanac Office and Naval Observatory	$1,200 a year.
Computer and estimator	$1,600-$1,800 a year.
Computing clerk	$900 a year.
Conductor, elevator	$720-$900 a year.
Construction, superintendent of	$1,600-$2,400 a year.
Cook (Indian Service)	$480-$660 a year.
Cook, qualified us deck hand	$780 a year.
Co-operative marketing, investigator in	$2,250-$2,750 a year.
Co-operative organization, investigator in	$2,000-$2,750 a year.
Co-operative purchasing, investigator in	$1,800-$2,500 a year.
Copyist ship draftsman	$3.76 a day.
Cotton classing:	
Assistant in	$1,800-$2,400 a year.
Specialist in	$2,500-$3,500 a year.
Cotton entomologist	$1,000-$1,500 a year.
Cotton grading, assistant in	$1,200-$1,600 a year.
Cotton marketing and warehousing, specialist in	$3,000-$3,600 a year.
Crop acclimatization, assistant in	$900-$1,400 a year.
Crop physiologist	$3,000 a year.
Crop physiology, assistant in	$1,200-$1,500 a year.
Curator, assistant	$1,500-$1,800 a year.

Custodian, assistant	$1,400-$1,600 a year.
Custodian-janitor, assistant	$660-$1,000 a year.
Dairy cattle breeding, specialist in	$2,500-$3,000 a year.
Dairy herdsman, senior	$1,500 a year.
Dairy husbandman	$1,800-$2,500 a year.
Assistant	$1,500-$1,740 a year.
Dairying, scientific assistant in	$1,200-$1,800 a year.
Dairyman	$900 a year.
Deck hand	$600-$780 a year.
Deck officer	$1,000 a year.
Dentist (Indian Service)	$1,500 a year.
Deputy collector, inspector, and agent, antinarcotic act	$1,600 a year.
Designer, electrical	$153-$164 a month.
Designer, gauge	$2,000-$3,000 a year.
Designer, landscape	$1,500 a year.
Designer of marine engines, boilers, and machinery	$2,400-$3,000 a year.
Director, assistant, Child Labor Division	$2,400-$2,820 a year.
Director clinical	$2,000 a year.
Draftsman—	
Aeronautic	$5.04 a day.
Aeronautical engineering	$1,500-$2,000 a year.
Aeronautical mechanical	$1,200-$1,800 a year.
Architectural and structural steel	$1,500 a year.
Architectural, mechanical, structural steel—	
Grade I	$4-$4.96 a day.
Grade II	$4.96-$5.92 a day.

Grade III	$5.92-$6.88 a day.
Artist	$1,200-$1,440 a year.
Chief	$2,500 a year.
Copyist	$2.56-$3.76 a day.
Copyist structural steelwork	$2.80-$3.28 a day.
Electrical—	
Grade I	$4-$4.96 a day.
Grade II	$5.44-$6.40 a day.
Electrical copyist	$3.52-$4 a day.
Hull	$1500 a year.
Marine	$1,440-$1,800 a year.
Marine engine and boiler	$3.28-$7.04 a day.
Copyist	$3.28 a day.
Mechanical	$800-$1,800 a year.
Panama Canal Service—	
Class I	$1,800 a year.
Class II	$1,500 a year.
Navy Department	$4-$7.84 a day.
Mechanical and electrical	$1,200-$1,500 a year.
Minor or copyist	$1,200 a year.
Ordnance	$4-$5.04 a day.
Radio	$3.44-$6 a day.
Rural engineering	$1,200-$1,500 a year.
Ship—	
Grade I	$4-$.96 a day.
Grade II	$4.96-$5.92 a day.
Grade III	$5.92-$6.88 a day.
Copyist	$3.76 a day.
Skilled	$1,400-$2,000 a year.
Structural steel	$3.04-$8 a day.
Copyist	$2.80-$3.28 a day

Junior	$3.52-$4 a day.
Topographic	$1,000-$1,200 a year.
Copyist	$900-$1,000 a year.
Panama Canal Service	$1,630 a year.
Topographic and subsurface	$4.48-$5.04 a day.
Driller, expert	$2,160-$3,300 a year.
Driver, automobile	$780-$840 a year.
Auto truck	$900 a year.
Drug inspector	$1,400 a year.
Drug-plant investigations, scientific assistant in	$1,200 a year.
Dry land agriculture, assistant in	$1,200-$2,000 a year.
Dry land arboriculture, assistant in	$900-$1,500 a year.
Dynamo tender	$3.68 a day.
Immigration Service	$900 a year.
Economic geologist	$3,000 a year.
Economist—	
Grade I	$2,500-$4,000 a year.
Grade II	$1,800-$2,500 a year.
Economist, petroleum	$1,800-$2,500 a year.
Editor—	
Assistant	$2,000 a year.
Information	$2,000 a year.
Editorial clerk	$1,200-$1,600 a year.
Editorial division, chief of	$2,500 a year.
Educational community organization, special agent in	$1,800 a year.
Electrical designer	$153-$164 a month.
Electrical machinist	$4 a day.
Electrician	$1,000-$1,200 a year.

Electrometallurgist	$2,000-$3,300 a year.
Electrotyper	70 cents an hour.
Elevator conductor	$720-$900 a year.
Engine runner, Bureau of Mines	$720 a year.
Engineer—	
Aeronautical	$3,600 a year.
Assistant	$1,500 a year.
Assistant testing	$1,800-$2,500 a year.
Chemical—	
Assistant (petroleum)	$1,800-$2,100 a year.
Junior	$1,200-$1,500 a year.
Chief, Coast and Geodetic Survey	$1,200 a year.
Civil—	
Junior—	
Grade I	$1,320-$1,680 a year.
Grade II	$720-$1,200 a year.
Philippine Service	$1,560-$3,000 a year.
Senior	$1,800-$2,700 a year.
Civil, and superintendent of construction	$1,500 a year.
Construction	$1,560-$3,000 a year.
Designing	$2,000-$3,000 a year.
Designing and construction	$10-$16 a day.
Drainage	$1,440-$1,800 a year.
Junior	$1,080-$1,320 a year.
Senior	$2,220-$3,000 a year.
Electrical	$1,500-$3,000 a year.
Assistant, qualified in municipal research	$1,400-$1,800 a year.
Junior—	
Grade I	$1,320-$1,680 a year.

Grade II	$720-$1,200 a year.
Senior	$1,800-$2,700 a year.
Electrochemical	$1,500-$1,800 a year.
Experimental	$3,000 a year.
Explosives	$2,520-$2,700 a year.
Junior	$1,200-$1,500 a year.
Fuel, junior	$1,200 a year.
Gas-waste	$2,400-$3,600 a year.
Highway	$1,800-$2,100 a year.
Highway bridge	$1,800-$2,100 a year.
Senior	$2,400-$3,300 a year.
Hoist	$1,200 a year.
Hydraulic and sanitary	$10-$16 a day.
Indian Service	$600-$900 a year.
Junior	$1,080-$1,200 a year.
Marine—	
Gasoline	$1,200-$1,500 a year.
Steam	$1,200 a year.
Supervising	$3,500 a year.
Mechanical	$1,600-$2,700 a year.
Designing	$2,100 a year.
Junior—	
Grade I	$1,320-$1,680 a year.
Grade II	$720-$1,200 a year.
Senior	$1,800-$2,700 a year.
Mechanical and electrical	$1,560-$3,000 a year.
Metallurgical	$7.04 a day.
Mining, chief of coal-mining investigations	$4,000 a year.
Mining, coal	$2,400-$4,000 a year.
Assistant	$1,800-$2,400 a year.
Mining, junior	$1,200-$1,500 a year.

Mining, metal	$2,400-$4,000 a year.
Natural gas	$1,800-$2,500 a year.
Ore dressing	$2,400-$3,600 a year.
Petroleum	$2,500-$3,000 a year.
Assistant	$1,800-$2,500 a year.
Junior	$1,200-$1,500 a year.
Pulp and paper	$3,500 a year.
Radio	$1,800 a year.
Sanitary	$2,500 a year.
Assistant	$1,600 a year.
Philippine Service	$1,600 a year.
Signal—	
Junior—	
Grade I	$1,320-$1,680 a year.
Grade II	$720-$1,200 a year.
Senior—	
Grade I	$3,000-$4,800 a year.
Grade II	$1,800-$2,700 a year.
Steam—	
Assistant or second-class	$1,000-$1,200 a year.
First-class	$1,000-$1,400 a year.
Road-roller	$900 a year.
Third-class	$840-$1,000 a year.
Structural—	
Junior—	
Grade I	$1,320-$1,680 a year.
Grade II	$720-$1,200 a year.
Senior—	
Grade I	$3,000-$4,000 a year.
Grade II	$1,800-$2,700 a year.
Supervising mining and metallurgist	$4,000 a year.

Telegraph and telephone, junior—	
Grade I	$1,320-$1,680 a year.
Grade II	$720-$1,200 a year.
Telephone	$1,800 a year.
Vehicle	$1,500 a year.
Engineer and draftsman—	
Civil	$1,500-$2,000 a year.
Heating and ventilating	$1,200-$1,500 a year.
Junior	$1,200-$2,000 a year.
Structural	$1,600-$1,800 a year.
Engineer-economist	$2,000-$2,500 a year.
Engineer and metallurgist, supervising mining	$3,600-$4,000 a year.
Engineer and sawyer	$4.48 a day.
Engraver—	
Map, copperplate	$1,620 a year.
Script, square letter, and vignette	$3.84-$8.95 a day.
Entomology—	
Preparator in	$600-$1,000 a year.
Scientific assistant in	$1,200-$1,800 a year.
Scientific preparator in	$1,200 a year.
Special field agent in	$1,200-$2,000 a year.
Entomological inspector	$1,400-$1,740 a year.
Epidemiologist, assistant	$2,000-$2,500 a year.
Examiner, Assistant (Patent Office)	$1,500 a year.
Executive secretary	$2,400-$2,800 a year.
Expert—	
Automobile	$2,400 a year.
Child welfare	$1,800-$2,400 a year.

Nautical	$1,000-$1,800 a year.
Telegraph rate	$117 a month.
Expert and special agent	$1,200-$1,600 a year.
Farm economics, assistant in	$1,800-$2,000 a year.
Farm management, scientific assistant in	$1,200-$1,800 a year.
Farm management demonstrations, agriculturist in	$1,800-$2,760 a year.
Farmer, Indian Service	$600-$900 a year.
Finger-print classifier	$1,000-$1,400 a year.
Fireman—	
Marine	$768-$900 a year.
Stationary	$660-$720 a year.
Fireman-watchman	$600-$840 a year.
Fish culturist, apprentice	$600-$960 a year.
Fish investigations, assistance in	$1,200-$1,620 a year.
Fish pathologist	$2,500 a year.
Food inspector	$1,400 a year.
Food and drug inspector	$1,400-$2,000 a year.
Food research, specialist in	$1,500 a year.
Forage crops, scientific assistant in	$1,200-$1,800 a year.
Foreign marketing of agricultural products:	
Assistant in	$1,600-$2,280 a year.
Investigator in	$2,000-$3,000 a year.
Forest assistant	$1,100-$1,400 a year.
Philippine	$1,600 a year.
Forest education, district assistant in	$1,800 a year.
Forest entomology, assistant in	$1,200-$1,400 a year.

Forest pathology, assistant in	$1,200-$1,440 a year.
Field	$1,200-$1,620 a year.
Forest products—	
Architectural assistant in	$1,500 a year.
Chemist in	$2,000-$2,400 a year.
Assistant	$1,200-$1,800 a year.
Engineer in	$1,860-$3,000 a year.
Assistant	$1,200-$1,500 a year.
Forest ranger	$1,100-$1,200 a year.
Fruit transportation and storage, investigator in	$2,000-$2,520 a year.
Fruit-fly quarantine inspector	$1,800 a year.
Fruits and vegetables, supervising inspector of	$2,000-$3,000 a year.
Game conservation, assistant in	$3,000 a year.
Game warden	$1,500 a year.
Garageman	$780-$840 a year.
Gardener	$600-$1,200 a year.
Landscape	$1,350 a year.
Gas inspector	$1,800 a year.
Gauge checker	$1,800-$2,400 a year.
Gauge designer	$2,000-$3,000 a year.
Gauge expert, master	$2,000-$3,600 a year.
Gauge inspector	$1,800-$2,400 a year.
Assistant	$1,000-$1,600 a year.
Gauger, oil	$1,200-$1,800 a year.
Gauges, inspector of	$1,800-$2,400 a year.
Geologic aid	$1,000-$1,800 a year.
Geologist	$2,500 a year.
Assistant	$1,800 a year.
Ground-water work	$1,200 a year.
Glass blower	$1,400 a year.

Glassworker	$1,200-$1,380 a year.
Grain-dust explosions, assistant in	$1,200-$1,500 a year.
Grain-exchange practice—	
Investigator in	$1,800-$2,400 a year.
Specialist in	$2,500-$3,500 a year.
Grain handling, bulk, investigator in	$2,000-$2,760 a year.
Grain inspection—	
Supervisor in	$2,500-$3,500 a year.
Assistant	$1,800-$2,400 a year.
Grain samples	$1,000-$1,620 a year.
Assistant	$1,200-$1,500 a year.
Grain standardization—	
Aid in	$900-$1,400 a year.
Scientific assistant in	$1,200-$1,800 a year.
Specialist in	$2,200-$3,000 a year.
Grain supervisor	$1,800-$3,000 a year.
Grazing assistant	$1,200 a year.
Helper—	
Automobile mechanic's	$900 a year.
Electrician's	$720 a year.
Foundry	$720-$1,020 a year.
Glass pot maker's	$780 a year.
Laboratory	$720-$1,080 a year.
Junior	$540 a year.
Physical	$600-$900 a year.
Office	$480-$540 a year.
Plumber's	$900 a year.
Tinner's	$720 a year.
Herdsman	$720-$1,200 a year.
Dairy, senior	$1,500 a year.

Horticulture, scientific assistant in	$1,200-$1,800 a year.
Horticulturist	$2,100-$3,240 a year.
Assistant	$1,800-$2,200 a year.
Hostler	$540-$660 a year.
Hours of service, inspector of	$3,000 a year.
Hulls—	
Local and assistant inspector of	$2,100-$2,500 a year.
Husbandman:	
Animal	$1,800-$2,600 a year.
Dairy	$1,800-$2,500 a year.
Assistant	$1,500-$1,740 a year.
Poultry	$1,800-$2,600 a year.
Illustrator	$1,800 a year.
Income-tax deputy collector, inspector, and agent	$1,400-$1,600 a year.
Incubation and brooding, assistant in	$1,200-$1,800 a year.
Indexer, scientific	$1,200 a year.
Infant mortality, expert in prevention of	$2,400-$3,600 a year.
Insect delineator	$1,400-$1,800 a year.
Insect investigations, apple, specialist in	$1,800 a year.
Insects as carriers of plant diseases, specialist in	$1,600 a year.
Inspector—	
Boilers, local and assistant	$2,100-$2,500 a year.
Drug	$1,400 a year.
Engineer	$1,440-$1,800 a year.
Entomological	$1,400-$1,740 a year.

Fiber (Philippine Service)	$1,600-$2,000 a year.
Food	$1,400 a year.
Food and drug	$1,400-$2,000 a year.
Fruit-fly quarantine	$1,800 a year.
Gas	$1,800 a year.
Gauge	$1,800-$2,400 a year.
Hours of service	$3,000 a year.
Interstate commerce in game	$1,500 a year.
Lay	$1,080 a year.
Locomotives	$3,000 a year.
Pathological	$1,800-$2,400 a year.
Predatory animal	$1,200 a year.
Quarantine—	
Fruit-fly	$1,800 a year.
Plant	$1,200-$2,500 a year.
Radio	$1,200-$1,600 a year.
Rubber	$1,200-$1,500 a year.
Safety appliances	$3,000 a year.
Interne—	
Dental	$900 a year.[1]
Medical	$900 a year.[1]
Interpreter	$1,200 a year.
Investigations—	
Drug plant, scientific assistant in	$1,200 a year.
Marketing, assistant in	$1,800-$3,000 a year.
Marketing, city, assistant in	$1,440-$1,800 a year.
Poisonous plant, assistant in	$1,400 a year.
Sugar beet—	
Agriculturist in	$1,800-$2,100 a year.
Assistant pathologist in	$1,800-$2,400 a year.
Tobacco, assistant in	$1,200-$1,600 a year.

Wool, assistant in	$1,380-$1,800 a year.
Janitor	$600-$720 a year.
Joiner master	$7.52 a day.
Kelp harvester, foreman of	$1,200 a year.
Laboratorian—	
Chemical	$900-$1,500 a year.
Mechanical or electrical	$1,000-$1,400 a year.
Physical	$3.84 a day.
Qualified in chemistry and physics	$1,000 a year.
Strength of materials	$3.52 a day.
Qualified in electrical science	$3.60-$4.24 a day.
Laboratory aid	$840-$1,240 a year.
Agricultural technology	$720-$1,080 a year.
Chemistry and physics	$600-$900 a year.
Foreign seed and plant introduction	$500-$900 a year.
Hygienic Laboratory	$720-$900 a year.
Plant pathology	$720 a year.
Seed testing	$600-$720 a year.
Laboratory aid and engineer	$800-$900 a year.
Laboratory aid and junior chemist	$3.28-$5.04 a day.
Laboratory assistant	$960-$1,320 a year.
Mechanical	$960-$1,080 a year.
Qualified in petrography	$1,200-$1,800 a year.
Radio	$1,200 a year.
Laboratory attendant	$660-$900 a year.
Laboratory helper	$720-$1,080 a year.
Junior	$480-$540 a year.
Labor, foreman of	$7.72 a day.
Laborer, skilled	$720-$900 a year.

Qualified as chauffeur	$720-$1,000 a year.
Qualified as elevator machinist	$900-$1,000 a year.
Qualified as general mechanic	$720 a year.
Laborer, unskilled	$480-$720 a year.
Land classifier	$1,800-$2,400 a year.
Assistant	$1,500-$1,800 a year.
Landscape gardening, scientific assistant in	$1,200-$1,800 a year.
Laundry worker	$30-$93 a month.
Law clerk	$1,000-$1,800 a year.
Lead burner	$4.50 a day.
Leather technology, laboratory assistant in	$1,200 a year.
Librarian	$1,700 a year.
Assistant	$1,200-$1,440 a year.
Library assistant	$900-$1,500 a year.
Lithographer	$1,000-$1,200 a year.
Lithographic draftsman, apprentice	$300 a year.
Lithographic pressman	$1,200-$1,800 a year.
Locomotives, inspector of	$3,000 a year.
Loftsman foreman	$8 a day.
Lumbering, assistant in	$2,000-$2,600 a year.
Machinist	$1,200-$1,500 a year.
Electrical	$1,200 a year.
Foreman	$7.04 a day.
Linotype	75 cents an hour.
X-ray	$1,800 a year.
Machinist's helper	$780 a year.
Manual training teacher	$720-$1,200 a year.
Map colorist	$720-$900 a year.

Map engraver—	
Copperplate	$1,620 a year.
Map printer	$1,200 a year.
Marine fireman	$768-$780 a year.
Marker	$780 a year.
Market business practice, assistant in—	
Grade I	$1,800-$2,400 a year.
Grade II	$1,200-$1,600 a year.
Market station assistant	$1,000-$1,400 a year.
Marketing, assistant in—	
Grade I	$1,800-$2,400 a year.
Grade II	$1,200-$1,800 a year.
Marketing dairy products, assistant in	$1,800-$2,400 a year.
Junior	$1,200-$1,800 a year.
Marketing fruits and vegetables—	
Assistant in	$1,200-$1,800 a year.
Investigator in	$1,800-$2,760 a year.
Marketing investigations, assistant in	$1,800-$3,000 a year.
Marketing, investigator in—	
Bureau of Markets, Department of Agriculture	$2,100-$3,000 a year.
Office of Markets and Rural Organization	$1,800-$2,400 a year.
Marketing live stock and animal products, scientific assistant in	$1,200-$1,800 a year.
Marketing live stock and meats, assistant in—	
Grade I	$1,800-$2,400 a year.

Grade II	$1,200-$1,800 a year.
Marketing and organization, field agent in	$1,200-$1,600 a year.
Marketing seeds—	
Investigator in	$1,800-$2,400 a year.
Specialist in	$2,500-$3,500 a year.
Marketing wool, specialist in—	
Grade I	$2,500-$3,000 a year.
Grade II	$1,800-$2,400 a year.
Markets and rural organization, office of, assistant chief	$4,000 a year.
Meat cutter, assistant	$360 a year.[1]
Mechanic—	
Automobile	$1,200-$1,320 a year.
Chief (automobile)	$1,200-$1,500 a year.
Foreman	$7.04 a day.
General	$840 a year.
Master	$7.44 a day.
Qualified to operate laundry machinery	$1,200 a year.
Qualified in shipbuilding trades	$5.36 a day.
Mechanic, special—	
Boiler maker, qualified as	$5.36 a day.
Chipper and caulker	$5.36 a day.
Electrician, qualified as	$5.36 a day.
Gas and oil engine installations, qualified in	$4.48 a day.
Machine design, qualified in	$5.04 a day.
Machinist, qualified as	$5.36 a day.
Marine engine and boiler installations, qualified in	$4.48-$5.04 a day.

Motor-boat installations, qualified in	$6 a day.
Ship fitter, qualified as	$5.36 a day.
Mechanician—	
Addressograph	$900-$1,500 a year.
Chief	$1,200-$1,500 a year.
Expert	$1,400-$1,800 a year.
Tabulating	$1,200-$1,600 a year.
Mechanician, qualified as instrument maker	$1,000-$1,400 a year.
Mechanician and laboratory assistant	$3.50 a day.
Medalist, assistant	$1,400-$1,600 a year.
Medical interne	$900 a year.[1]
Melter	$3.50 a day.
Messenger boy	$360-$480 a year.
Metabolism investigations, assistant in	$1,500 a year.
Metallographist	$1,500-$2,000 a year.
Metallurgist	$2,400-$3,300 a year.
Assistant	$1,800-$3,000 a year.
Physical	$6-$8 a day.
Microanalyst	$1,200-$1,440 a year.
Microscopist, assistant	$1,800-$2,000 a year.
Miller, Indian Service	$900-$1,000 a year.
Mineral examiner	$1,380-$1,500 a year.
Mineral technologist	$2,400-$3,600 a year.
Motor-boat installations, assistant inspector of	$6 a day.
Multigraph operator	$1,000-$1,200 a year.
Nautical expert	$1,000-$1,800 a year.
Negative cutter	$3 a day.

Nematologist	$1,800-$2,000 a year.
Nematology, preparator in	$660-$1,000 a year.
Nurse, Panama Canal Service	$1,020-$1,140 a year.
Nurseryman	$900 a year.
Observer, assistant	$1,080 a year.
Observer and meteorologist	$1,260-$1,800 a year.
Oceanography, scientific assistant in	$900 a year.
Office helper (typist)	$564-$660 a year.
Office of Information, assistant in	$1,800-$2,760 a year.
Officer in charge of classification, assistant to	$2,400 a year.
Oil, assistant inspector of	$1,400 a year.
Oil and gas production, assistant technologist in	$1,800-$2,100 a year.
Oil gauger	$1,200-$1,800 a year.
Oiler	$840 a year.
Marine	$480-$600 a year.[1]
Oiler and filterman	$85 a month.
Opener and packer	$840 a year.
Operative	$720-$1,000 a year.
Operator—	
Calculating machine	$900-$1,200 a year.
Linotype	65 cents an hour.
Machine, harness shop	$720 a year.
Monotype	65 cents an hour.
Motor-boat	$145 a month.
Multigraph	$1,000-$1,200 a year.
Power plant	$1,000-$1,500 a year.
Substation	$1,200 a year.
Telegraph	$900-$1,600 a year.

Wireless	$780-$1,140 a year.
Telephone	$660-$720 a year.
Packer, chief	$1,200 a year.
Packer of merchandise	$900 a year.
Painter	$900-$1,200 a year.
Auto body	$1,000 a year.
Paleobotany, aid in	$1,200 a year.
Paleontology, assistant curator in	$1,500 a year.
Panology, scientific assistant in	$1,200-$1,800 a year.
Pathological adviser in cotton, truck, and forage crop diseases	$2,500-$3,000 a year.
Pathologist	$2,000 a year.
Plant, assistant	$1,800-$2,040 a year.
In citrus fruit diseases	$2,520-$3,000 a year.
Pathologist in charge of forage crop disease investigations	$1,800-$2,000 a year.
Pharmacist	$1,200 a year.
Pharmacist and physician's assistant	$1,000 a year.
Pharmacognosist, assistant	$1,800-$2,500 a year.
Pharmacological aid	$900-$1,200 a year.
Pharmacologist, junior	$1,200-$1,600 a year.
Pharmacology, technical assistant in	$2,500 a year.
Philippine assistant	$1,500 a year.
Photographer, assistant	$1,020 a year.
Physician	$480-$1,800 a year.
Physicist—	
Assistant	$1,500-$1,800 a year.

Associate (qualified in electrical engineering)	$2,000-$2,800 a year.
Junior	$1,500 a year.
Soil	$1,320-$1,680 a year.
Physicist, assistant—	
Physical metallurgy, qualified in	$1,400-$1,800 a year.
Spectrophotometry, qualified in	$1,400-$1,800 a year.
Spectroscopy, qualified in	$1,400-$1,800 a year.
Physiologist, crop	$3,000 a year.
Physiologist in crop utilization, assistant	$2,000-$2,400 a year.
Pilot	$125 a month.[1]
Plant breeding, scientific assistant in	$1,200-$1,800 a year.
Plant disinfection, assistant in	$1,620-$1,800 a year.
Plant introduction, assistant in	$1,200-$1,400 a year.
Field station assistant in	$1,200-$1,600 a year.
Plant nutrition, assistant in	$1,080-$1,380 a year.
Plant pathology—	
Field aid in	$840-$1,080 a year.
Field and laboratory aid in	$720-$1,080 a year.
Scientific assistant in	$1,200-$1,800 a year.
Laboratory aid in	$720 a year.
Plant physiology, scientific assistant in	$1,200-$1,800 a year.
Plant quarantine inspector	$1,200-$2,500 a year.
Plate cleaner	$4.80 a day.
Plate printer	$7.55 a day.
Plumber	$1,000-$1,200 a year.
Master	$6.40 a day.

Postmaster—	
Fourth class	$180-$999 a year.
Second and third classes	$1,000-$2,400 a year.
Poultry and egg handling, investigator in	$1,200-$1,800 a year.
Poultry husbandry, scientific assistant in	$1,200-$1,800 a year.
Powder and explosives, inspector of	$1,400-$2,400 a year.
Preparator in entomology	$600-$1,000 a year.
Scientific	$1,200 a year.
Preparator in nematology	$660-$1,000 a year.
Press feeder	$720-$840 a year.
Pressman	65 cents an hour.
Pressman on offset presses	$5.75 a day.
Printer	60-65 cents an hour.
Public health work, scientific assistant in—	
Grade I	$1,500-$2,000 a year.
Grade II	$900-$1,500 a a year.
Public roads and rural engineering, assistant chemist in	$1,800-$2,500 a year.
Radio activity, junior chemist in	$1,200-$1,500 a year.
Radio draftsman	$3.52-$6 a day.
Radio engineer	$1,800 a year.
Radio, expert, aid	$9.04 a day.
Radio inspector	$1,200-$1,600 a year.
Radio towers, subinspector	$5.52 a day.
Railway mail clerk	$1,100 a year.
Ranger, forest	$1,100-$1,200 a year.

Reclamation projects, agriculturist for	$1,800-$2,400 a year.
Rodman and chainman	$720-$1,080 a year.
Rural carrier	$480-$1,344 a year.
Motor	$1,500-$1,800 a year.
Rural economics, specialist in	$1,500-$1,800 a year.
Safety appliances, inspector of	$3,000 a year.
Salvage superintendent	$4-$6 a day.
Sawyer, Indian Service	$840-$1,000 a year.
Sawyer and carpenter, Indian Service	$840-$1,000 a year.
Sawyer and general mechanic, Indian Service	$720-$900 a year.
Sawyer and marine gasoline engineer	$900 a year.
Scaler	$1,400 a year.
Scientific assistant—	
Bureau of Fisheries	$900-$1,400 a year.
Department of Agriculture	$1,000-$1,800 a year.
Scientific indexer	$1,200 a year.
Scientific preparator	$1,200 a year.
Scientist, statistical	$1,600-$1,800 a year.
Seeds, marketing—	
Investigator in	$1,800-$2,400 a year.
Specialist in	$2,500-$3,500 a year.
Seed testing—	
Laboratory aid in	$600-$720 a year.
Scientific assistant in	$1,200-$1,800 a year.
Sheet metal worker	$5.36 a day.
Ship fitter	$5.36 a day.
Shoemaker, Indian Service	$300-$600 a year.
Skilled laborer—	

Qualified as chauffeur	$720-$1,000 a year.
Qualified as elevator machinist	$900-$1,000 a year.
Qualified as general mechanic	$720 a year.
Soil bacteriology, scientific assistant in	$1,200-$1,800 a year.
Soil surveying, scientific assistant in	$1,200-$1,800 a year.
Specialist—	
Agricultural education	$3,000 a year.
Dairy manufacturing	$1,800-$2,500 a year.
Assistant	$1,500-$1,740 a year.
Fruit crop	$1,600-$2,400 a year.
Market milk, assistant	$1,440-$1,740 a year.
Milk	$1,800-$2,500 a year.
School hygiene and sanitation	$3,000 a year.
Truck crop	$1,600-$2,400 a year.
Statistical agent	$1,400 a year.
Statistical clerk	$900-$1,200 a year.
Statistical scientist	$1,600-$1,800 a year.
Statistician	$1,800 a year
Statistics, vital, chief statistician for	$3,000 a year.
Steam fitter	$1,200-$2,400 a year.
Steel maker, master	$8 a day.
Stenographer	$1,000-$1,200 a year.
Stenographer and typist	$1,000-$1,200 a year.
Stereotyper	70 cents an hour.
Steward, assistant	$1,080 a year.
Stockman	$3.84-$5.76 a day.
Stock tender	$480 a year.
Storage, specialist in	$1,800-$2,400 a year.

Storehouse arrangement and control, organizer of	$2,400 a year.
Stoveman	$900 a year.
Subclerical—	
Messenger	$480-$720 a year.
Skilled laborer	$720-$900 a year.
Watchman	$600-$900 a year.
Substation operator, assistant	$900 a year.
Sugar-beet investigations—	
Agriculturist in	$1,800-$2,100 a year.
Assistant pathologist in	$1,800-$2,400 a year.
Sugar-beet seed production, technologist in	$2,100-$2,500 a year.
Sugar sampler	$1,000-$1,080 a year.
Superintendent—	
Construction	$1,600-$2,400 a year.
Equipment	$2,400-$2,800 a year.
Forge shop	$8.40-$12 a day.
Indian Reservation	$1,200-$3,000 a year.
Supervising inspector of fruits and vegetables	$2,000-$3,000 a year.
Surveyor	$1,200-$1,800 a year.
Surveys, examiner of	$1,200-$1,500 a year.
Tailor, Indian Service	$600-$1,200 a year.
Teacher—	
Agriculture	$1,000-$1,200 a year.
Free-hand drawing	$720 a year.
Indian Service	$600-$720 a year.
Kindergarten	$600-$1,200 a year.
Manual training, Indian Service	$720-$1,200 a year.
Philippine	$1,000-$1,500 a year.

Assistant	$1,000 a year.
Technical assistant, Assay Office	$3.50 a day.
Technologist—	
Mineral	$2,400-$3,600 a year.
Petroleum	$2,500-$3,000 a year.
Chief (Bureau of Mines)	$3,000-$4,800 a year.
Junior	$1,200-$1,500 a year.
Testing engineer, assistant	$1,800-$2,500 a year.
Tests, engineer of	$4,000 a year
Timber cruiser	$1,200 a year.
Tinner, Indian Service	$840 a year.
Tinner and sheet-metal worker	$5.36 a day.
Tobacco examiner	$2,500 a year.
Tobacco investigations, assistant in	$1,200-$1,600 a year.
Toolmaker	$1,500 a year.
Topographer	$2,100 a year.
Junior	$1,500 a year.
Trade commissioner, Bureau of Foreign and Domestic Commerce	$10 a day.
Trade commissioner and special agent, Bureau of Foreign and Domestic Commerce	$10 a day.
Trade or industrial education, special agent for	$3,000-$3,500 a year.
Traffic, director of	$1,800-$2,400 a year.
Assistant	$1,200-$1,600 a year.
Transferrer—	
Lithographic	$5.76 a day.
Steel plate	$4.48 a day.
Translator	$1,200-$1,440 a year.

Transportation, assistant in	$1,800-$2,700 a year.
Truck crop specialist	$1,600-$2,400 a year.
Tug master	$4-$4.96 a day.
Typist	$900-$1,200 a year.
Minor	$600-$900 a year.
Unskilled laborer	$480-$720 a year.
Veterinarian	$1,500 a year.
Visual agricultural instruction, assistant in	$2,000 a year.
Warehouse investigations, assistant in	$1,500-$2,100 a year.
Warehouseman	$900 a year.
Seed	$840 a year.
Warehousing—	
Investigator of	$2,400-$3,600 a year.
Wool, investigator in	$2,200-$3,000 a year.
Watchman	$600-$900 a year.
Mounted	$1,200 a year.
Park	$70 a month.
Watchman-fireman	$600-$840 a year.
Weed investigations, scientific assistant in	$1,200-$1,620 a year.
Weigher	$1,020-$1,200 a year.
Weight clerk	$3.28 a day.
Weights and measures, assistant inspector of	$1,000-$1,600 a year.
Wireman	$900-$1,200 a year.
Yardmaster	$8 a day.
Zoologist, junior	$1,400-$1,800 a year.

[1] With subsistence.

PLAN No. 218. WAYSIDE TEA HOUSE

A young woman, living in a big city, wished to live in the country, and induced her parents to buy a farm of thirty acres some distance away. But the farm didn't pay, and the question of making a living became a serious one.

Several young people of the neighborhood had remarked to the young lady in question upon the large number of motorists who had stopped at their house and inquired for refreshments, or for overnight accommodations. This gave the young lady from the city her idea.

She had a lot of bird houses put up among the trees surrounding the house, put up a sign, "Bird House Inn," had the place all lighted by electricity, increased the kitchen equipment, and awaited results. They came, and have been coming ever since, for the fame of "Bird House Inn," with its daintily cooked yet generous meals, its superior sleeping accommodations and its home-like restfulness, has spread all over the land, and the enterprising young lady is reaping a harvest as a result of her foresight in grasping the opportunity that came to her unbidden.

The rickety old place has become a bower of beauty, a veritable haven of refuge for the weary traveler, and the young lady who preferred the country to the city is rejoicing in the happiness she has been the means of bringing to thousands of other people and to herself.

PLAN No. 219. ILLUSTRATED POULTRY PRIMER

Acknowledgement is due to the United States Dept. of Agriculture for the following Plan:

HARRY M. LAMON AND JOS. WM. KINGHORN,

Animal Husbandry Division.

The object of this article is to give, by means of photographs and brief statements, the fundamentals underlying the production of poultry.

An effort has been made to illustrate the various phases of poultry production in such a way as to impress upon the reader's mind the principles of poultry keeping.

Under "Selecting the Breed," for example, photographs are shown of the more popular breeds of each of the three main classes of poultry, giving the reader an immediate and complete idea of the appearance of these fowls, the classes to which they belong, and their economical usefulness. In like manner other essential phases of poultry keeping are illustrated and discussed.

Selecting the Breed

In the selection of a breed or variety of poultry care should be taken to obtain healthy, vigorous stock.

Beginners are urged to keep but one variety of a breed of fowls. There is no best breed of poultry. Select the breed that suits your purpose best.



Mongrel male.



Standard-bred male.

Be sure that the male bird at the head of the flock is standard-bred.

A standard-bred male at the head of a mongrel flock will improve the quality of the stock materially. A mongrel male will produce no improvement in quality.

Given the same care and feed, standard-bred fowls will make a greater profit than mongrel fowls.



A standard-bred flock

Standard-bred fowls produce uniform products which bring higher prices.

Standard-bred stock and eggs, sold for breeding purposes, bring higher prices than market quotations.

Standard-bred fowls can be exhibited and thus compete for prizes.



A mixed or mongrel flo

The products from mongrel fowls are not uniform and do not always bring the highest prices.

Eggs and stock from mongrel fowls are not sold for breeding purposes.

Mongrel fowls are not exhibited in poultry shows or exhibits.

The General-Purpose Breeds

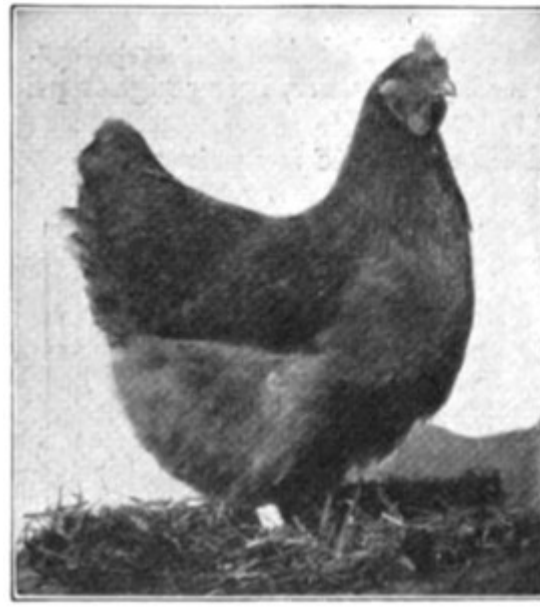
The general-purpose breeds are best suited to most farms where the production of both eggs and meat is desired. The four most popular representatives of this class are the Plymouth Rock, Wyandotte, Orpington and Rhode Island Red.



Plymouth Rock.



Wyandotte.



Orpington.



Rhode Island Red.

All these breeds, with the exception of the Orpington, are of American origin. They are characterized by having yellow skin and legs, and lay brown-shelled eggs. The Orpington is of English origin, has a white skin, and also lays brown-shelled eggs.

For detailed discussion of the various breeds of fowls of American origin request Farmers' Bulletin 806 on "Standard Varieties of Chickens. I. The American Class," which may be had on application to the U. S. Department of Agriculture, Washington, D. C.

The Egg Breeds

The Mediterranean or egg breeds are best suited for the production of white-shelled eggs. Representatives of this class are bred largely for the production of eggs rather than for meat production. Among the popular breeds of this class are: Leghorn, Minorca, Ancona, and Andalusian.



Leghorn.



Minorca.



Ancona.



Andalusian.

One of the outstanding characteristics of the egg breeds is the fact that they are classed as nonsitters; that is, as a rule they do not become broody and hatch their eggs. When fowls of this class are kept, artificial incubation and brooding are usually employed.

For detailed discussion of the various breeds of this class request Farmers' Bulletin 898 on "Standard Varieties of Chickens. II. The Mediterranean Class," which may be obtained on application to the U. S. Department of Agriculture, Washington, D. C.

The Meat Breeds

The meat breeds of poultry are primarily kept for the production of meat rather than for the production of eggs in large quantities.

Representatives of this class are: Langshan, Brahma, Cochin, and Cornish.



Langshan.



Brahma.



Cochin.



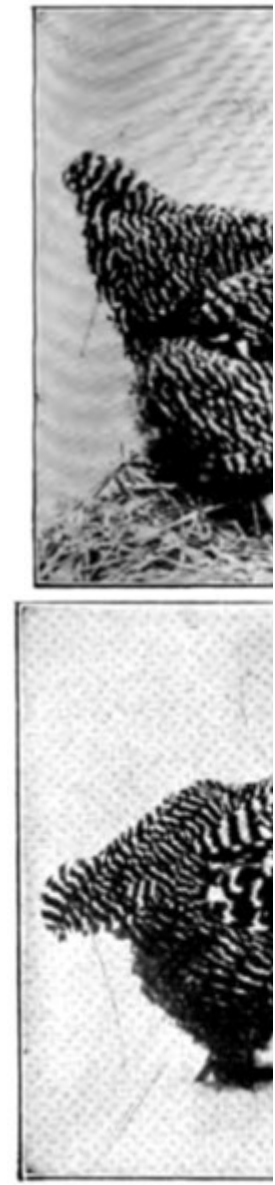
Cornish.

Although classed as meat breeds representatives of this class are sometimes kept as general-purpose fowls. Each of these breeds is heavier and larger in size than the egg breeds or those of the general-purpose class, and lay brown-shelled eggs.

For further information on the various breeds of this class, request Farmers' Bulletin on "Standard Varieties of Chickens. III. The Asiatic, English, and French Classes," which may be obtained on application to the U. S. Department of Agriculture, Washington, D. C.

Breeding

Fowls for breeding purposes should be strong, healthy, vigorous birds. The comb, face, and wattles should be of a bright-red color, eyes bright and fairly prominent, head comparatively broad and short and not long or crow-shaped, legs set well apart and straight, plumage clean and smooth.



Females showing high and low vitality. The latter



A knock-kneed fowl. The kind to be avoided as a breeder.

Defects of the kind shown here should be avoided in selecting breeders.

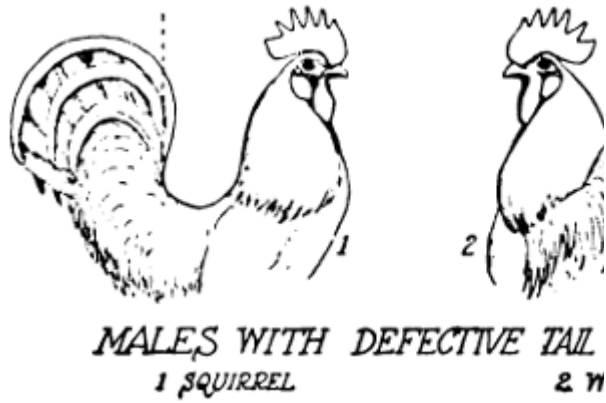
If possible, free range should be provided for the breeding pen.

Usually hens make better breeders than pullets. Cockerels, if well grown and matured, often give better fertility than older birds. However, cock birds that have proved good breeders should be used.



MALE HEADS SHOWI

1. THUMB MARK *2. LOPPED (SINGLE)*
4. SIDE SPRIG *5. UNEVEN SERRAT*



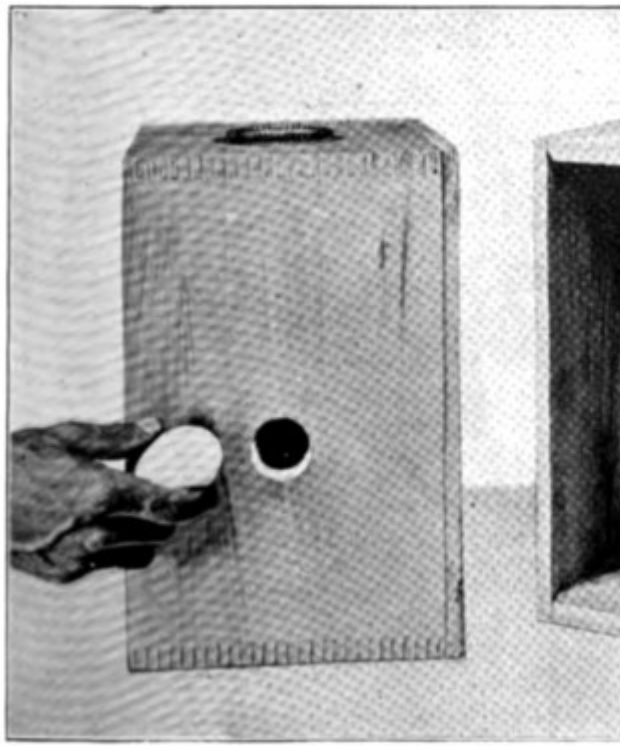
MALES WITH DEFECTIVE TAIL CA
1. SQUIRREL

When the breeding flock is confined to a yard, the size of the mating should be 1 male to 10 or 12 females. When allowed free range, the number of females can be increased to 20 or 25 with good results.

Matings should be made two weeks before the eggs are saved for hatching.



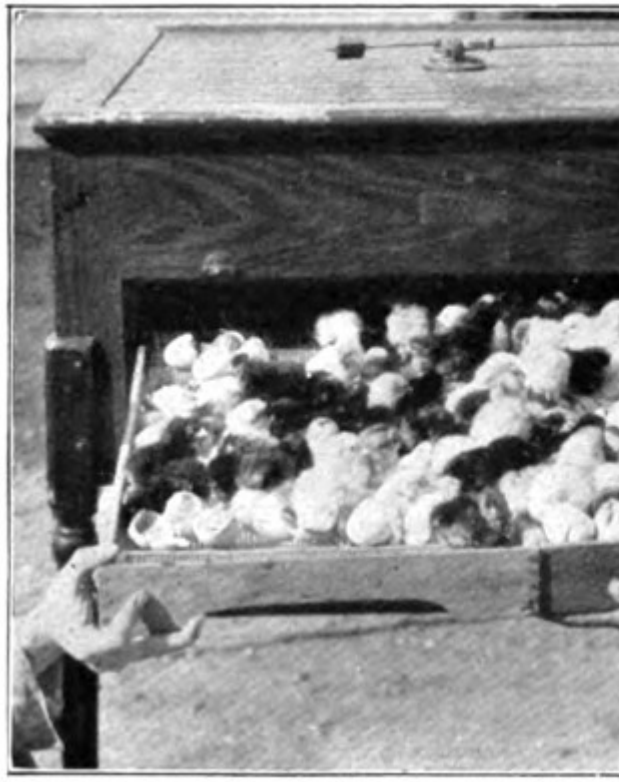
A well-ventilated cellar of uniform temperature is an exc



Homemade egg candler. The hole for testing eggs should be

Artificial and Natural Incubation and Brooding

Have everything ready beforehand and start your hatching operations early in the year. In sections where the climate is temperate, February, March, and April are the best months for hatching. The early hatched pullet is the one that begins to lay early in the fall and continues to lay when eggs are high in price.



A good hatch.



Dust the hen thoroughly with a good lice powder before placi

Select uniform, fairly large sized eggs for hatching.

Operate the incubator according to the manufacturer's directions to produce the best results.

Test the eggs for fertility on the seventh and fourteenth days.

Do not open the incubator after the eighteenth day until the chicks are hatched.

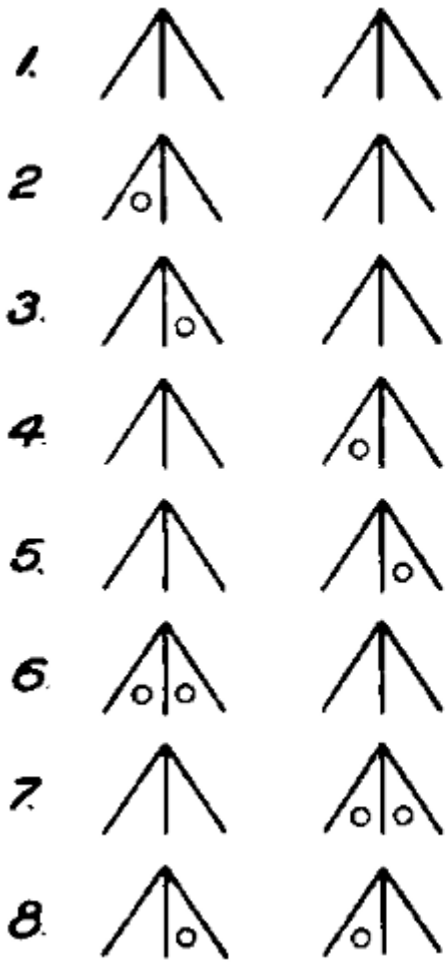
Given proper care and attention, the hen is the most valuable incubator for the farmer whose poultry operations are of moderate size.



Do not allow the mother hen to range over the farm with the chi



Confine the mother hen to a brood coop until the chicks are weaned.



Toe-mark the chicks as soon as they are hatched.

In cool weather place from 10 to 13 eggs under the hen; in warm weather from 13 to 15 eggs.

Chicks should not receive feed until they are 36 hours old.

When artificial incubation is used, start the brooder a day or two before putting in the chicks, to see that the heating apparatus is working properly.

Brooder lamps should be cleaned every day.

In the case of hen-hatched broods, the coop for hen and chicks should be well ventilated, easy to clean, and large enough to insure comfort. To allow the hen to range over the farm with the chicks will often be the cause of heavy losses.

For the first three days chicks may be fed a mixture of equal parts of hard-boiled eggs and rolled oats or stale bread, or stale bread soaked in milk. When bread and milk are used, care should be taken to squeeze all the milk out of the bread. From the third or fourth day commercial chick feed may be fed until the chicks are old enough to eat wheat screenings or cracked corn.

To insure rapid and uniform growth of the chicks, provide in addition to a grain feed a dry mash to which the chickens will have access at all times.

For additional information on incubation and brooding, request Farmers' Bulletins 585 and 624.



An excellent range providing shade and she

If possible locate the brooders on ground that has recently been cultivated, thereby eliminating the danger of tainted soil and possible disease.

Chicks having access to a shaded range, such as shown above, develop and thrive better in warm weather than those not having such range.

For the production of infertile eggs, exhaustive information relating to the care of poultry and eggs, along with individual advice on such subjects—write to U. S. Dept. of Agriculture, c/o Animal Husbandry Division, Washington, D. C.

Poultry Houses and Fixtures

Select a location for the poultry house that has natural drainage away from the building. A dry,

porous soil, such as sand or gravelly loam, is preferable to a clay soil.



OLD STYLE HEN HOUSE
NO LIGHT—NO VENTILATION
POOR RESULTS



SHED
EXCELLENT MATERIAL FOR POULTRY HOUSE



OPEN FRONT HEN HOUSE
SHED BOARDED UP IN FRONT POULTRY NETTING WINDOWS



SIDE VIEW OF HOUSE
CONSTRUCTED FROM OLD SHED



INTERIOR OF SAME HOUSE
GOOD SUNLIGHT CONDITIONS.
1 MOVABLE ROOSTS
2 DROPPING BOARD

3 NESTS

NESTS OPEN FROM FRONT HENS ENTER FROM REAR



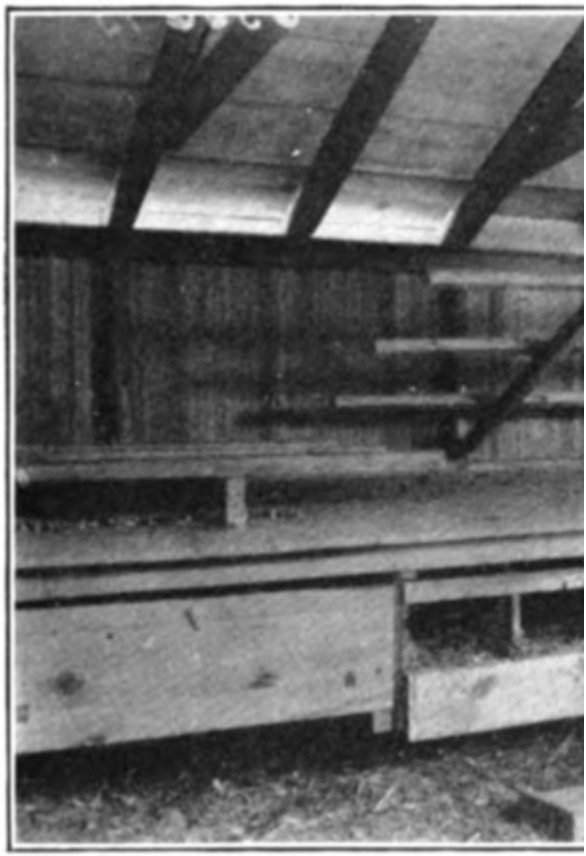
MODEL HEN HOUSE

CONSTRUCTED FROM SHED AT LITTLE COST
NOTE EFFECTS OF A COAT OF WHITEWASH

Rebuilding a poultry house out of old lumber at small cost

The building should face the south or southeast to insure the greatest amount of sunlight during the winter.

The roosts should be built on the same level, about 3 feet from the floor with a droppings board about 6 inches below the roosts.



A good interior arrangement for a poultry house, showing roosts a confining broody hens. Note ventilators in back of house and fowls.



A partial open-front curtain house is conceded to be

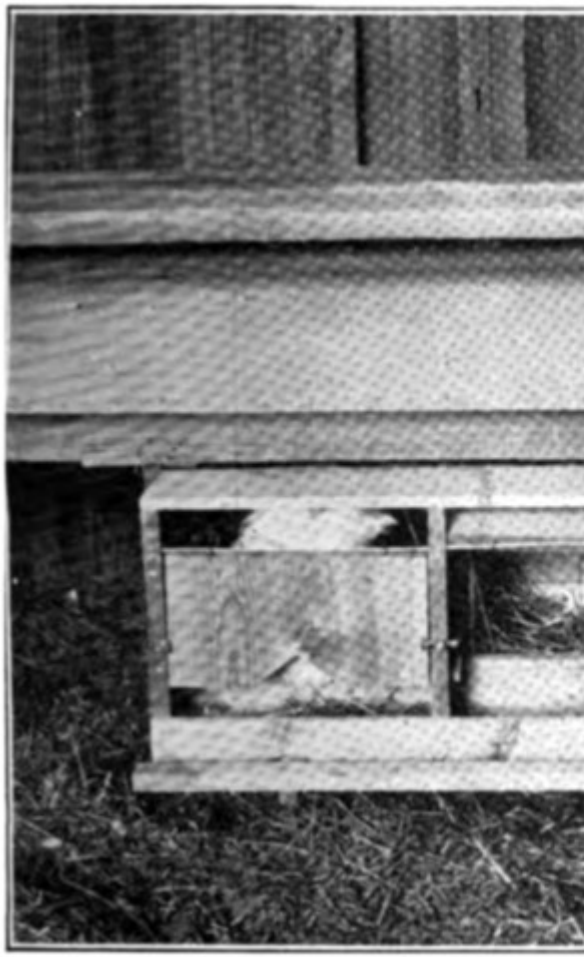
Good roosts may be made of 2 by 2 inch material with the upper edges rounded.

The nests may be placed on the side walls or under the droppings boards. It is best to have them darkened, as hens prefer a secluded place in which to lay. For further information on poultry house construction request Farmers' Bulletin 574.

Trap Nests

A trap nest is a laying nest so arranged that after a hen enters it she is confined until released by the attendant. The trap nest shown in the accompanying illustration is used with good results on the

Government poultry farm and is very similar to the nest used at the Connecticut State experiment station. It is very simple and may be built at a small cost.



Trap nests enable the poultryman to dist

When possible it is advisable to trap-nest the layers for the following reasons:

1. To tame the birds, thereby tending toward increased egg production.

2. To furnish definite knowledge concerning traits and habits of individuals.

3. To furnish the only satisfactory basis for utility or other breeding.

4. To eliminate the nonproductive hen.

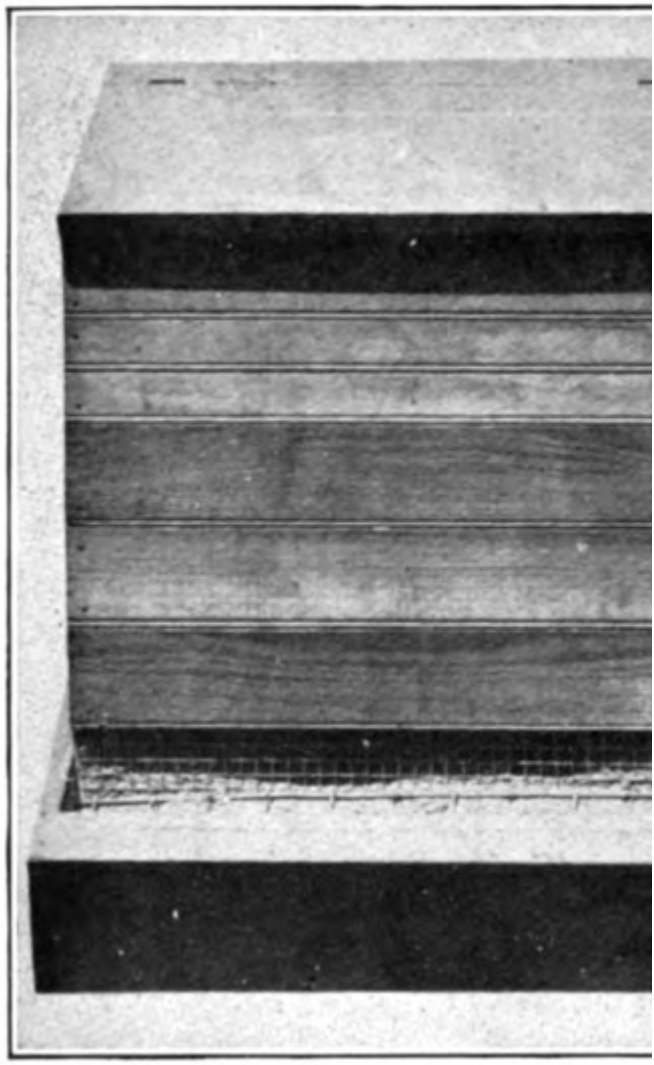
5. To add mechanical precision to judgment and experience in developing and maintaining the utility of a flock.

For further information and plans showing the construction of a trap nest, send for Farmers' Bulletin 682, "A Simple Trap Nest for Poultry."

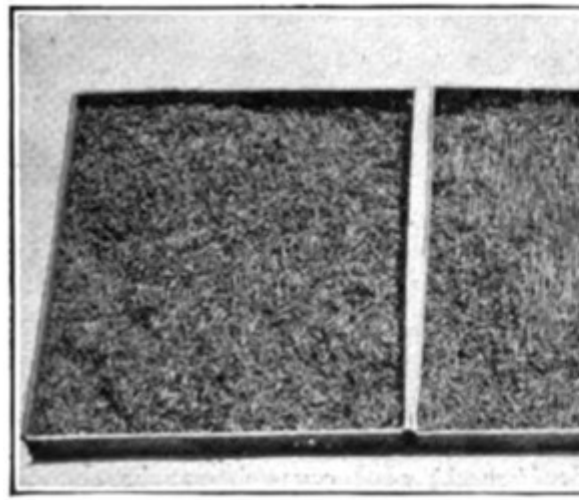
Feeding for Egg Production

Classification of Poultry Feeds

Nature provides—	Scientific classification	Poultrymen feed—
Worms and bugs	Nitrogenous material, or protein	Meat (Green cut bone or beef scrap), milk or cottage cheese.
Seeds	Carbohydrates	Wheat, oats, corn, barley, etc.
Greens	Succulents	Lettuce, cabbage, kale, mangels, alfalfa, clover, sprouted oats, etc.
Grit	Mineral matter	Grit and oyster shell.
Water	Water	Water.



A homemade dry-mash hopper.



Oats in the pro

In order to obtain an abundance of eggs it is necessary to have healthy, vigorous stock, properly fed.

The following are good grain mixtures for the laying stock, the proportions being by weight:

Ration 1.	Ration 2.	Ration 3.
Equal parts of:	3 parts cracked corn.	2 parts cracked corn.
Cracked corn.	2 parts oats.	1 part oats.
Wheat.	1 part wheat.	Oats.

A choice of any one of these rations should be scattered in the litter twice daily, morning and evening.



Average amount of feed consumed

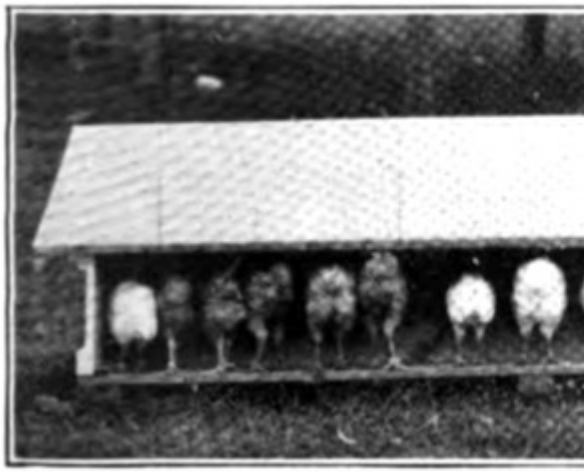
Either of the following suggested dry-mash mixtures should be fed in a dry-mash hopper such as illustrated, allowing the fowls to have access to it at all times.

Mash No. 1.		Mash No. 2.
2 parts corn meal.	1 part middlings.	3 parts corn meal.
1 part bran.	1 part beef scrap.	1 part beef scrap.

When fowls do not have access to natural green feed, sprouted oats, cabbage, mangels, cut clover,

etc., should be fed.

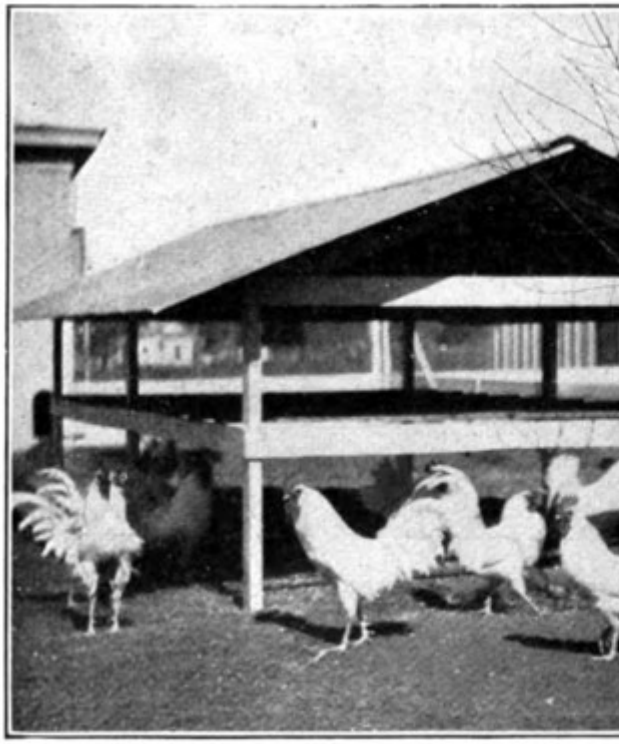
When wet mashes are fed, be sure that they are crumbly and not sticky. Plenty of exercise increases the egg yield.



A rural

Fresh, clean drinking water should be always provided. Charcoal, grit, and oyster shell should be placed before the fowls so that they can have access to them at all times.

For additional information on feeds and feeding request Farmers' Bulletin 287, "Poultry Management," and Farmers' Bulletin 528, "Hints to Poultry Raisers," from U. S. Department of Agriculture, Washington, D. C.



To produce infertile eggs confine or dispose of the male birds. Thi
by the hens.

Produce the infertile egg. Infertile eggs are produced by hens that have no male birds with them.

The following table shows that the losses of fertile eggs are computed to be nearly twice as great as in the case of infertile eggs.

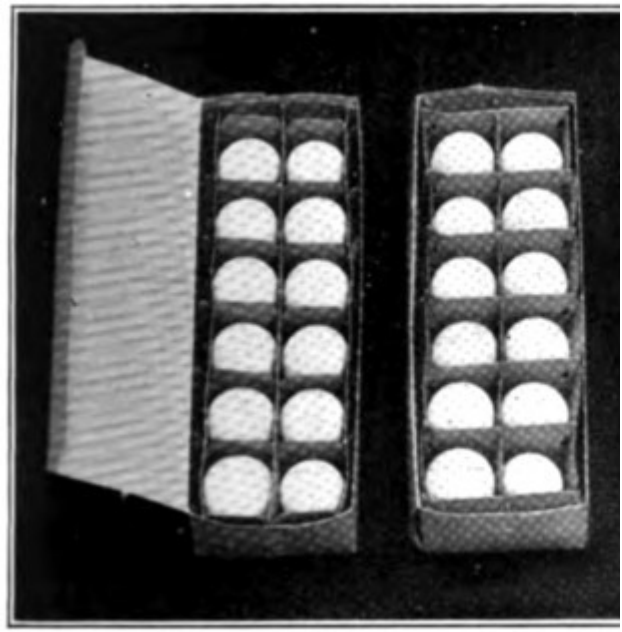
	Fertile Eggs Per cent	Infertile Eggs Per cent
On the farm	29.0	15.5
At country store	7.1	4.0
Transportation to packing house	6.4	4.7

Total	42.5	24.2

Marketing the Product

The hen's greatest egg-producing periods are the first, second, and third years, depending upon the breed. The heavier breeds, such as Plymouth Rocks, may be profitably kept for two years; the lighter breeds, such as Leghorns, three years.

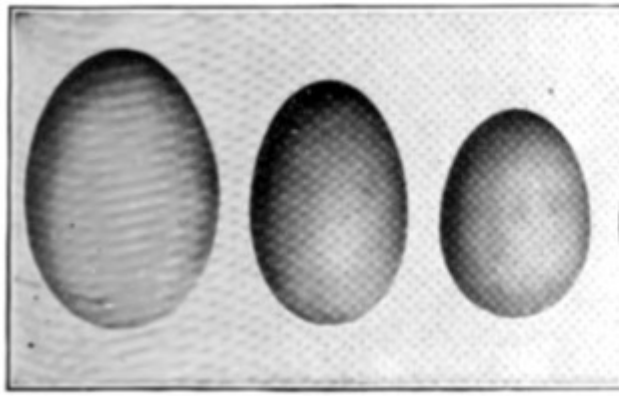
Market white-shelled and brown-shelled eggs in separate packages. Eggs irregular in shape, those which are unusually long or thin-shelled, or which have shells otherwise defective, should be kept by the producer for home use, so that breakage in transit may be reduced as much as possible.



Uniform products command the best prices. Standard-br

For additional information on packing and

shipping eggs by parcel post request Farmers' Bulletin 830, "Marketing Eggs by Parcel Post," issued by the U. S. Department of Agriculture, Washington, D. C.



Extremely large, small and soiled eggs should not be marketed; produced by a farm flock of mixed o

Eggs from "stolen" nests should not be marketed; they are of unknown age and quality and should be used at home.

When taking eggs to market, protect them from the sun's rays in warm weather. Ship or deliver eggs twice or three times weekly.

Notice the candler has places for the good eggs as well as for checks (cracked eggs), dirty eggs and "rots." When selling eggs insist that they be bought on a quality basis.



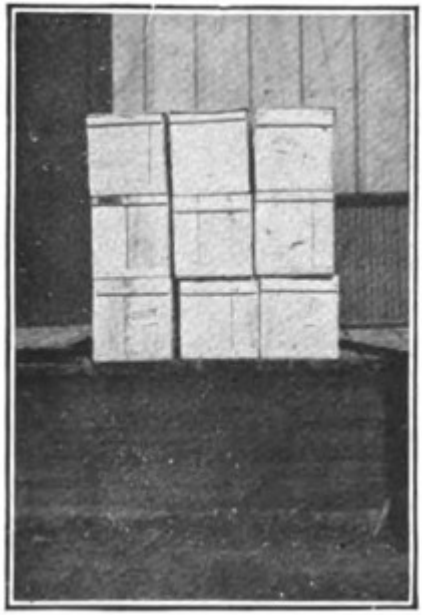
The result of a trip under the corncrib.



Everybody in the shade except the eggs.

Infertile eggs will withstand marketing conditions much better than fertile eggs.

All cockerels not intended to be kept or sold for breeders should be marketed when they reach suitable size. Such birds confined in a homemade fattening battery or coop and fed a fattening ration for a week or ten days will not only increase in weight but bring a better price on the market, because of improved quality.



A shipment of eggs on the railroad station platform, exposed to the sun.



Candling eggs for quality.

Caponizing

A capon is an unsexed male bird, which when mature is of larger size and more desirable for eating than cockerels or cocks.



A Buff Orpington cock.



A Buff Orpington capon.

By following directions and with a little practice, poultrymen will find caponizing a simple operation. For detailed information on caponizing, request Farmers' Bulletin 849.



Boys caponizing a cock

Lice and Mites

The free use of an effective lice powder is always advisable. A dust bath, consisting of road dust and

wood ashes, is essential in ridding fowls of lice.

Sodium fluorid, a white powder which can be obtained from druggists, is also effective. Apply a pinch of the powder at the base of the feathers on the head, neck, back, breast, below the vent, base of tail, both thighs, and on the underside of each wing.

An effective remedy for lice on chicks is a small quantity of melted lard rubbed under the wings and on top of the chick's head.



Applying sodium fluorid.

The free use of kerosene or crude oil on the roosts and in the cracks of the house will help to

exterminate mites.

Whitewash is effective against all vermin.

It is possible and thoroughly practicable to keep the poultry flock reasonably free from lice and mites. Such practices should be the aim of every one who is endeavoring to establish a successful flock of poultry.

For complete information on mites and lice, request Farmers' Bulletin 801.



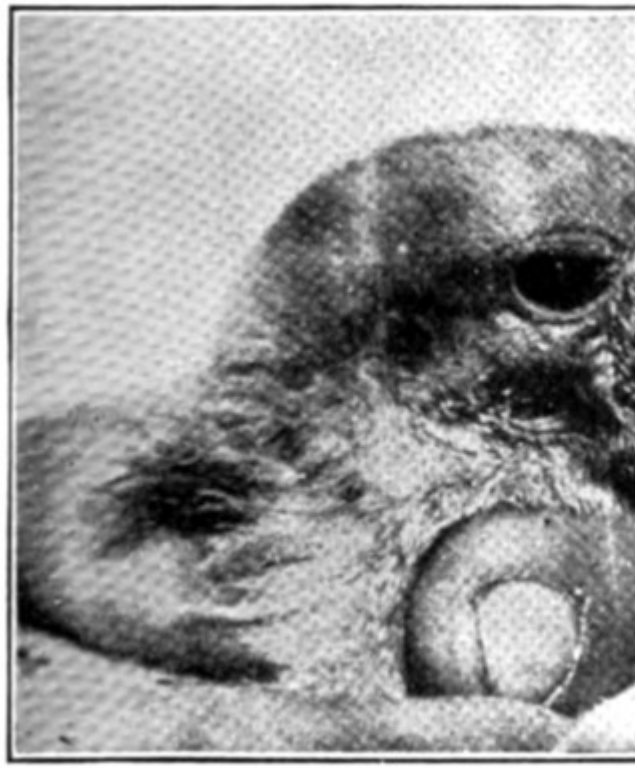
A bad case of roup.

Common Diseases and Treatment

All diseased birds should be isolated.

Colds and roup.—Disinfect the drinking water as follows: To each gallon of water add one tablespoonful of sodium sulphite or as much

potassium permanganate as will remain on the surface of a dime.



Chicken pox.

Chicken pox.—Put a touch of iodin on each sore and apply carbolated vaseline.

Gapes.—Fresh ground and vigorous cultivation will often remedy this trouble, which is caused by small gapeworms that live in the soil and attach themselves to the inside of the throat.



Limberneck.

Diarrhea in hens.—Low-grade wheat flour or middlings is good for this trouble. A teaspoonful of castor oil containing 5 drops of oil of turpentine to each fowl is also good.



Scaly legs.

Bumblefoot.—When the feet are badly swollen, a small cut should be made with a clean, sharp knife, and the pus removed. Wash the wound out with equal parts of hydrogen peroxide and water, grease with vaseline, and bandage.

Limberneck.—A teaspoonful of castor oil given to the fowl will sometimes effect a cure.

Scaly legs.—Apply vaseline containing 2 per cent of creolin to the affected parts and after 24 hours soak in warm, soapy water. Repeat treatment until

cured.

For a detailed discussion of the foregoing and other poultry diseases, request Farmers' Bulletin 957, "Important Poultry Diseases."

Nine Essential Features for Profitable Poultry Keeping

1. KEEP BETTER POULTRY:
   Standard-bred poultry increases production and improves the quality.
2. SELECT VIGOROUS BREEDERS:
   Healthy, vigorous breeders produce strong chicks.
3. HATCH THE CHICKS EARLY:
   Early hatched pullets produce fall and winter eggs.
4. PRESERVE EGGS FOR HOME USE:
   Preserve when cheap for use when high in price.
5. PRODUCE INFERTILE EGGS:
   They keep better. Fertile eggs are necessary for hatching only.
6. CULL THE FLOCKS:
   Eliminate unprofitable producers and reduce the feed bill.
7. KEEP A BACK-YARD FLOCK:
   A small flock in the back yard will supply the family table.
8. GROW YOUR POULTRY FEED:
   Home-grown feed insures an available and economical supply.
9. EAT MORE POULTRY AND EGGS:
   Poultry and eggs are highly nutritious foods.

For further information or individual advice on poultry raising write to your State Agricultural

College, or to the Animal Husbandry Division, Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

PLAN No. 221. RAISING CANARIES

A Philadelphia lady who was fond of canaries, and was an adept in their breeding and care, netted over $1,000 every year by raising these beautiful songsters and selling them to people of wealth in various parts of that city. But to make a success of this venture, one must thoroughly understand canaries from every point of view.

PLAN No. 222. LAUNDERING LINGERIE

A Chicago woman, made a comfortable living by laundering and mending lace and other fine articles of women's wear, which could not be entrusted to a washer woman. She went among the wealthy people and solicited this work.

PLAN No. 223. SMALL-TOWN MANICURING

A young lady, in a Western Washington town, too small to support a professional manicurist, made a good living by studying up on the treatment and care of the nails and hands, and offering her services to the well-to-do people of her town. They were greatly pleased that they could have this service performed for them without going to the city, and kept the young lady busy, at a compensation that afforded her an excellent living.

PLAN No. 224. SHAMPOOING AND HAIR DRESSING

A woman who lived in a small town some distance from a city, where there were many families of wealth, found field for her talents in shampooing and dressing the hair of women and children. Possessing a pleasing personality, she called upon the leading ladies of the place and offered to come to their homes at stated intervals, for the purpose of caring for the hair of the ladies and their daughters, at a stipulated sum per hour, assuring them of satisfactory service. Her offer was accepted by most of the women she visited, and she found her time fully occupied.

PLAN No. 225. MARKETING EGGS BY PARCEL POST

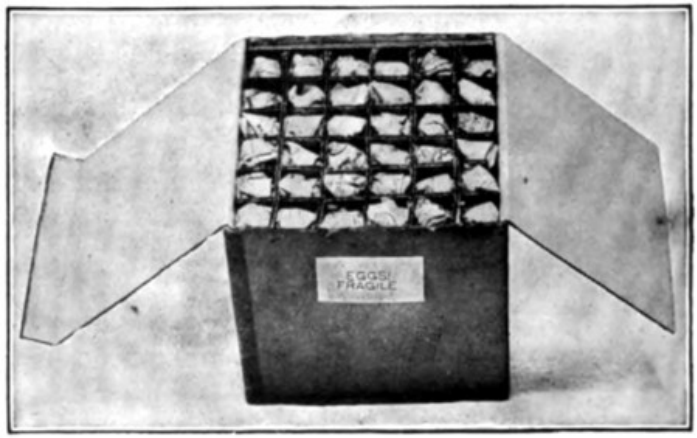
Acknowledgment is due to the United States Department of Agriculture for the following plan.

Contribution from the Bureau of Markets, Charles J. Brand, Chief.

Whether the marketing of eggs by parcel post should be attempted by any particular producer will depend on his present available markets, the possibility of securing a satisfactory customer or customers, and the care taken to follow tested and approved methods in preparing the eggs for shipment. Failures in attempting to ship eggs by parcel post have resulted because proper precautions as to package or container, packing, and labeling were not observed.

This article presents conclusions from investigations made by the Office of Markets and

Rural Organization in cooperation with the Post Office Department and gives detailed information as to the use of the parcel post.



The practicability of shipping eggs by parcel post is demonstrated by the fact that more parcels of eggs than of any other one product pass through the mails. In order to test various methods of packing and handling eggs the Office of Markets and Rural Organization has shipped more than 700 dozen eggs through the mails from various points, under various conditions, and in different types of containers, without undue loss, either in the expense of shipment or the condition of the eggs on reaching the consumer's kitchen.

While the great bulk of eggs which come from distant producing territory will continue to be shipped by other methods, it is no doubt true that many cities can be supplied with a considerable portion of their fresh eggs from within the first and second zones by parcel post to the advantage of both producer and consumer. By such direct contact the producer should secure somewhat better prices for

his eggs than are realized by present methods of marketing, and the consumer should obtain a fresher quality at no increased cost, or, frequently, even at a reduction in price. The producer who does not have satisfactory marketing facilities may find in the parcel post a means of solving his egg-marketing problems. This applies especially to the man whose flock is so small that he can not make case shipments, i. e., shipments in the regular 30-dozen-size egg case.

Summary of Results of Experimental Shipments

Four hundred and sixty-six shipments were made in the experiments. They comprised a total of $760^{11}/_{12}$ dozens, or 9,131 eggs, in lots of from 1 dozen to 10 dozen each. The number of eggs broken was 327, or slightly less than 3.6 per cent of the whole number. Of these, 209 eggs, or slightly less than 2.3 per cent, were broken too badly to use; the remaining 118 were usable. If 91 eggs broken in parcels known to have received violent usage be eliminated, the breakage resulting in loss is less than 1.3 per cent.

The instructions issued by the Post Office Department for the handling of fragile mail matter (which includes eggs) are carefully drawn and quite ample. If the proper preparations were made for mailing, and if all employees of the Postal Service could be educated to observe the instructions faithfully, the breakage could be reduced to a negligible minimum.

These experimental shipments were made over various routes and distances, including not only local shipments over short routes but points as far away from Washington as Minneapolis, Minn., and the

Rocky Mountains. They began in October, 1913, and extended to February, 1914, thus including the holiday rush. The shipments were sufficiently numerous to justify the conclusion that eggs can be shipped by mail satisfactorily under the existing postal provisions, provided these are rigorously observed.

The Eggs

The successful use of the parcel post for marketing eggs imposes the need of great care on the producer. Only such eggs should be shipped as are produced by healthy fowls kept under proper sanitary conditions and supplied with sound, wholesome feed. If possible, only infertile eggs should be produced for market; fertile eggs deteriorate rapidly and are the cause of much loss. A broody hen on the nest, or exposure to a temperature from other sources sufficient to start incubation, causes all such eggs to be rejected when they are candled. Eggs should be cared for carefully, beginning with keeping the fowls, under such conditions that the eggs will not be soiled in the nest by mud from the feet of the hens or otherwise; they should be gathered at least once a day (twice would be better) and should be stored in a well-ventilated place, which must be kept as cool as possible. Eggs intended for high-class trade should never be washed, as washing removes the natural mucilaginous coating of the egg and opens the pores of the shell. Eggs which are soiled should be kept for home use or disposed of otherwise than to a parcel-post customer.

In spite of the greatest care it will sometimes happen under ordinary farm conditions that an occasional bad egg will appear among those sent to market. It would be wise to candle every egg

shipped. Candling is “the process of testing eggs by passing light through them so as to reveal the condition of the contents.” A simple candling outfit may be made of an ordinary pasteboard box sufficiently large to be placed over a small hand lamp after the ends have been removed. The box should have a hole cut in it on a level with the flame of the lamp. Several notches should be cut in the edges on which the box rests, to supply air to the lamp. The box should be sufficiently large to prevent danger from catching fire. The one shown in figure 1 is made of corrugated pasteboard; ordinary pasteboard will serve the purpose. Candling is done in the dark, or at least away from strong light, and each egg is held against the hole in the side of the box, when its condition may be seen. An egg that shows any defect should not be marketed.

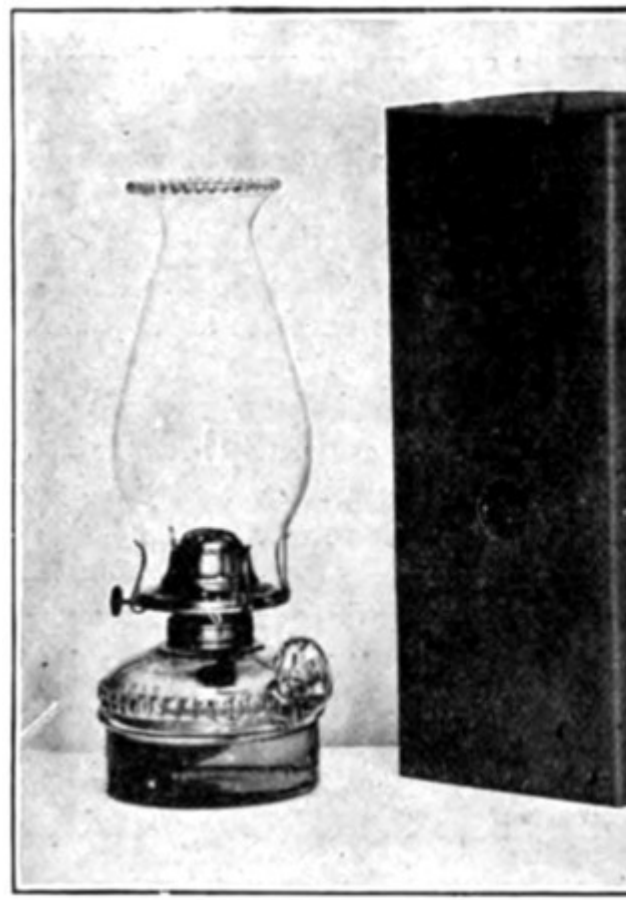


Fig. 1.—This cut illustrates a homemade candling outfit, consisti
pasteboard box.

Only first-class eggs can be marketed successfully by parcel post. The shipping of bad eggs not only will cause dissatisfaction or even loss of the customer, but, in interstate shipments, will violate the Federal food law if there are more than 5 per cent of bad eggs in a shipment. The limit allowed, however, is no excuse for any bad eggs among those marketed.

Persons desiring to build up a business of marketing eggs by this method should hatch their chicks early enough to have them begin laying in the fall season, when eggs are scarce and high priced. This will also result in more evenly distributed production throughout the year.

Preserving Eggs in Water Glass

In the spring, when they are plentiful, eggs may be preserved for home use in a solution of water glass, so that those laid during the fall and winter season may be available for marketing. A standard grade of water glass can be obtained at drug stores for 75 cents per gallon, if bought in moderately large quantities. Each quart of water glass should be diluted with 10 quarts of water which has been boiled and cooled. Only strictly fresh, newly laid, clean eggs should be placed in the solution. The eggs may be packed in stone jars or crocks which have been washed thoroughly in scalding water and the water-glass solution poured over them, or the eggs may be placed daily in the solution by putting them down in it carefully by hand so as to avoid breaking or cracking them. The solution at all times should cover the eggs to a depth of at least 2 inches. The solution will not injure the hands. The jars should be put in a cool and preferably dark place before the eggs are deposited in them, and should not be moved, because breakage and loss may result. The water-glass solution may become cloudy, but this is a natural condition and should cause no alarm.

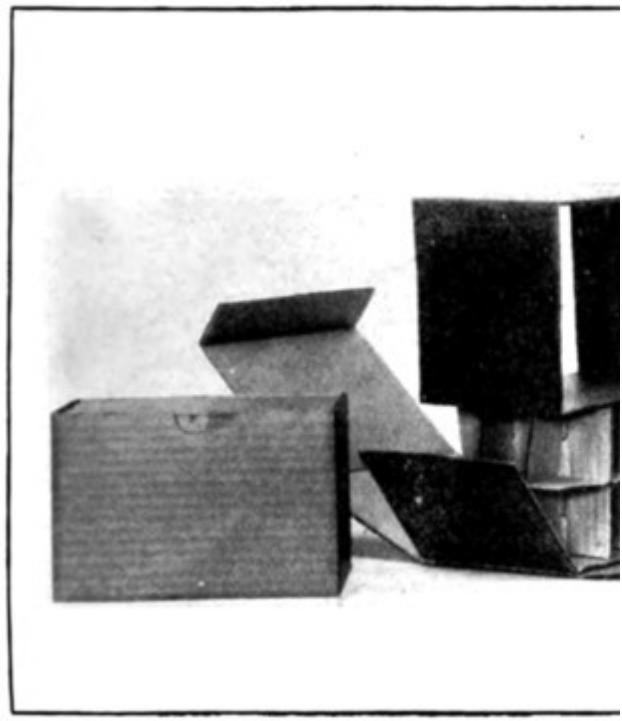


Fig. 2.—This illustration shows two 2-dozen size corrugated pastel The other is taken apart to show construction. The two inner and slip into the outer case shown on top. In filling, the box i up properly.

Eggs thus kept are good for all purposes, but the shells break rather easily in boiling. This trouble can be prevented by puncturing the end of the shell with a pin or needle just before boiling. Perhaps an occasional customer will be willing to buy eggs preserved in water glass, but they should be sold for just what they are and at a price mutually agreed upon by the producer and customer.

CONTAINERS

Experience has shown that frequently parcels are

mailed in containers not sufficiently strong and inadequately prepared and protected. These are a cause of complaint. While the containers often can be secured more easily by the consumer, the producer should make it a point to secure, through his local dealer or otherwise, such containers or carriers as meet the requirements of the postal authorities and such as will carry the particular product in a satisfactory manner, so that he may have uniformity in them when he is shipping to a number of customers. Uniform containers and uniform pack are economical and desirable; otherwise he may lose his customer, and should the container or carrier not be sufficiently stout to stand the service it will not be worth returning as an "empty" to use again.

The postal requirements for mailing eggs for local delivery are as follows:

> Eggs shall be accepted for local delivery when so packed in a basket or other container as to prevent damage to other mail matter.

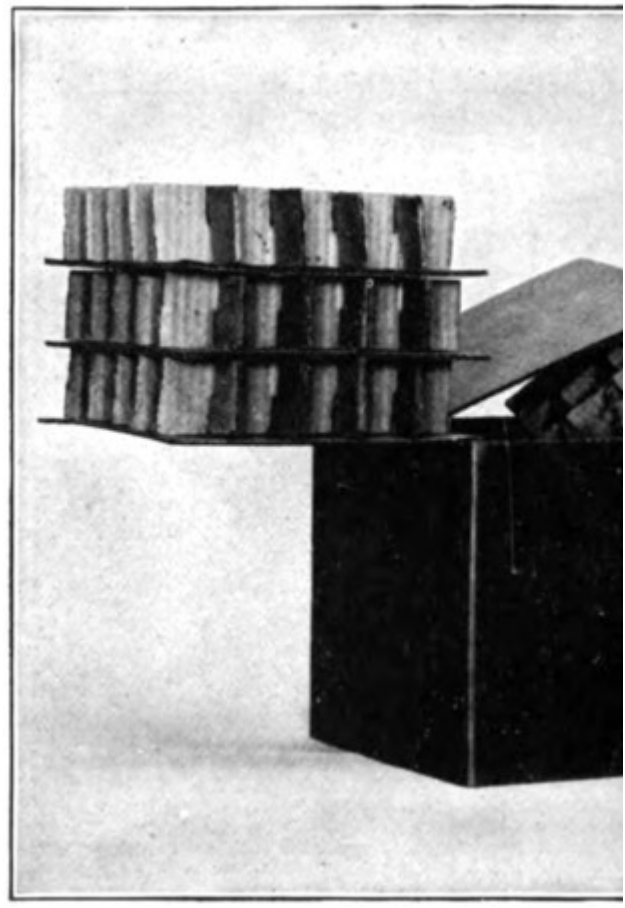


Fig. 3.—This picture shows a 10-dozen size box of corrugated pas
30 each.

This embraces all collection and delivery service within the jurisdiction of the postmaster of the office where the parcel is mailed.

Eggs to be sent beyond the local office are to be prepared for mailing as follows:

Eggs shall be accepted for mailing regardless of distance when each egg is wrapped separately and surrounded with

excelsior, cotton, or other suitable material and packed in a strong container made of double-faced corrugated pasteboard, metal, wood, or other suitable material and wrapped so that nothing can escape from the package. All such parcels shall be labeled “Eggs.”

Eggs in parcels weighing more than 20 pounds shall be accepted for mailing to offices in the first and second zones when packed in crates, boxes, buckets, or other containers having tight bottoms to prevent the escape of anything from the package and so constructed as properly to protect the contents. Such packages to be marked “Eggs—This side up,” and to be transported outside of mail bags.

The ideal container must be simple in construction, efficient in service, and cheap. Simplicity of construction is essential, so that it may be assembled and packed or filled readily and rapidly. Any part which is to be opened should be so marked or notched as to indicate the part to pull up or out. It must be efficient in service to insure satisfaction to the shipper and to the receiver, and also to prevent damage to other mail matter by possible breakage and leakage. It must be inexpensive or it will defeat the object to be attained, which is a reduction of the cost of handling between producer and consumer.

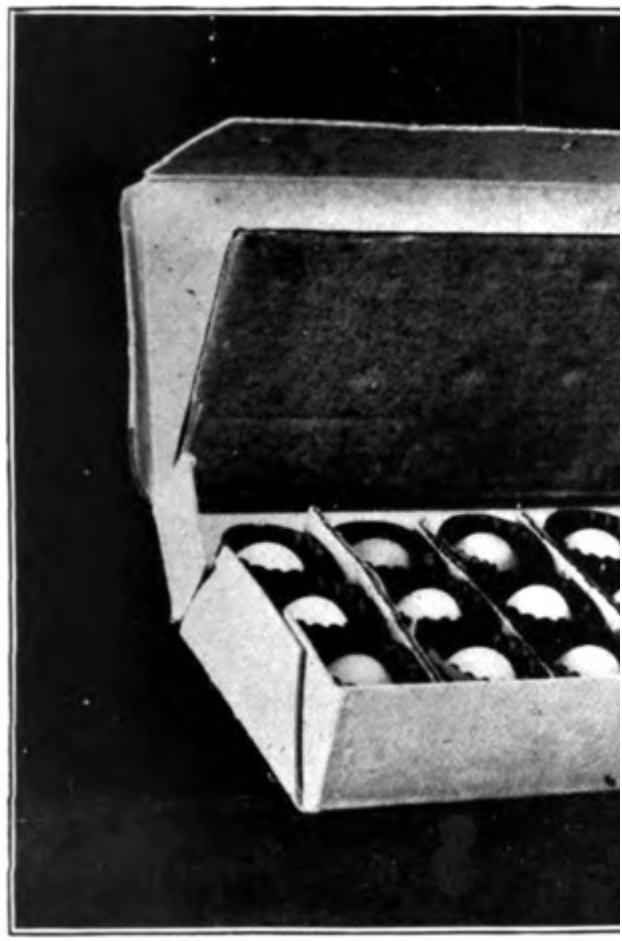


Fig. 4.—This photograph shows a fiber-board box filled with
partitions, of the same material. Each egg has a wrap of o
raised to show the eggs; it shows dark against the lid.

Trials of many different styles and makes of containers or cartons for shipping eggs by parcel post were made. Quite a number proved satisfactory in extended trials. A few of them are illustrated in these pages for the purpose of showing in a general way their appearance and construction. Any container

which meets the postal requirements and which serves the purpose properly can be used.

Information Relative to Securing Containers

The experiment stations in the various States have information as to containers for parcel-post shipments of eggs, in consumer-size lots, and persons desiring information of this kind should not address the United States Department of Agriculture, but should address the director of the experiment station in their own States. The following list gives the post-office address of each station:

Alabama:
    Auburn.
    Tuskegee Institute.
Alaska: Sitka.
Arizona: Tucson.
Arkansas: Fayetteville.
California: Berkeley.
Colorado: Fort Collins.
Connecticut:
    New Haven.
    Storrs.
Delaware: Newark.
Florida: Gainesville.
Georgia: Experiment.
Guam: Guam.
Hawaii: Honolulu.
Idaho: Moscow.
Illinois: Urbana.
Indiana: Lafayette.
Iowa: Ames.
Kansas: Manhattan.
Kentucky: Lexington.
Louisiana: Baton Rouge.
Maine: Orono.
Maryland: College Park.
Massachusetts: Amherst.

Michigan: East Lansing.
Minnesota: University Farm, St. Paul.
Mississippi: Agricultural College.
Missouri: Columbia.
Montana: Bozeman.
Nebraska: Lincoln.
Nevada: Reno.
New Hampshire: Durham.
New Jersey: New Brunswick.
New Mexico: State College.
New York:
Geneva.
Ithaca.
North Carolina: Raleigh.
North Dakota: Agricultural College.
Ohio: Wooster.
Oklahoma: Stillwater.
Oregon: Corvallis.
Pennsylvania: State College.
Porto Rico: Mayaguez.
Rhode Island: Kingston.
South Carolina: Clemson College.
South Dakota: Brookings.
Tennessee: Knoxville.
Texas: College Station.
Utah: Logan.
Vermont: Burlington.
Virginia: Blacksburg.
Washington: Pullman.
West Virginia: Morgantown.
Wisconsin: Madison.
Wyoming: Laramie.

Packing Eggs for Shipment

The eggs for packing, if the trade requires it or if it can be done without any disadvantage, should be assorted as to size and color. Eggs irregular in shape, those which are unusually long or thin-shelled, or which have shells otherwise defective, should be

kept by the producer for home use, so that breakage in transit may be reduced as much as possible.

Regardless of the particular style or design of the container used, each egg should be wrapped according to parcel-post requirements, so that it will not shake about. Square-block tissue paper, which comes in packages of 500 sheets each, soft wrapping paper, or newspaper, should be used around each egg. Should the eggs shake about in the container, the danger of breakage in handling is increased.

From the experimental shipments that have been made, it is clear that the packing should be attended to carefully. A little practice will enable the packer to do his work rapidly.

Weight of Egg Parcels

Average hens' eggs will weigh about $1^1/_2$ pounds to the dozen, or 2 ounces apiece. The weight of a single dozen of eggs in a carton properly packed and wrapped for mailing will run from 2 to 3 pounds, depending on the nature of the particular container, the size of the eggs, and the packing and wrapping used. If the container be a very light one and the eggs small, the parcel may fall within the 2-pound limit, and the postage, therefore, within the first and second zones, or 150-mile limit, would be six cents. Most parcels containing a dozen eggs will exceed 2 pounds but will not reach 3; therefore the postage on them will be 7 cents within the first and second zones. A parcel containing 2 dozen eggs will add perhaps 2 cents to the postage, though sometimes only 1 cent, depending on the nature of the container and the packing and wrapping.

It should be observed that the larger the parcel (within the size and weight limits) the cheaper is the postage, as the first pound of every package costs 5

cents within the first and second zones, while each additional pound, up to 50, costs but 1 cent; so that while a 1-pound parcel would cost 5 cents postage, a 2-pound parcel would cost only 6 cents, or 3 cents a pound. A 20-pound parcel would cost 24 cents, or $1^{1}/_{5}$ cents per pound, and a 50-pound parcel would cost 54 cents, or but $1^{2}/_{25}$ cents per pound.

Shipping Eggs for Hatching Purposes



Fig. 5.—This illustration shows 20-pound parcel-post scales, wl found quite convenient for many household purposes requi scale.

Shipping eggs intended for hatching purposes in the style of containers illustrated in this bulletin has been found satisfactory to a great many poultry breeders. Those who do not favor this way of packing can use the method ordinarily employed when eggs are to be shipped by express, which is covered by the following postal regulation:

> Eggs for hatching shall be accepted for mailing, regardless of distance, when each egg is wrapped separately and surrounded with excelsior, wood-wool, or other suitable material and packed in a basket, preferably with a handle, or other suitable container, lined with paper, fiber-board or corrugated pasteboard, in such a way that nothing can escape from the package. Such parcels shall be labeled “Eggs for hatching.” “Keep from heat and cold.” “Please handle with care,” or other suitable words, and shall be handled outside of mail sacks.

The person receiving eggs for hatching should place them on the small end in bran or similar substance for 24 hours, in order that the germs may settle thoroughly before incubation is started.

Supplies for Shippers

As the postal regulations require that every parcel must have on it the name and address of the sender preceded by the word “From,” each person shipping eggs by parcel post will find it convenient to have a rubber stamp similar to the following:

From

William Smith,

Rural Corners, Pa.

The stamp and an inking pad will cost about 50 cents.

The postal regulations also require that parcels containing eggs are to be marked “Eggs.” For this purpose a rubber stamp having letters one-half inch high and reading “Eggs” should be used to stamp this word on each side of the parcel. Thus the nature of the contents will be apparent no matter which side is in view.

The sender will soon learn how much postage each size of parcel requires. Parcel-post scales can be secured at reasonable prices. Scales are needed in the farm home on many occasions, and the parcel-post type will serve these other purposes also. They can be had for $2.50 and weigh up to 20 pounds. (See fig. 5.) “Union” scales having both a platform and a scoop attachment and weighing up to 200 or 300 pounds can be had for from $6 to $12, if desired.

Boxes, wrapping paper, and twine should be bought in as large quantities as possible (say a year’s supply at a time), so that lower prices may be obtained. With proper organization it will be possible for several farmers to join in ordering containers by the thousand and other supplies in correspondingly large quantities.

Economical Size of Parcels

In arranging with the customer as to the size and frequency of shipments it is wise to take into consideration the fact that the larger the parcel sent (i. e., the more eggs sent in one parcel) the cheaper

will be the postage per dozen. It would be much more economical for the family that uses, say, 4 dozens a week to have them sent in a 4-dozen parcel once a week than to have them sent in two 2-dozen parcels at different times during the week; and the eggs, if produced under proper conditions and properly kept, would not deteriorate to any appreciable extent in that length of time. The same principle would hold good regardless of quantity used.

Considering the cost of the container and the postage, the consumer usually will find it no economy to buy eggs for food by parcel post in less than 2-dozen lots.

Wrapping and Addressing Parcels

The appearance of the parcel depends largely upon the manner in which it is wrapped. Odds and ends of paper and twine are not desirable for this purpose. Every producer who aims to make a business of shipping eggs by parcel post should procure a supply of good tough paper of the proper size to wrap his parcels, and also good, strong, though not too heavy, cord or twine that stretches very little.

No matter what the design of the container there is always danger, should the parcel be subjected to excessive pressure or violence in any form, that the eggs may be broken and the contents leak out. In a large number of experiments it was found that when parcels were properly wrapped with good paper, even though there were quite a number of broken eggs in the parcel, in only a few cases did any leakage of the contents damage other mail matter. A container badly stained from broken eggs should not be used again. Better a little less profit on a shipment of eggs than a displeased customer, who, displeased

a few times, will cease to be a customer.

It is a simple matter to wrap the parcels both rapidly and neatly. A little attention to the best manner of folding the paper in completing the wrapping will result in a securely and neatly covered package. This applies to parcels weighing less than 20 pounds—parcels exceeding 20 pounds need not be wrapped.

To insure prompt delivery the address should be written plainly on the wrapping of the parcel. Much mail matter is delayed or altogether fails to reach its destination because of an incomplete or poorly written address.

Inclosures

An inclosure stating the number of eggs and the price may be placed in the parcel, but no message of any kind may be included, as that would subject the package to the first-class postage rate.

Unpacking Eggs When Received

The person receiving the eggs should unpack them immediately to see if any have been broken. It may be desirable to have instructions printed on the outside of the container, and the following are suggested:

"Please unpack and examine at once to see condition and to give proper attention."

Whether or not this is printed on the container, the shipper should have a distinct understanding with the consumer that this is to be done with every parcel received, so that information as to any unsatisfactory condition may be promptly obtained.

Returning Empty Containers

Many shippers will doubtless find it desirable and economical to have the customer save the containers and return them after a sufficient number have accumulated. When so returned the postage on empty cases still in usable condition is less than the cost of new ones. The consumer should receive credit for the postage required to return them. Many of the containers are made in "knocked-down" style, i. e., to take apart and fold so they can be made into a much smaller package or parcel. Containers which are knocked down to be returned should be packed in such a way that there will be no edges or points projecting without support or protection, as such projections are likely to be broken or crushed in the mails.

The cost of the container is necessarily included in the price of the eggs to the consumer. It is therefore to the interest of the consumer to take proper care of containers and to save or return all that are in usable condition. Since the return of containers will have some effect on the price of the eggs, the proper spirit of thrift should cause the consumer to take care of all returnable empties and to send them back in accordance with whatever agreement or understanding may exist between the producer and himself.

Method of Bringing Producer and Consumer Together

One of the problems to the average farmer is how to secure customers who desire eggs direct from the farm. In other words, the question is, "How shall I come in contact with the person who wants my product?"

An occasional contact may be secured through acquaintance in the city or town where a parcel-post

market is sought. Contact might also be secured by a small advertisement in a city or town paper, stating the number of eggs available per week. The postmasters in a number of large cities have issued lists of consumers which ought to be helpful. In France city dwellers make these business arrangements in summer when in the country on their holiday. Consumers who will not take trouble about these relatively small things should not complain of the high cost of food products.

Additional contact ought to be more easily obtained than the original contact, for the simple reason that if a producer supplies satisfactory eggs the person receiving them is almost sure to obtain other customers for him by speaking well of his product. It might be said that the reputation a parcel-post shipper makes with his first customers will very largely determine his success or failure in marketing by this method.

The matter of holding business once secured and securing additional business is important. One of the serious drawbacks of ordinary farming is the great irregularity of income during the year. The development of a regular parcel-post business in eggs and the numerous other products that may be marketed by this means will increase the income and distribute it better throughout the year. Once a customer has been secured, every endeavor should be made to furnish strictly high-grade goods and to deal fairly, promptly, and satisfactorily, so that the customer may be retained. When a reputation has been established for products of high quality and for fair dealing, the holding of customers and securing new ones will be a comparatively simple matter.

Fixing Fair Prices

As the object of parcel-post dealing is to get slightly increased prices for the producer and better products at the same price, or the same class of products at lower prices, for the consumer, the question of arriving at prices fair to both is important. It is also difficult.

It is not likely, at least not for some time to come, that eggs will be marketed so largely by parcel post that the ordinary marketing quotations can not be depended upon in arriving at prices.

It ought to be a comparatively easy matter for a producer and a consumer to agree upon a stipulated market quotation as the basis for determining the price to be paid. A consumer may desire 5 dozen eggs per week, the price to be agreed upon being the number of cents per dozen above the wholesale quotation for the best grade of eggs on the market that week. The necessary relations in this matter can be maintained only by scrupulous honesty and well-founded mutual trust.

Contracts or Agreements Between Producer and Consumer

The nature of the agreement between the producer and the consumer, whether reduced to writing or not, should be made to suit the circumstances and must be fair to both. Perhaps the first agreement made should be in writing; but later, if mutual confidence and trust have been thoroughly established, the contract may be verbal.

The matter of frequency and method of payment can be arranged in various ways. For the first agreement term, which may be a year or less, cash in advance might be satisfactory, until a definite system of orders and payments is established.

The agreement should specify:

(1) The names of the parties to the agreement.

(2) The length of time during which the agreement is to be in force.

(3) The number of eggs to be shipped each week during the time the contract runs, and also the frequency of shipment and the number in each shipment.

(4) Price to be paid during the time of the contract, together with the base on which the price is fixed.

(5) Method of adjusting claims for broken or bad eggs.

(6) The consumer should open boxes properly (without cutting or tearing), and should take proper care of them and return them by mail as desired by the producer.

(7) Frequency of payment and manner of remitting; postage paid on empties returned to the producer to be credited to the consumer on next bill rendered.

For the reason that eggs are in very abundant supply in the spring season and in very short supply in the fall and early winter season, the contract should specify quantity to be supplied each week throughout the year. The producer can not expect the consumer to take all the eggs that are to be marketed in the season of greatest production, nor can the consumer expect to get as many eggs as he wishes in the season of lowest production; and these two extremes should be thoroughly understood and specifically mentioned in the agreement, so as to have no misunderstanding regarding them.

In the season of short supply the consumer might be willing to try some eggs preserved in water glass, thereby relieving the situation.

The producer in making an agreement with a consumer should undertake to replace or allow for eggs lost by breakage in shipping. Should this provision in the agreement be abused by any consumer it might be sufficient reason to refuse to contract again with that consumer, and of course

satisfactory evidence of unusual breakage would need to be produced, and it might even be necessary to locate the cause of the breakage in the mails.

The following is a suggested form of agreement:

THIS Article of Agreement made this ..... day of ....., 1917, by and between JOHN DOE, of DOEVILLE, DOE County, Va., party of the first part, and RICHARD ROE, of 298 Bahama Avenue, Washington, D. C., party of the second part.

WITNESSETH, That for the price of .... cents (....) per dozen above the wholesale price for best eggs quoted in the "Blankville News" on Tuesday of each week, the party of the first part agrees to supply the party of the second part .... (....) dozens of eggs weekly for the remainder of the calendar year 1917, each weekly consignment to be shipped in one parcel.

Payments are to be made every four weeks on bill rendered by party of the first part to party of the second part after making proper allowance for eggs broken beyond use and for eggs otherwise unusable. The party of the second part is to receive credit for postage on empties returned and agrees to take proper care of containers, open them properly (without cutting or tearing), and to return them to the party of the first part as party of the first part may desire.

If party of the first part require it, party of the second part agrees to return containers with broken eggs in place if he claims they are damaged beyond use.

PARCEL POST ZONES

The United States is divided into "units," each one of which is numbered, as illustrated by the accompanying section of map. (See fig. 6.) The center of each unit constitutes the center of the zones for all post offices within that unit. The first zone consists of any given unit together with all the adjoining units, even though they but touch at the corner. The second zone embraces all those units

within a radius of 150 miles from the center of any given unit, and the whole of any unit, any part of which is touched by this 150-mile boundary line, is considered entirely within that zone.

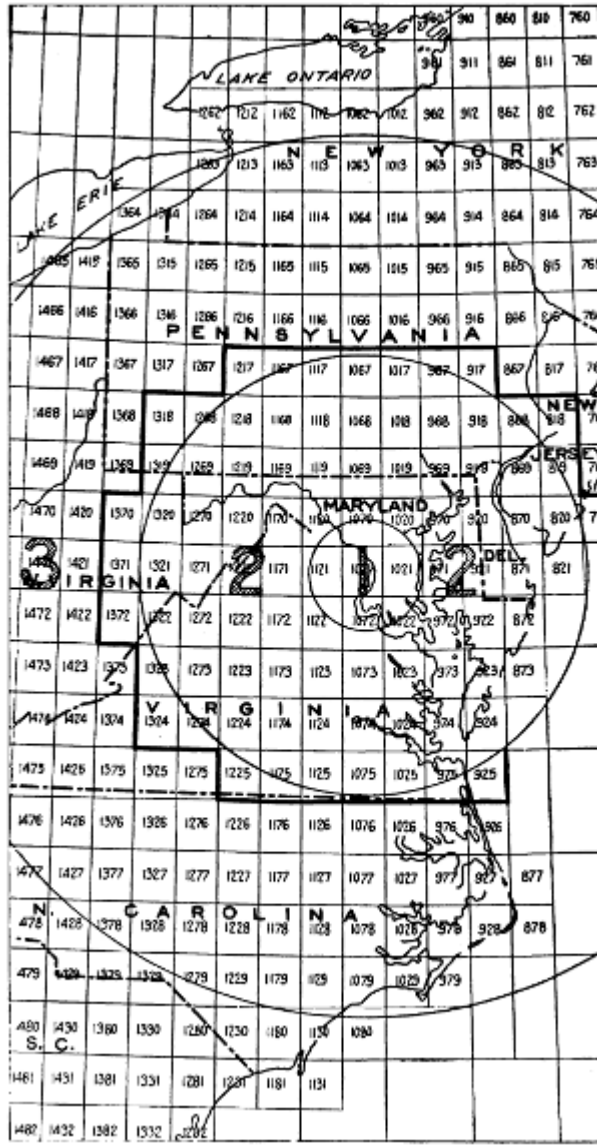


FIG. 6.—This illustration shows a section of Parcel Post Zone Map and all other post offices in Unit 1071.

There is separate zone map for each unit. The accompanying illustration shows a section of the map for the unit in which Washington is located. The second circle shows the nominal boundary of zone 2; but owing to the fact that all units which are touched by this boundary line fall entirely within the second zone, the units which are bounded by the heavy line (outside the second curved line) are entirely within zone 2. This principle applies to all other zones; that is, any unit which is touched at any point by the boundary of a given zone lies wholly within that given zone and is so considered for the purposes of the parcel-post service.

Particular description is here given of the first and second zones because of the fact that the great bulk of the shipping of farm products by parcel post is likely to be done within these zones. The rate can be ascertained readily from the accompanying tables.

Local parcel post rates

Pounds	Postage	Pounds	Postage	Pounds	Postage	Pounds	Post
	Cents		*Cents*		*Cents*		*Cer*
1	5	11	10	21	15	31	2(
2	6	12	11	22	16	32	2[
3	6	13	11	23	16	33	2[
4	7	14	12	24	17	34	2[
5	7	15	12	25	17	35	2[
6	8	16	13	26	18	36	2[
7	8	17	13	27	18	37	2[
8	9	18	14	28	19	38	2[
9	9	19	14	29	19	39	2[
10	10	20	15	30	20	40	2[

Fifty pounds is the weight limit for local delivery. These rates are 5 cents for the first pound and 1 cent additional for each 2 pounds or fraction thereof; they

apply to any parcel-post matter that does not go beyond the jurisdiction of the mailing office.

First and second zone parcel-post rates

Pounds	Postage	Pounds	Postage	Pounds	Postage	Pounds	Post
	Cents		*Cents*		*Cents*		*Cer*
1	5	11	15	21	25	31	35
2	6	12	16	22	26	32	36
3	7	13	17	23	27	33	37
4	8	14	18	24	28	34	38
5	9	15	19	25	29	35	39
6	10	16	20	26	30	36	40
7	11	17	21	27	31	37	41
8	12	18	22	28	32	38	42
9	13	19	23	29	33	39	43
10	14	20	24	30	34	40	44

The weight limit within the first and second zones is 50 pounds. These rates apply to all points within the first and second zones, as there is no difference in rates between these two zones. A simple rule to determine the postage on any parcel not going beyond the second zone is to add 4 to the number of pounds, and the resulting number is the postage required in cents. Example: A parcel weighs 13 pounds and 11 ounces; this will require postage on 14 pounds (as any fraction of a pound is considered a full pound); 14 + 4 = 18 cents postage.

The weight limit for the third, fourth, fifth, sixth, seventh, and eighth zones is 20 pounds. Any information desired in regard to rates, zones, and other postal matters can be obtained from any post office.

Measurement Limits for Parcel-Post Mail Matter

In addition to the weight limits shown in

connection with the foregoing postage tables there is a measurement limit, which is the same for all zones. This limit is that the girth (measurement around) and the length added must not exceed 84 inches. For example, a parcel 12 inches square (48 inches around) and 36 inches long would be just up to the limit, as would also a parcel 15 inches square (60 inches around) and 24 inches long. A parcel cubical in shape and 14 inches in each dimension would measure 56 inches around, and to this would be added 14 inches for length, making 70 inches, or 14 inches less than the limit.

Receipt, Insuring and C. O. D.

If desired, a receipt can be procured from the postmaster acknowledging the mailing of a parcel on the payment of 1 cent. For 3 cents a parcel may be insured against loss if not valued at more than $5.

A parcel may be sent collect on delivery for 10 cents. This also insures it for actual value not exceeding $50.

Practicability and Utility of the Parcel Post in Egg Marketing

Under the present method the general farmer, or in most cases the farmer's wife, sells the surplus eggs to the local storekeeper, taking their value out in trade. The parcel post offers an opportunity for a cash outlet at better prices. It should prove a valuable help, especially to those farms that are located unfavorably in regard to a consuming market. It is not too much to say that shipping by parcel post has been demonstrated as a practical proposition when properly conducted.

To send a 2-dozen-size parcel would cost about as follows: For container and wrapping, 8 cents; for

postage, 9 cents, or a total of 17 cents, which would be $8^1/_2$ cents a dozen marketing cost. Marketing a 5-dozen parcel would cost about 13 cents for container and wrapping and 14 cents postage, or a total of 27 cents; a 10-dozen lot would cost about 22 cents for container and wrapping and 25 cents postage, or a total of 47 cents. These figures are based on container prices prevailing prior to July 1, 1914.

The postage rates here used are those within the first and second zones. The rates to the third and farther zones are higher, and the advantages of marketing by parcel post consequently less.

These figures include the cost of a new container each time. The experiments show that containers from the 4-dozen size up will stand on an average two to four trips very satisfactorily. Containers for smaller lots will stand on an average from three to five trips. As the postage cost of returning containers is considerably less than the price of new ones, the average expense for containers can be materially reduced from the figures quoted.

Disadvantages or Difficulties in Marketing Eggs by Parcel Post

If it is kept in mind that it takes a few days for eggs to reach the consumer, a regular supply of eggs can be had for use at all times. The possibility of broken eggs and the consequent adjustment of payment may seem to be a disadvantage, but if properly provided for in the agreement it need not be. The matter of arriving at equitable prices may seem to be difficult, but ought not be a drawback.

Some farmers may be so situated that they already have a satisfactory market for their eggs. Others may wish to have a parcel-post market during a part of the year, but may dispose of them otherwise during

the remainder of the year. The local market may also at times afford a more satisfactory price than that received under a parcel-post selling agreement. There may also be producers of large quantities of eggs who find express transportation cheaper than parcel post.

The securing of proper containers and the wrapping and packing of the eggs properly for mailing, as well as the care that needs to be exercised in shipping only strictly first-class eggs, may seem difficult to some, but if a parcel-post market is to be developed, it will require care and attention to get it properly established and to keep it going successfully.

Direct Marketing of Larger Quantities of Eggs Than Private Families Require

The foregoing discussion applies especially to shipments of eggs for family consumption. It is likely that many producers will desire a larger outlet than is afforded by private families. These shippers may use containers such as are described in the postal regulations. They must come within the weight and measurement limits, however. The present 30-dozen commercial case exceeds the weight limits and would have to be forwarded by express. The express companies are now paying special attention to small shipments of food products, and furnish prompt and efficient service.

Should an individual farmer not have enough eggs to ship alone a number of neighboring farmers may club together for the purpose of shipping eggs and may secure a purchaser in the person of a hotel, restaurant, or lunch-room proprietor, or a retail grocer in some town or city. The eggs from each farm should be packed in 1-dozen size cartons or

fillers, which would take the place of the ordinary filler of the standard 30-dozen-size egg case. These cartons should have stamped on them the name and address of the producer, or instead of the name and address a number could be assigned to each farm for the purposes of identification. Each carton should be sealed so that any complaint in regard to quality can be traced to the individual producer. This is necessary in order to protect members of the club from complaints of delinquency not justly attributable to them.[2]

[2] Farmers' Bulletin 656, The Community Egg Circle, gives the details of such an organization. It can be obtained on request from the Division of Publications, Department of Agriculture, Washington, D. C.

Shipping by express presupposes that the producers concerned are within reasonable distance of express service, otherwise the expense of transporting the eggs to the express office might be prohibitive.

It is hoped that these methods may enable the producer to realize better prices, and that at the same time the consumer will secure a fresher product. Eggs so handled and shipped will be fresher and in better condition than ordinary country-store or huckster-collected eggs.

The average farmer pays scant attention to egg and poultry production, usually leaving matters relating thereto to his wife. Properly managed, however, this branch of farm industry may prove profitable. Indeed, it is not unlikely that a careful keeping of the cost of producing corn on many farms would lead to the conclusion that the family treasury had profited more by the activities of the hen than by raising corn.

Opportunity of Extension of Parcel-Post Marketing to Other Products

It is quite possible that once having secured a parcel-post market for eggs many farmers having other commodities not readily salable at home may open up markets for them in the same way. Methods of arriving at prices would be the same, the producer advising the consumer as to the commodities, quantity, and price. By this means a market may be found for many products which are not now being marketed, mainly for the reason that they are in the nature of by-products or small surpluses over the family's need which do not justify a special trip to market.

There is also a field of opportunity open for development in making a special effort to produce such things as town or city residents are anxious to obtain, and by proper attention a supplemental income could be built up by developing such business.

Summary

(1) In the experiments conducted in this study $760^{11}/_{12}$ dozens, or 9,131 eggs, were sent through the mails in 466 shipments of from 1 to 10 dozens each. The total breakage was 327 eggs; of these, 118 were only cracked or slightly broken and were usable, and 209 (or 2.3 per cent) were broken beyond use. Ninety-one eggs were broken because the parcels containing them were handled contrary to postal rules and regulations. Subtracting these, the loss was only 1.3 per cent. This shows the possibility of shipping eggs by parcel post with small loss, and indicates that eggs may be so shipped with safety if existing postal regulations are observed.

(2) Care should be exercised in the production of

eggs so that they will be of as good quality as possible. The hens should be provided with proper quarters and fed on clean, wholesome feed. The production of non fertile eggs reduces the losses materially. After gathering, the eggs should be kept carefully in the coolest and best ventilated place available.

(3) Trials of many styles and makes of containers were made; a large number proved satisfactory. The addresses of manufacturers of containers can be obtained from the agricultural experiment stations in the several States.

(4) In selecting eggs for shipping by mail, thin-shelled and unusually long or irregular-shaped eggs should not be used. Each egg should be wrapped in sufficient paper to hold it snugly in its own individual compartment in the container. The container should be properly closed and carefully wrapped with good, tough wrapping paper and strong twine. The address should be written plainly to insure prompt delivery on arrival. The postal regulations require the name and address of the sender on the parcel also.

(5) If attention is given to the necessary details, as indicated in this bulletin, eggs can be shipped by parcel post to the advantage of the farmer. This method of marketing affords a means of increasing the fresh-egg business to the benefit of both the producer and the consumer.

(6) Farmers located out of reach of a satisfactory market or of the usual means of transportation can find in the parcel post a ready means of getting their eggs direct to a consuming market promptly and at prices that will justify the additional trouble involved in packing for mailing.

Publications of the Department of Agriculture of Interest to Poultry Raisers

Farmers' Bulletin 51. Standard Varieties of Chickens.
Farmers' Bulletin 287. Poultry Management.
Farmers' Bulletin 528. Hints to Poultry Raisers.
Farmers' Bulletin 530. Important Poultry Diseases.
Farmers' Bulletin 562. The Organization of Boys' and Girls' Poultry Clubs.
Farmers' Bulletin 574. Poultry House Construction.
Farmers' Bulletin 585. Natural and Artificial Incubation of Hen's Eggs.
Farmers' Bulletin 624. Natural and Artificial Brooding of Chickens.
Farmers' Bulletin 656. The Community Egg Circle.
Farmers' Bulletin 682. A Simple Trap Nest for Poultry.
Farmers' Bulletin 703. Suggestions for Parcel-post Marketing.

Further suggestions along this line may be found in Farmers' Bulletin 703, Suggestions for Parcel-Post Marketing, which may be obtained on request from the Division of Publication, Department of Agriculture, Washington, D. C.

PLAN No. 226. DRESSING CHRISTMAS DOLLS

Having observed that of the thousands of dolls which are sold during the holidays very few of them are dressed to suit the tastes of buyers, this woman felt certain she could make a good living by dressing these dolls.

She therefore prepared a circular letter which she sent to hundreds of selected homes in her city, asking to be allowed the privilege of dressing the children's dolls according to her own taste, or that of the mothers of the little girls, and received invitations to

call at the homes of a large number of these people. She did so, and so well did she demonstrate her ability for the work that she received many orders. Her charges were reasonable, and she developed a regular and paying business.

PLAN No. 227. PAPER COVERS FOR SCHOOL BOOKS ASSIST IN PUTTING MAN THROUGH COLLEGE

A young man in an eastern Washington town, who was obliged to work his way through the agricultural college, adopted, as one of his numerous plans for making money, that of providing substantial yet inexpensive manilla covers for school books.

He bought from a wholesale paper store, a quantity of the best manilla paper at 4 cents a pound and, at a cost of 15 cents additional, had it cut into different sizes and the corners cut off on a regular paper cutter. The ends he cut off himself with a pair of shears, and pasted them down so they could be slipped on over any school book, to protect it. The cover, completed, cost him less than 2 cents each, yet he sold a large number of them for 5 cents each. Finally, he induced the school board to buy 5,000 of them, at $3^1/_2$ cents each. He made enough in this to put him through the greater part of his first year's schooling. He operated the same plan in other school districts the second and third years, and completed his course with the money he thus earned.

PLAN No. 228. MAKING PAN-LIFTERS

A woman in Lincoln, Nebraska, who knew the

difficulties and dangers involved in lifting hot pans that have to be handled often, figured out a plan to make this work both safe and convenient.

She made a belt to fasten around the waist, and on each side of the front she fastened a strip that came down nearly to the knees. On the ends of these strips she sewed small quilted pads about six inches square. These were always ready to use, and proved great time-savers and made the lifting easy.

She was so well pleased with the one she made for herself, that she made up a hundred of them and went from house to house, explaining their advantages, and readily sold them at 25 cents each.

PLAN No. 229. MONEY IN WINTER BULBS

In late October or early November every year, a Massachusetts woman buys some plain glass dishes, about five inches wide and two or three inches deep. She then collects pebbles and places them in each dish, and on top of them, so they will not touch each other, she places fine narcissus bulbs, filling in around them with more pebbles, until the dish is quite full. Then adding water enough to fill to the top, she sets the dishes on the cellar floor and leaves them there until they are full of roots. She then brings them into a light, sunny room, and as soon as they are in bloom she takes them to the woman's exchange, where they sell readily for 50 cents a dish. The cost of the dishes is 5 cents each, and the bulbs, six for 5 cents, so she makes 40 cents on each dish.

PLAN No. 230. SELLING HICKORY NUTS

A country woman with a grove of hickory trees on her farm, made $30 in one month gathering hickory nuts, which she sent to a friend in the city, who bought them at $1.50 per bushel. That was only twenty bushels, and people who live in localities where these nuts are plentiful could multiply that number many times by gathering them on a more extensive scale.

PLAN No. 231. THUMBLESS MITTENS FOR CHILDREN

What mother has ever been able to get a baby's thumb into a mitten? And how long would it stay if she did? Then why have thumbs on baby's mittens at all?

These are questions a Canadian mother asked herself many times, and learned that there was but one answer: make the mittens without thumbs. And she did so.

In fact, she found that no matter how many pair she made, the baby-outfitters gladly took all she could knit, sold them for 40 cents a pair, and charged her only a small commission for selling; as the materials cost less than 10 cents, her profit was large. She used white pompadour or saxony yarn, and a large steel hook, so the work was light, pleasant and profitable.

PLAN No. 232. TAILORED HATS

Here is the story of a Montana woman who discovered that she could make a better tailored hat for girls, and sell it for 50 cents, than the millinery

stores ask $2 for, and she not only made one for her own little girl, but for a hundred or more other small misses, and realized a profit on every one she made. The material cost but little, while the work on the hats was no trouble at all, so she kept it up until she had supplied everybody of her acquaintance with the prettiest hats to be seen anywhere. She made them from a pattern published by a well known woman's periodical; and it was so easy to follow it that the making of hats was a real pleasure.

She also made nice hats for women, at $1.00 each, and on these the profits were still greater.

PLAN No. 233. SELLING POTTED PLANTS

A southern woman who was extremely fond of flowers lived in a town of 5,000 inhabitants in which there was no regular florist, so she began supplying the needs of the flower-loving people there by engaging in the business on a small scale herself, specializing on potted plants and cut flowers.

She bought small plants, repotted them, and easily doubled her money on them. In their season she buys tomato and pansy plants and scarlet sage, as well as bulbs and roots, and holds regular flower sales at Easter, Christmas, Thanksgiving, Mother's Day, etc., and always finds a demand for all her floral products.

Recently she turned her back yard into a hot-house, and raises the plants herself, thus decreasing the cost and increasing the margin of profit. From one large bed, the seed for which cost 75 cents, she sells from $15 to $20 worth of plants every season. She also advises flower growers about flowers culture, color schemes, etc., and in many ways adds

to the grand total of her yearly income.

PLAN No. 234. BASKET MAKING

A downeast woman learned basket making in the young people's society of her church, and made it a regular business. She specializes in market and scrap baskets, but makes fancy reed ones to order. Her main sales are made through the woman's exchange, though sometimes direct to customers, and her earnings are sufficient to support her very comfortably.

This line of work is not overcrowded, and there is plenty of opportunity in it for many other women.

PLAN No. 235. GROWING MUSHROOMS

There are many methods of growing mushrooms, but the one adopted by this Michigan woman is perhaps as easy and profitable as any of them.

First, providing a sufficient quantity of fresh manure and black dirt, she carefully prepares the beds and buys the spawn, and with but little care thereafter they produce a good crop every month in the year.

In one bed 7 feet long by 2 feet wide, made from an old trunk lid and two soap boxes, she placed three bricks of spawn early in October, and eight weeks later picked $1^1/_2$ pounds of mushrooms, which sold for $1.26 per pound. Then every two days thereafter, until May 1st, she picked from four to five pounds. The picking, packing and marketing are easy, and do not interfere with her regular household duties. She made $8 to $10 a week out of this industry, and

recommends it to others who need something to help out with household expenses.

PLAN No. 236. LUNCHES FOR SCHOOL CHILDREN

A woman in Minnesota, whose income was very limited, was asked by the parent-teachers' association to provide noon lunches for the pupils in the basement of a school building, the profit or loss to be her own.

She had two long tables made of rough boards, covered with white oilcloth, and on these she spreads sandwiches made of minced ham, peanut butter, chipped beef and cheese, at 3 cents each; cake at 2 cents a slice, with milk, cocoa, soup, etc., at very low prices, yet which pay her a profit. She buys her material at wholesale prices, and makes a small profit on each article, so there is at least a comfortable living in it.

At one o'clock her work is all done, and she has the afternoons and Saturdays at her own disposal.

Not a very large enterprise, but it affords a living, and that is quite an item for a poor woman.

PLAN No. 237. DESICCATED VEGETABLES

An eastern woman, anxious to help her husband lift the mortgage from their farm, had been told of the possibilities of desiccated vegetables, and decided to try out the plan herself.

By way of experiment, she desiccated some vegetables and dried them in the sun. These she soaked for an hour in cold water, poured off the water, and put the vegetables in with some meat she

was stewing. In half an hour she had a fine Irish stew ready for the table.

Calling in some of her neighbors, they formed a local company for manufacturing desiccated vegetables. The vegetables, dried to a small bulk, were easily shipped to grocers at a great saving in freight or express charges, the weight also having been reduced to almost nothing.

The company employed several of its members to become traveling salesmen, and they took many orders, as dealers were glad to get the new product. A package containing enough potatoes, carrots and onions for a stew, was sold for 3 cents at retail or 2 cents wholesale. They sold well at all seasons, as they were a great saving to the housewife, and when put into water were as fresh and palatable as in their original state.

PLAN No. 238. A PROFITABLE ADVERTISING PLAN

A young man left Chicago some time ago and went to the Northwest for the purpose of increasing his earning power.

Having first provided himself with twelve cartoon plates, with a strong home-trade argument under each cartoon, which a big newspaper syndicate had made for him, he stopped at a town of some 5,000 inhabitants and called upon the publisher of the leading newspaper. To him he made the following proposition: To obtain for his paper one or two pages of local advertisements to run every week for twelve weeks, and create a strong sentiment for patronizing home merchants and local industries, furnishing the cartoons and home-trade arguments, of which he

showed proofs, and to divide the profits equally, though it was not to cost the publisher a cent, except the composition on the local ads. to be secured and set up; that for this home-trade page, the rates must be double his regular rates, so that he would get full price for his ads.

Of course, the publisher accepted, and the Chicago man went to work. In three days he had contracts signed up for enough local ads. to fill two pages with the cartoon in the center of the page to run twelve consecutive weeks, the contracts to be left with the publisher, who was to collect and forward him his half, but the newspaper man willingly paid him one-fourth of the amount that would be due him at the end of the twelve weeks.

In three days the Chicago man had made just $288. This plan will afford a good living to any advertising salesman.

PLAN No. 239. BACKYARD POULTRY KEEPING

Acknowledgment is due for this article to the United States Department of Agriculture, Washington, D. C. Contribution from the Bureau of Animal Industry, A. D. Melvin, Chief.

In every household, no matter how economical the housewife, there is a certain amount of table scraps and kitchen waste which has feeding value but which, if not fed, finds its way into the garbage pail.

Poultry is the only class of domestic animals which is suitable for converting this waste material, right where it is produced in the city, into wholesome and nutritious food in the form of eggs and poultry meat.

Each hen in her pullet year should produce ten dozen eggs. The average size of the back-yard flock

should be at least ten hens. Thus each flock would produce in a year 100 dozens of eggs which, at the conservative value of 25 cents a dozen, would be worth $25.

By keeping a back-yard poultry flock the family would not only help in reducing the cost of living but would have eggs of a quality and freshness which are often difficult to obtain.

Remember that eggs produced by the back-yard flock cost very little, as the fowls are fed largely upon waste materials.



An illustration of the average back yard of the city man which ma
raising chickens.

Advantages of Home Poultry

The keeping of a small flock of laying hens on a

town or village lot or in a city back yard is an important branch of poultry keeping. Though the value of the product from each flock is small of itself the aggregate is large. The product of such a flock, both in the form of eggs and fowls for the table, may be produced at a relatively low cost, because of the possibility of utilizing table scraps and kitchen waste which would otherwise be thrown away. A small flock of hens, even as few as six or eight, should produce eggs enough, where used economically, for a family of four or five persons throughout the entire year, except during the molting period of the fall and early winter. By the preservation of surplus eggs produced during the spring and early summer this period of scarcity can be provided for. The keeping of pullets instead of hens also will insure the production of eggs at this time. Not only will the eggs from the home flock materially reduce the cost of living, but the superior freshness and quality of the eggs are in themselves well worth the effort expended. Eggs are a highly nutritious food and are so widely used as to be almost indispensable, and an occasional chicken dinner is relished by everyone.

Where conditions render it feasible and cheap small flocks of poultry should be kept to a greater extent than at present by families in villages and towns, and especially in the suburbs of large cities. The need for this extension of poultry raising is particularly great in those sections where the consumption of poultry products exceeds the production, with the result that prices are high.

Overcoming Objections to Keeping Poultry in the City

Objection is frequently raised to the keeping of poultry in towns and cities because of the odor

which may result and also because of the noise which is made by roosters crowing, particularly in the early morning. In some cases city regulations have been formulated to prevent or to control poultry keeping. Where there are city regulations it is necessary to find out their provisions and to conform to them. There is no necessity for the poultry flock to become a nuisance to neighbors. If the dropping boards are cleaned daily and the houses and yards are kept in a reasonably clean condition there will be no annoying odors.

The male bird need not be a nuisance. Unless it is intended to hatch chickens from the flock it is unnecessary to keep a male bird. The fact that there is no male in the flock will have absolutely no effect on the number of eggs laid by the hens. If it is desired to mate the hens and to hatch chicks the male bird should be sold or eaten just as soon as the hatching season is over. This is desirable not only for the purpose of eliminating noise, but also to save the feed that would be eaten by the male and for the reason that the eggs produced after the male is disposed of will be infertile. Since these eggs are incapable of chick development they keep much better than fertile eggs and consequently are superior for preserving or for market.

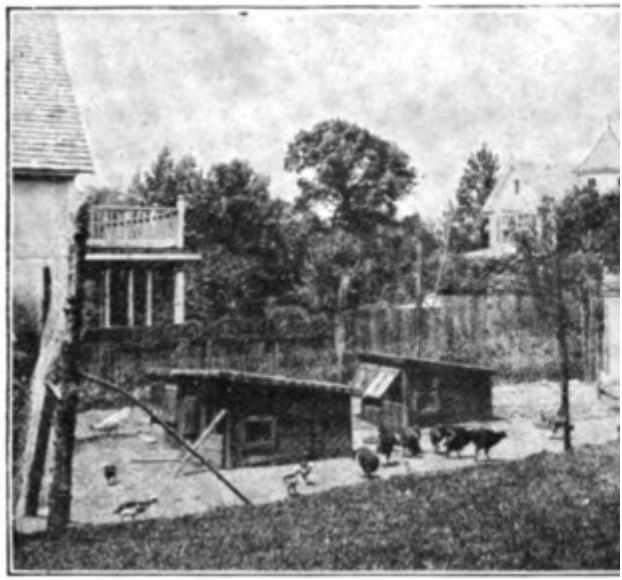


Fig. 1.—Poultry house and run in

The flock must be kept confined; otherwise the hens will stray into neighbors' yards and gardens, where they may cause damage and are almost sure to cause ill feeling.

Kind of Fowls to Keep

Householders usually desire not only eggs for the table and for cooking, but also an occasional chicken to eat. For this reason one of the general-purpose breeds, such as the Plymouth Rock, Wyandotte, Rhode Island Red, or Orpington, is preferable to the smaller egg breeds, such as the Leghorns. Not only do the mature fowls of these breeds, because of their larger size, make better table fowls than the Leghorns, but the young chickens for the same reason make better friers and roasters, whereas

chickens of the egg breeds are only suitable for the smaller broilers. The general-purpose breeds are also "broody" breeds, the hens making good sitters and mothers, which is a decided advantage when it is desired to hatch and raise chickens, since the hens of the egg breeds seldom go broody and are in any event rather unreliable sitters and mothers. If, however, the production of eggs outweighs the desire for an occasional table fowl, the lighter egg breeds undoubtedly will be found better, because they lay as many eggs and do so on less feed, with the result that they produce the eggs more cheaply. It is by all means advisable to keep some pure breed or variety. Where this is done, sales at a profitable figure can often be made of breeding stock which it is intended to market or of eggs for hatching.

Size of Flock

The size of the flock which can be most efficiently kept will depend first of all upon the space available and, secondly, upon the amount of table scraps or other waste which is available for feed. It is a mistake to try to overstock the available space. Better results will be obtained from a few hens in a small yard than from a larger number. The back-yard poultry flock rarely will consist of over 20 or 25 hens and in many cases of not more than 8 or 10, or occasionally of only 3 or 4. For a flock of 20 to 25 hens a space of not less than 25 by 30 feet should be available for a yard. Where less space is available, the size of the flock should be reduced, allowing on the average 20 to 30 square feet per bird. A few hens are sometimes kept successfully with a smaller yard allowance than this, but if the space is available a yard of the size indicated should be used.



Fig. 2.—A back-yard poultry plant. In the background are the poult
rats. At the left is a shade made of wooden strips and roofing
and chicks. In the foreground oats for green feed are being spr

Procuring Stock

The best way for the city poultry keeper to procure hens is to purchase them in the fall. An effort should be made to obtain pullets rather than older hens, and the pullets selected should be well matured, so that they will begin to lay before the cold weather sets in. Evidences of the maturity of pullets are the development and red color of the comb and a size and growth which are good for the breed or variety. Hens will lay little or no eggs during the fall and early winter, while they are molting. Well-matured pullets, however, should lay fairly well during this period, so that an immediate return is realized from the investment. The purchasing of pullets in the fall is preferable in most cases to purchasing day-old

chicks or to hatching chicks in the spring. Usually there is little space available for the raising of chicks, and, moreover, many city dwellers have had no experience in raising them. Under these conditions the results are apt to be very poor. Hatching and rearing chicks also necessitates broody hens for this purpose, or else investing money in artificial apparatus such as incubators and brooders. Such an investment is often too great to prove profitable with the average small flock. If chicks are raised, they must be fed throughout the summer and no return will be obtained until the pullets begin to lay in the fall, except that the males can be eaten or sold.



Fig. 3.—A shed in the heart of the city utilized for a poultry hou admit more light and make a more suitable hen house, the fe netting used for the yard was purchased very cheaply at an au the run are used to furnish shade.

When pullets are to be purchased, it is well if possible to go to some farmer or poultryman who may be known to the prospective purchaser. In some cases it may pay to make arrangements with the farmer to raise the desired number of pullets at an agreed price. Where the householder does not have an opportunity to go into the country for his pullets, he can often pick them out among the live poultry shipped into the city to be marketed. The advice of some one who knows poultry should be sought in making such a purchase, to make sure that pullets or young hens are obtained, and that the stock is healthy. Often the local poultry associations are glad to help the prospective poultry keeper to get stock by putting him in communication with some of its members having stock for sale. Sometimes the local board of trade or chamber of commerce is glad to help to bring together the prospective purchaser and the poultry raiser.

HOUSING

The flock should be comfortably but not expensively housed. A house which provides a floor space of 3 or 4 square feet per bird is ample for the purpose, and fowls are often successfully kept with an allowance no greater then $2^1/_2$ to 3 square feet. Houses must be dry and free from draft, but must allow ventilation. Often there is an unused shed or small building on the place which can easily be converted into a chicken house (see fig. 3). The front of the poultry house should be faced toward the south, if possible, so that the sun will shine into it. Perfectly satisfactory houses can be made cheaply from piano boxes or other packing cases. Two piano boxes with the backs removed can be nailed together and a door cut in the end. These boxes should be

covered with a roofing paper in order to keep the house dry and to make it wind-proof. A portion of the door should be left open or covered with a piece of muslin, so as to allow ventilation. (See figs. 4 and 5.) Similar houses can be constructed of packing cases at a relatively small cost. A small amount of 2 by 4 or 2 by 3 lumber can be purchased for framing. The box boards can be applied for siding or sheathing and then covered with roofing paper. Where there is a board fence it is sometimes possible to take advantage of this by building the poultry house in the corner of the fence and making the fence itself, with the cracks covered by strips or battened, serve as the back and one side of the house.



Fig. 4.—Poultry houses, each of which is made out of two piano bo
feet apart, the back and top of each removed, a frame for roof

boxes built in with the boards removed from the boxes. The w
boxes at $2.50 each, such a house can be easily and quickly
hens comfortably.

A cheap house 8 by 8 feet square can be made of 2 by 4 inch pieces and 12-inch boards. Plans for such a house are given in figure 6. The 2 by 4 pieces are used for sills, plates, corner posts, and three rafters. No studding is required except that necessary to frame the door and window space. The boards are run up and down and add sufficient stiffness to the house. They are used also for the roof and covered with roofing paper. The back and sides of the house also can be covered with roofing paper, or the cracks can be covered with wooden battens or strips $1^1/_2$ to 3 inches wide. In the front of the house there should be left a window or opening which can be closed, when desired, by a muslin screen or curtain which serves as a protection against bad weather but allows ventilation. In the side a door should be provided which will allow entrance. A shed or single-slope roof is best because easiest to build. A height of 6 feet in front and 4 feet in the rear is ample. If desired, the house may be built higher, so that it is more convenient to work in; the increase in cost will be slight. The ventilator in the rear is not needed in the northern part of the country, but is desirable in the South where summers are very warm.



Fig 5.—Rear view of piano-box houses shown in fig. 4. The openin coolness in the hot weather. Windows could be used instead lighter when closed.

Such a house would be ample for a flock of 20 to 25 hens. It can be built quickly and easily and is cheap in construction. The material required is as follows:

BILL OF MATERIAL

Roof rafters, 5 pieces, 2 by 4 inches by 8 feet long.

Roof plates, 2 pieces, 2 by 4 inches by 8 feet long.

Sills, 4 pieces, 2 by 4 inches by 8 feet long.

Posts, 3 pieces 2 by 4 inches by 6 feet long; 2 pieces 2 by 4 inches by 4 feet long.

Stringer, 1 piece, 2 by 4 inches by 8 feet long.

Total pieces required to cut list:

7 pieces 2 by 4 inches by 16 feet long.

1 piece 2 by 4 inches by 12 feet long.

Total feet in board measure, 81.

ROOSTS AND DROPPING BOARD.

1 piece 2 by 3 inches by 16 feet long.

1 piece 2 by 3 inches by 10 feet long.

Total board measure, 13 feet.

2 pieces 1 by 12 inches by 16 feet long.

Total board measure, 32 feet.

SHEATHING BOARDS

Roof, 5 pieces 1 by 12 inches by 16 feet long.

Two sides, 2 pieces 1 by 12 inches by 10 feet long; 3 pieces 1 by 12 inches by 12 feet long; 2 pieces 1 by 12 inches by 14 feet long.

Front, 2 pieces 1 by 12 inches by 10 feet long.

Back, 2 pieces 1 by 12 inches by 16 feet long.

Total feet board measure, 216.

BATTEN STRIPS.

130 linear feet $^{1}/_{2}$ by 2 inch strips, 24 board feet.

24 linear feet $^{7}/_{8}$ by 2 inch strips, for curtain frame, 4 board feet.

ROOFING

80 square feet roofing paper; nails and tins.

HARDWARE

2 pairs 8-inch T hinges for door.

1 padlock for door.

3 pairs 4-inch T hinges for curtain frame and rear ventilator.

5 pounds 10-penny wire nails for framing.

10 pounds 8-penny wire nails for sheathing.

5 pounds 4-penny wire nails for stripping.

21 square feet poultry wire, $^3/_4$-inch mesh, for front.

3 yards muslin for curtain.

32 rough bricks will build piers.

FLOOR

If floor is desired in house, add the following material:

2 pieces 2 by 4 inches by 16 feet long.

4 pieces 1 by 12 inches by 16 feet long.

Total feet board measure, 85.

TOTAL LUMBER REQUIRED

Without floor, 370 board feet.

With floor, 455 board feet.

Lumber can be rough or dressed.

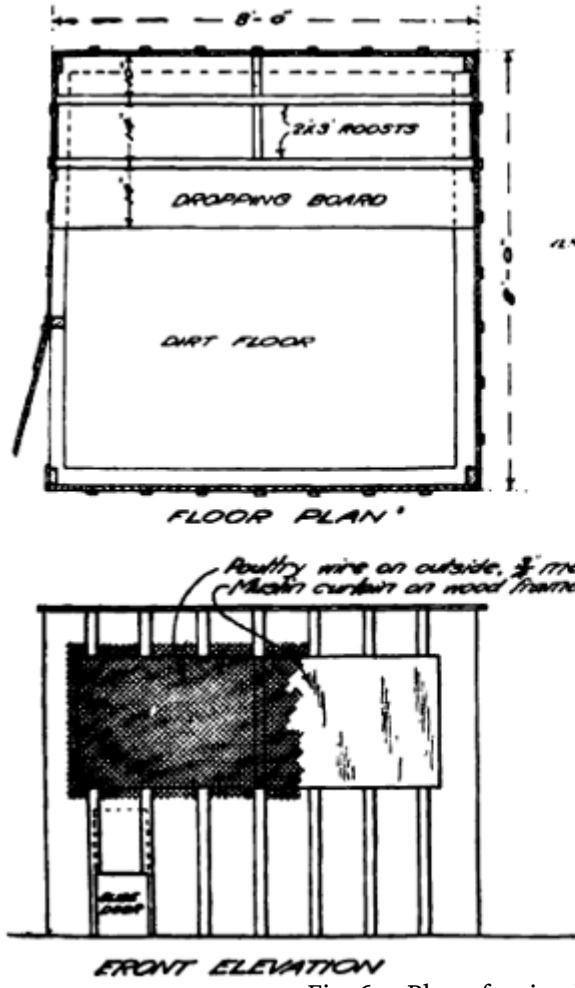


Fig. 6.—Plan of a simple

When the soil is well drained and consequently will remain dry no floor need be used in the house, the ground itself serving as the floor. Often a slight dampness can be corrected by filling up the floor several inches above the outside ground with sand, cinders, gravel, or dry dirt. Three or four inches of

the surface of the floor, and of the run if a very small run is used, should be removed and replaced with fresh dirt two or three times a year. If the ground is so wet or damp that this condition can not be corrected by filling it is best to provide a board floor as this will help to keep the house dry, will allow easier cleaning, and will promote the general health and welfare of the hens. A house with a board floor should be set on posts or blocks, so that it is 5 to 12 inches above the ground. When this space is left the floor will not rot so quickly and rats are not so likely to take refuge under the house. (See fig. 7.)



Fig. 7.—A good type of open-front poultry house for a small flock. on cold nights. The house is set on brick piers so as not to aff

on the front of the house where the eggs can be reached by rai

In order to keep the flock in a clean and sanitary condition, dropping boards should be provided and roosts above them. This makes it easy to remove the droppings each morning and helps greatly to keep the house free from objectionable odors. A little sand or ashes sprinkled on the dropping board after each cleaning will be found to make the cleaning easier.

The dropping boards and roosts should be placed against the back wall. Here they are out of the way and at the same time where they are least likely to be reached by drafts. The dropping boards should be about 20 to 30 inches from the floor, depending on the height of the building. This gives space enough under them so that the hens have room to exercise and is not too high for the heavier hens to fly up to. The roosts should be 3 or 4 inches above the dropping boards. If more than a single roost is used, they should be on the same level; otherwise all the hens will try to crowd upon the highest roost. A piece of 2 by 4 or 2 by 3, laid and with the upper corners rounded off, make a good roost. A pole, or even a piece of board 2 or 3 inches wide, may be used. If the roost is of light material and fairly long, it should be supported in the center, as well as at the ends, to prevent it from sagging badly. An allowance of 7 to 10 inches of roost space per fowl, according to the size of the birds, should be made. If more than one roost is used, they should be placed about 15 inches apart.

Nests must be provided and may be very simple. Any box about 1 foot square and 5 or 6 inches deep is suitable. An ordinary orange box with the partition in the middle serves this purpose very well, each box forming two nests. The top is removed, the box laid

on its side, and a strip 3 to 4 inches wide nailed across the lower front. (See fig. 9.) Nests can be fastened against the walls of the house or set on the floor. It is preferable to fasten them against the wall, as they take too much floor space if set on the floor. One nest should be provided for each 4 or 5 hens.

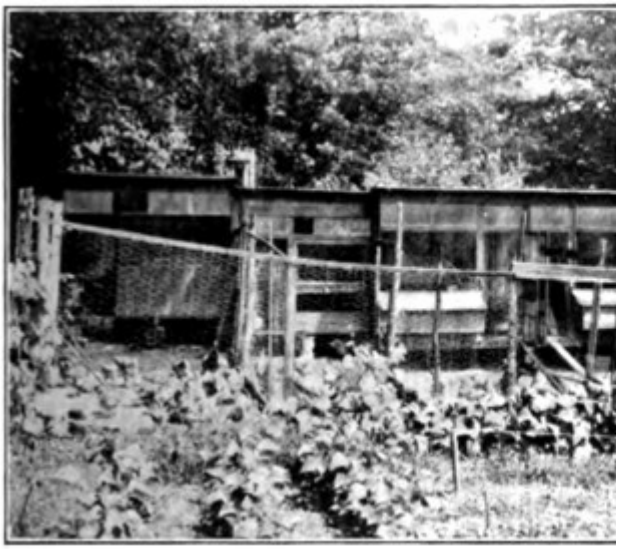


Fig. 8.—A larger poultry house suitable for a suburban lot. No construction. The utilization of such used material, which ca auction or where buildings are being wrecked, lessens the cost

The straw or other material used in the nest should be kept clean and not be allowed to get so low that the eggs when laid by the hen will strike the board bottom of the nest, as this will cause them to break and will start the hens to eating the eggs, which is a very troublesome habit and one that is very difficult to break up once it is formed.

A litter of straw or the leaves raked up in the fall about 3 or 4 inches deep, should be used on the floor of the house. This material helps to absorb the

droppings and also provides a means of feeding the grain in such a way that the hens are obliged to exercise by scratching for it.

When hens become broody, they should be "broken up" as quickly as possible. for the sooner this is done the sooner they will resume laying. To break a hen of broodiness she should be confined to a small coop, preferably with a slat bottom. Give her plenty of water to drink; she may be fed or not as desired. Not much difference will be found in the time required to break her of broodiness, whether she is fed or made to fast. Usually from 3 to 6 days' confinement will break her, but some hens require 10 to 12 days. The broody hen will be recognized by her inclination to stay on the nest at night, the ruffling of her feathers and her picking at anyone who approaches her, and by the clucking noise she makes. The fact that her broodiness has been broken up can be recognized by the disappearance of these symptoms.

The Yard

The yard should be inclosed by a board or wire fence. Wire fencing is preferable, as it is cheaper and the hens are less likely to fly over it. If cats prove troublesome, where one is raising young chickens, it may be necessary to cover the top of the yard with wire also. A board should not be used at the top of a wire fence, as this gives the hens a visible place to alight and tends to teach them to fly over. A 5-foot fence is high enough for most conditions, but if the hens show a tendency to fly over such a fence the flight feathers of one wing should be clipped. The larger the yard which can be provided the better the hens will do, as it not only gives them greater opportunity to exercise, but also makes it possible to

maintain a sod on the yard. In most cases not enough land will be available so that a sod can be maintained.

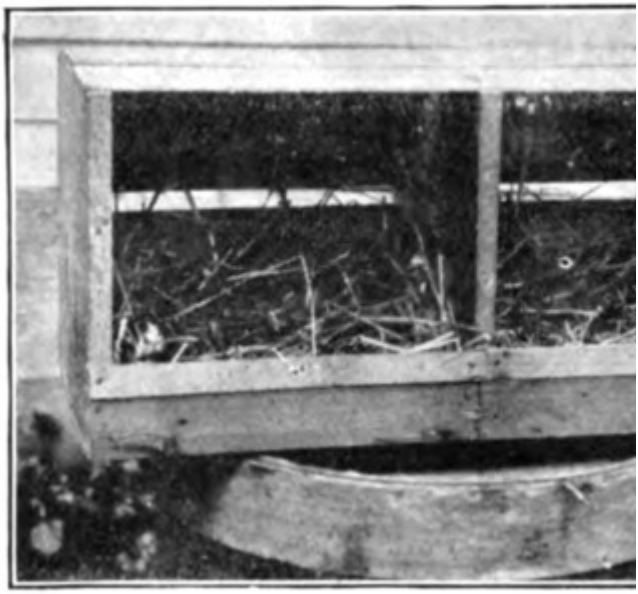


Fig. 9.—An orange box converted into a double nest by laying it c
the front to hold in the nesting mate

If the yard is fairly large, it can be divided into two parts and green crops, such as oats, wheat, rye, or dwarf essex rape, allowed to start in one yard while the hens are confined to the other. (See fig. 10.) The green crops should be sown very thick, and the following quantities will be found satisfactory for a yard 25 by 30 feet: Wheat, $2^3/_4$ pounds; oats, $1^1/_2$ pounds; rye $3^1/_4$ pounds; rape, 5 ounces. When the growing stuff reaches a height of 2 or 3 inches the hens can be turned upon it and the other yard be similarly sown.

Where it is inadvisable to divide the yard, it is

possible to keep a supply of green stuff growing by using a wooden frame 2 or 3 inches high, covered with 1-inch-mesh wire. A frame made of 2 by 4 lumber, 6 feet long and 3 feet wide, with an additional piece across the center to support the wire when the hens stand on it, will be found desirable for a small yard. (See fig. 11.) A part of the yard as large as this frame is spaded up and sown, the frame placed over it, and the material allowed to grow. As soon as the green sprouts reach the wire the hens will begin to pick them off, but since they can not eat them down to the roots the sprouts will continue to grow and supply green material. This frame can be moved from place to place in the yard, and in this way different parts cultivated.

The yard should be stirred or spaded up frequently if not in sod in order to keep it in the best condition. This will not only tend to keep down any odors which might arise, but also allow the droppings to be absorbed into the soil more readily and therefore keep the yard in better condition for the hens.

Although it is necessary to keep the hens confined to their yard most of the time, it is sometimes possible to let them out where they may range upon the lawn for an hour or so in the evening when some one can be at hand to watch them, or at certain seasons of the year to allow them to run in the garden plot. This will be enjoyed greatly by the hens and will be very beneficial to them.



Fig. 10.—Back-yard poultry house and flock. Notice the double ya
fed off and the second yard is planted to rape, which is ab
background provides, when the berries are ripe, nearly enough

Feeding

In feeding the city flock an effort should be made to do so as cheaply as possible, consistent with the production of eggs. To accomplish this, all table scraps, kitchen waste, etc., should be utilized. Scraps of meat or left-over vegetables which can not be utilized in any other way make excellent feed. There are also many other waste products, such as beet tops, turnip tops, carrot tops, potato parings, onion tops, watermelon and cantaloup rinds, the outside leaves of cabbages, waste lettuce leaves, bread and cake crumbs, etc., all of which are relished by the hens and can be used to the best advantage. In saving the scraps and waste it is well to separate the portions adapted for feeding to the flock and place

these in a receptacle or pail of their own. Decomposed waste material or moldy bread or cake should never be saved to feed to the hens, as it is harmful to them and may cause serious bowel trouble. Sloppy material, such as dishwater, should not be thrown into their pail. It is also useless to put in such things as banana peels or the skins of oranges, as these have little or no food value. Any sour milk which is not utilized in the house should be given to the chickens. This should be fed separately, however, either by allowing the hens to drink it or by allowing it to clabber on the back of the stove and then feeding it in that condition. When the family's table waste is not sufficient for feeding the flock, it is usually possible to get some of the neighbors who keep no hens to save material suitable for feeding. Many people are glad to do this if a small pail in which to place the waste is furnished.



Fig. 11.—A frame made of 2 by 4 inch lumber and covered with
sprout oats or other grain for the hens. The wire prevents the
so close as to kill the plants and from scratching out the root
be quickly killed.

Table scraps and kitchen waste are best prepared for feeding by running them through an ordinary meat grinder. After the material has been put through the grinder it is usually a rather moist mass, and it is well to mix with it some corn meal, bran, or other ground grain until the whole mass assumes a crumbly condition. The usual method is to feed the table scraps at noon or at night, or at both times, as may be desired, in a trough or on a board. All should be fed that the hens will eat up clean, and if any of

the material is left after one-half or three-quarters of an hour it should be removed. If allowed to lie it may spoil and would be very bad for the hens.

With the table scraps it is well to feed some grain. Perhaps this may be given best as a light feed in the morning. Four or five handfuls of grain (about $^{1}/_{2}$ pint) scattered in the litter will be sufficient for a flock of 20 or 25 hens. By handful is meant as much as can be grasped in the hand, not what can be scooped up in the open hand. By scattering it in the litter the hens will be compelled to scratch in order to find the grain and in this way to take exercise, which is decidedly beneficial to them. If the house is too small to feed in, the grain can be scattered on the ground outside. A good grain mixture for this purpose is composed of equal parts by weight of wheat, cracked corn, and oats. Another suitable grain mixture is composed of 2 parts by weight of cracked corn and 1 part oats.



Fig. 12.—An intensive back-yard poultry plant. Practically the
covered runs, and about 70 hens are carried. Each house is
covered yard of the same size. Each pen carries about 15 hens.
the hens can run under them. The soil in the runs is renewed
these pens laid 2,163 eggs in a year. Oats are sprouted in the
addition, chickens are raised here.

In addition to the grain and the table scraps it is well to feed a dry mash. This dry mash is composed of various ground grains and is placed in a mash hopper or box from which the hens can help themselves. The advantage of feeding such a mash is that the hens always have access to feed, and this tends to make up for any fault, inexperienced, or insufficient feeding. The hens do not like the dry mash so well that they are likely to overeat, but it

will supply a source of feed in case they are not getting enough. The dry mash also provides a suitable medium for feeding beef scrap, a certain amount of which may or may not be necessary, depending upon the amount of meat scraps available in the table waste. If the hens show a tendency to become overfat it may be desirable to close the mash hopper during a part of the day and allow them access to it only during a certain period, preferably the afternoon. A good dry mash is composed of equal parts by weight of corn meal, wheat bran, wheat middlings, and beef scrap. Another good mash is composed of 3 parts by weight of corn meal and 1 part beef scrap. Still a third mash, which has given excellent results, is composed of 1 pound of wheat bran, 1 pound of wheat middlings, 6.5 pounds of beef scrap, and 16.5 pounds of corn meal. The beef scrap used in the dry mash is usually the most expensive ingredient, but it is a very essential part of the mash and very efficient for egg production. It should not be eliminated or reduced unless the quantity of meat in the table scraps is considerable or unless some other product can be substituted for it. Fish scrap, when available, may replace the beef scrap, or cottonseed meal can be used to replace one-half the beef scrap in the mash. No attempt should be made to replace more than half the beef scrap with cottonseed meal, as the results in egg production and in the quality of the eggs will be unsatisfactory.

Green cut bone can often be purchased from the butcher. This material when procured fresh makes an excellent substitute for beef scrap. It should be purchased in small quantities, as it can not be kept fresh for any length of time and when spoiled may cause severe bowel trouble. It is best fed in a trough

not oftener than every other day, allowing about one-half ounce per bird. Should severe or continued looseness of the bowels follow the feeding of green cut bone it should be discontinued or the quantity reduced.

Vegetable tops, parings, and other vegetable refuse supply a valuable and very necessary green feed for the hens. Lawn clippings also are a valuable green feed. They can be fed as soon as cut, or they may be dried or cured, stored in bags, and saved until winter, when they can be soaked in warm water and fed in that condition or be mixed with some of the mash or with the table scraps.



Fig. 13.—Inclosure for hen and chicks with box used as a coop

moved each day to a fresh spot of ground. A burlap bag t provides shade. Twenty-five chicks were put with a hen in thi making good growth.

The hens should have access at all times to a supply of grit or stones of a size small enough to be swallowed readily. Grit is used by the hens to help in grinding in their gizzards the hard grains which they eat. A supply of ordinary gravel will answer the purpose of grit very well. Crushed oyster or clam shell also should be given to the hens and be kept before them at all times. If this is withheld the hens are likely to lack sufficient shell-forming material in their feed, with the result that they lay many soft-shelled or thin-shelled eggs. Grit or shell can be purchased in small quantities at any feed or poultry supply store.

A plentiful supply of clean, fresh water must always be available to the hens. The fowls drink freely, especially when laying heavily, and should not be stinted of such a necessary and cheap material as water. The water pan or dish should be kept clean. If it is not washed out frequently a green slime will gather on its inner surface. This should not be allowed to happen. It is well to keep the water pan outside the house and in the shade in the summer, but in the winter, when the water may freeze, it is best that the pan be left in the house, and it should be raised about a foot above the floor so that the hens will not kick it full of straw or other litter when scratching for their feed. When the nights are cold enough so that the water is likely to freeze the pan should be emptied each night and refilled in the morning.

Lice and Mites

If the best results are to be expected from the flock, the hens must not be allowed to become overrun with lice or the house with mites. Usually there will be a place in the yard where the hens can dust themselves in the dry dirt. If such a place is not available, a box large enough (about 2 feet square) for the hens to get into it should be provided in the house and a quantity of dust such as ordinary road dust or fine dirt placed in it to allow the hens a place to dust themselves. A dust bath aids the hens in keeping lice in check and therefore adds to their comfort. Usually the lice are not present on the birds in sufficient number to prove particularly harmful. However, it is better to keep the hens as free as possible from this pest, and if they are not able to keep them in check by dusting themselves, other measures can be undertaken.

To rid the hens of lice, each one can be treated by placing small pinches of sodium fluorid, a material which can be obtained at most large drug stores, among the feathers next to the skin—one pinch on the head, one on the neck, two on the back, one on the breast, one below the vent, one at the base of the tail, one on either thigh, and one scattered on the underside of each wing when spread. Another method is to use a small quantity of blue ointment, a piece about as large as a pea on the skin 1 inch below the vent. If mercurial ointment is used instead of blue ointment, it should be diluted with an equal quantity of vaseline. Any of these methods will be found very effective in ridding the hens of lice and should be employed whenever the lice become troublesome. Two or three applications a year usually prove sufficient.

Mites are more troublesome and more harmful than lice. They do not live upon the birds like the

lice, but during the day hide in the cracks and crevices of the roosts and walls of the house, and at night they come out and get upon the fowls. They suck the hen's blood, and if allowed to become plentiful—as they certainly will if not destroyed—will seriously affect her health and consequently her ability to lay eggs. They may be eradicated by a few thorough applications of kerosene or some of the coal-tar products which are sold for this purpose, or crude petroleum, to the interior of the poultry house. The commercial coal-tar products are more expensive but retain their killing power longer, and they may be cheapened by reducing with an equal part of kerosene. Crude petroleum will spray better if thinned with 1 part of kerosene to 4 parts of the crude oil. Both the crude petroleum and the coal-tar products often contain foreign particles, so should be strained before attempting to spray. One must be sure that the spray reaches all of the cracks and crevices, giving especial attention to the roosts, dropping-boards, and nests, and the treatment should be repeated two or three times at intervals of a week or 10 days.[3]

[3] For further information on the subject of poultry lice and mites and their control the reader is referred to Farmers' Bulletin 801, "Mites and Lice on Poultry," by F. C. Bishopp and H. P. Wood, of the Bureau of Entomology. Copies of this bulletin may be obtained free on application to the Division of Publications, United States Department of Agriculture.

Hatching and Raising Chicks

Often it is inadvisable to attempt to renew the city poultry flock by hatching and rearing chicks or buying and rearing day-old chicks. Previous

experience in the raising of chickens often increases the chances of success. However, the land available is usually small in area, and no attempt should be made to raise chicks unless a plot can be provided separate from that to which the hens have access and upon which there is grass, or a supply of green feed can be furnished. Where these conditions are not available, it is better to kill the hens as soon as they have outlived their usefulness and replace them by well-matured pullets in the fall. Where it is found desirable to hatch and rear a few chicks this can best be done with hens. Where a few day-old chicks are purchased to rear and no hens are available for the purpose, it is possible with little trouble and expense to construct a fireless brooder which will answer the purpose. Full directions for making such a brooder are given in Farmers' Bulletin 624, page 10[4].

[4] Copies of these publications may be obtained free from the Division of Publications, U. S. Department of Agriculture.

The hatching should be done early in the spring and should be completed if possible by the first of May. Chicks hatched before this time will have a good chance to mature and be in laying condition as pullets before the cold weather of fall sets in, and should in consequence be producers during the entire fall and winter. Early-hatched chicks are also easier to raise, as they live and thrive better than those which are still small when the hot weather begins. If it is desired to hatch and raise chicks, the reader is referred to Farmers' Bulletin 585, "Natural and Artificial Incubation of Hens' Eggs," and 624, "Natural and Artificial Brooding of Chickens."[5]

[5] Copies of these publications may be obtained free from the Division of Publications, U.

S. Department of Agriculture.

Culling the Hens

In any flock some hens will be found to be much better producers than others. Often there are a few hens which are such poor producers that they are unprofitable. Where the flock is comparatively small, the owner is often able to determine by observation which are the poor producing hens. Needless to say, these should be the ones to kill and eat as fowls are desired for the table. All hens molt in the fall and early winter. During this molting season, which usually takes about three months, the hens lay few or no eggs. It is advisable, if well-matured pullets can be purchased at a reasonable price, to kill and eat the hens as they begin to molt, replacing the flock with newly purchased pullets. The hens should not be killed, however, until they begin to molt and their comb begins to lose its size, color, and flexibility, for if these changes have not taken place the hens will probably still be laying and at a time of year when eggs are especially valuable.

Preserving Eggs

A small flock of hens, even five or six, may produce enough eggs during the greater part of the year to supply the needs of a medium-sized family. Where a larger flock is kept, there will be a time during the spring and early summer when more eggs are produced than are used. These surplus eggs can either be sold or, what is perhaps more desirable, preserved in the spring for home use during the fall and early winter, when eggs are high in price and much more difficult to obtain from the flock.

The eggs to be preserved must be fresh. They should be put in the preserver on the day on which

they are laid. The eggs should be clean, but it is better not to wash them. Eggs with dirty shells can be used for immediate consumption and the clean eggs preserved. Cracked eggs or those with thin or weak shells should never be used for preservation. Not only will the cracked egg itself spoil, but it will cause many of the other eggs packed in the same jar with it to spoil as well.

One of the best methods of preserving eggs is by the use of waterglass. This material can be purchased by the quart from the druggist or poultry supply men. It is a pale yellow, odorless, sirupy liquid. It should be diluted in the proportion of 1 part of waterglass to 9 parts of water which has been boiled and allowed to cool. Earthenware crocks or jars are the best containers for the purpose, since they have a glazed surface and are not subject to chemical action from the solution. The crocks or cans should be scalded out, so that they will be perfectly clean, and allowed to cool before they are used. A container holding 6 gallons will accommodate 18 dozen eggs and will require about 22 pints of solution. Too large containers are not desirable, since they increase the liability of breaking some of the eggs. Half fill the container with the waterglass solution and place the eggs in it. Eggs can be added from day to day as they are obtained, until the container is filled. Be sure that the eggs are covered with about 2 inches of waterglass solution. Cover the container and place it in a cool place, where it will not have to be moved. It should be looked at from time to time to see that not enough of the water has evaporated so that the eggs are uncovered. If there seems to be any danger of this, sufficient cool boiled water should be added to keep them covered.

Remove the eggs from the solution as desired for

use and rinse them in clean, cold water. Before boiling such eggs prick a tiny hole in the large end of the shell with a needle, to keep them from cracking. As the eggs age the white becomes thinner and is harder to beat. The yolk membrane becomes more delicate, and it is correspondingly difficult to separate the whites from the yolks.

Limewater is also satisfactory for preserving eggs and is slightly less expensive than waterglass. A solution is made by placing 2 or 3 pounds of unslaked lime in 5 gallons of water which has been boiled and allowed to cool, and allowing the mixture to stand until the lime settles and the liquid is clear. The eggs should be placed in a clean earthenware jar or other suitable vessel and covered to a depth of 2 inches with the liquid. Remove the eggs as desired, rinse in clean, cold water, and use immediately.

Practical Pointers

Keep the hens confined to your own land.

Don't keep a male bird. Hens lay just as well without a male.

Don't overstock your land.

Purchase well-matured pullets rather than hens.

Don't expect great success in hatching and raising chicks unless you have had some experience and have a grass plot separate from the yard for the hens.

Build a cheap house or shelter.

Make the house dry and free from drafts, but allow for ventilation.

Fowls stand cold better than dampness.

Keep house and yard clean.

Provide roosts and dropping boards.

Provide a nest for each four or five hens.

Grow some green crop in the yard.

Spade up the yard frequently.

Feed table scraps and kitchen waste.

Also feed grain once a day.

Feed a dry mash.

Keep hens free from lice and the house free from mites.

Kill and eat the hens in the fall as they begin to molt and cease to lay.

Preserve the surplus eggs produced during the spring and summer for use during the fall and winter when eggs are scarce and high in price.

Publications of the United States Department of Agriculture Relating to the Care of Poultry

Available for Free Distribution by the Department.

Standard Varieties of Chickens. (Farmers' Bulletin 51.)

Poultry Management. (Farmers' Bulletin 287.)

Successful Dairy and Poultry Farm. (Farmers' Bulletin 355.)

Hints to Poultry Raisers. (Farmers' Bulletin 528.)

Important Poultry Diseases. (Farmers' Bulletin 530.)

Boys and Girls Poultry Clubs. (Farmers' Bulletin 562.)

Poultry House Construction. (Farmers' Bulletin 574.)

Natural and Artificial Incubation of Hens' Eggs. (Farmers' Bulletin 585.)

Natural and Artificial Brooding of Chickens. (Farmers' Bulletin 624.)

Simple Trap Nest for Poultry. (Farmers' Bulletin 682.)

Squab Raising. (Farmers' Bulletin 684.)

Duck Raising. (Farmers' Bulletin 697.)

Goose Raising. (Farmers' Bulletin 767.)

Mites and Lice on Poultry. (Farmers' Bulletin 801.)

Standard Varieties of Chickens: 1. The American Class. (Farmers' Bulletin 806.)

How the Produce Dealer May Improve Quality of Poultry and Eggs. (Separate 596 from Year Book 1912.)

Thanksgiving Turkey. (Separate 700 from Year Book 1916.)

The Chicken Mite, Its Life History and Habits.

(Department Bulletin 553.)

For Sale by the Superintendent of Documents, Government Printing Office, Washington, D. C.

Refrigeration of Dressed Poultry in Transit. (Department Bulletin 17.) Price, 10c.

Commercial Fattening of Poultry. (Department Bulletin 21.) Price. 10c.

Lessons on Poultry for Rural Schools. (Department Bulletin 464.) Price, 10c.

Food Value and Uses of Poultry. (Department Bulletin 467.) Price, 5c.

Eggs and Their Value as Food. (Department Bulletin 471.) Price, 5c.

Improvement of Farm Eggs. (Bureau of Animal Industry Bulletin 141.) Price, 10c.

PLAN No. 240. CAPONS AND CAPONIZING

Contribution from the Bureau of Animal Industry, A. D. Melvin, Chief.

Acknowledgment is due for this article to the United States Department of Agriculture, Washington, D. C.

A capon is an unsexed or castrated male chicken.

The true capon seldom crows.

The capon is to the poultry dealer what the fat steer is to the beef packer—the source of the choicest food product of its kind. As a result of a contented disposition the capon develops more uniformly than the cockerel, and grows larger than the cockerel of the same age. Coupled with this better growth, the capon commands a better price per pound, and the demand continues good notwithstanding the fact that more and more are raised each year.

The Plymouth Rocks, Light Brahmas, Cochins, Indian Games, Langshans, Wyandottes, Orpingtons,

and various crosses of these, make the best capons.

Cockerels should be caponized when they weigh from $1^1/_2$ to $2^1/_2$ pounds or when from 2 to 4 months old.

The operation is more difficult than with most other domestic animals, but can be performed rapidly and with little danger after some practice.

The making, feeding, and marketing of capons, with details concerning methods and results, are presented in this bulletin that caponizing may become a regular practice of the poultry raiser where conditions are favorable.

It is impossible to say just how long the operation of caponizing has been performed. It seems quite certain, however, that the practice was familiar to the Chinese more than 2,000 years ago. Later it was practiced by the Greeks and Romans and, through medieval times, by the people of middle and southern Europe, until in recent times it has been introduced into America. At present capons are most universally known and appreciated in France, although within the last few years the business of producing them has advanced rapidly in this country. This industry is most important in that portion of the United States east of Philadelphia, though increasing numbers of capons are being raised in the Middle Western States. During the winter months capon is regularly quoted in the markets of the larger eastern cities. Massachusetts and New Jersey are the great centers for the growing of capons, while Boston, New York, and Philadelphia are the important markets.



A Capon.

Description and Characteristics of the Capon

What is a capon? A capon is an altered or castrated male chicken, bearing the same relation to a cockerel that a steer does to a bull, a barrow to a boar, or a wether to a ram. As with other male animals so altered, the disposition of the capon differs materially from that of the cockerel. He no longer

shows any disposition to fight, is much more quiet and sluggish, and is more docile and easy to keep within bounds. The true capon seldom crows. Along with this change in disposition there is a change in appearance. The comb and wattles cease growing, which causes the head to appear small. The hackle and saddle feathers develop beautifully.

As a result of the more peaceful disposition of the capon he continues to grow and his body develops more uniformly and to a somewhat greater size than is the case with a cockerel of the same age. For a time the cockerel and the capon make about equal development, but as soon as the reproductive organs of the cockerel begin to develop the capon begins to outstrip him in growth. Also when finishing off the capon fattens more readily and economically. As they do not interfere with or worry one another, a large flock of capons may be kept together. Coupled with the better growth is the fact that the capon brings a better price per pound. Cockerels from 2 to 5 months old usually bring from 15 to 25 cents a pound; if held longer than this they become “staggy,” are classed as old cocks, and do not bring more than 6 to 15 cents a pound. Capon in season brings 20 to 35 cents and often more a pound. There are two reasons, then, why it is better to caponize surplus cockerels than to raise them for market as such: (1) There is an increase in weight and (2) the price per pound is materially increased. Yet in many localities where especially fine poultry is raised, while capons usually sell for a somewhat better price, the difference is not great. In fact, for the Boston market, many capons are picked clean and sold as “south shore roasters.” Hence it will be seen that the profit in capons must depend to a great extent upon local conditions. The demand for capons continues good,

notwithstanding the fact that more and more are raised each year.

Selection of Breeds

In selecting the breed best suited for caponizing several factors must be taken into consideration. Large capons bring the best prices. Consequently the breed should be large. It does not pay to caponize small fowls. Yellow legs and skin, as in other classes of poultry, are most popular. The Plymouth Rocks, Light Brahmas, Cochins, Indian Games, Langshans, and Wyandottes are all recommended by different producers, as are also various crosses of these. The Orpington also makes fine capons, but the white legs and skin are somewhat of a disadvantage in this country. The Brahmas and Cochins possess good size. By some the Brahmas are claimed to be difficult to operate upon; by others this is denied. The Plymouth Rocks and Wyandottes are somewhat smaller, but sell readily and possess the advantage of yellow skin and legs. The Langshan is large and is easily operated upon. The Indian Game is probably most useful as a cross upon some one of the other breeds, thereby improving the breast meat without materially reducing the size of the fowl. In Massachusetts the Brahma was formerly the most popular breed for this purpose because of the demand for large birds for roasters. Later crosses between the Light Brahma and the Barred or White Plymouth Rock became quite popular, while at present the pure Barred and White Plymouth Rocks are perhaps most widely used.

Time to Caponize

In so far as the effects of the operation and the rapidity and ease of healing are concerned, the time of year when the operation is performed is of little

importance. The capons seem to recover and do well at any time. Certain other considerations, however, do influence the time. The age and size of the cockerel are very important. As soon as the cockerels weigh $1^1/_2$ to $2^1/_2$ pounds, or when 2 to 4 months old, they should be operated upon. The lower age and weight limits apply particularly to the American breeds, while the higher apply to the Asiatics. If smaller than this, their bodies do not give room enough to work handily. On the other hand, they should never be over 6 months old, as by this time the testicles have developed to a considerable extent, the spermatic arteries carry greater amounts of blood, and the danger of pricking these arteries and causing the fowl to bleed to death is greatly increased. The fact that capons are in greater demand and bring the best prices from the Christmas season until the end of March, and that it takes about 10 months to grow and finish them properly, makes it important to hatch the chicks in early spring so that they will be of proper size for caponizing in June, July, and August. These are by far the most popular months for the operation, though in some cases it is performed still later.

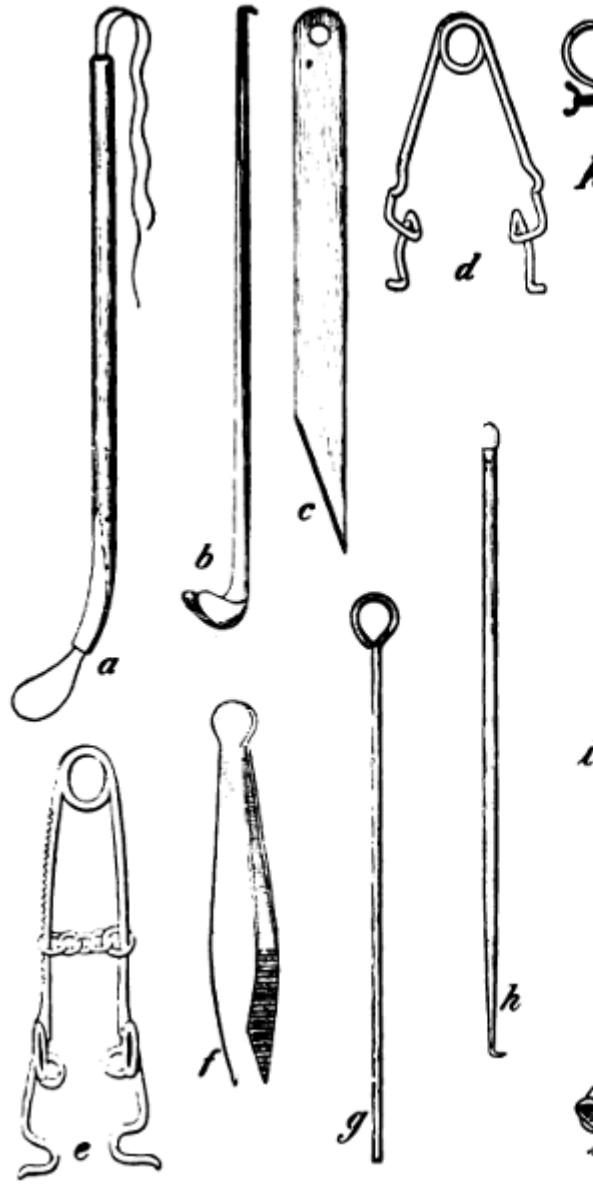


Fig. 1.—Instruments used

Caponizing Instruments

There are several sets of instruments for performing the operation. These differ principally in the type of instrument used in getting hold of and removing the testicle. One type is the cannula (fig. 1, *a*). This consists of a hollow tube, the lower end of which is compressed and closed except for two small holes through which to run the horse hair or wire comprising the other part of the instrument. This type requires two hands to operate. Another type is the twisting scoop (fig. 1, *b*). This is a spoon-like scoop slotted in the center and mounted upon a slender rod. It is designed to slip under the testicle, allowing the spermatic cord to pass through the slot. By twisting the cord in severed. This type has the advantage of requiring only one hand to operate, but is more liable to produce “slips” than the cannula. A third style of instrument (fig. 1, *i*) is also in the form of a spoon or scoop, but instead of being in one piece has two jaws regulated by a slide. The testicle is caught in the scoop with the spermatic cord between the jaws, and by tightening the jaws and gently moving the instrument the cord is severed and the testicle removed. Still another type, not now in common use, is the spoon forceps. With this the testicle is simply grasped with the forceps and detached by a twisting movement. Here one hand can be used also, but the liability of slips is rather greater than with the other methods.

Figure 1, *k*, shows a type of forceps, consisting of two hinged arms, one of which terminates in a broad, flat surface, and the other in an end of similar shape from which the center has been removed, leaving only a narrow rim. These two ends are held closely pressed together by means of a rubber band passing across the handles. In use, the ends of the forceps are separated, the solid one slipped under the

testicle and the rim then allowed to settle down over it. The cord is thus caught and the testicle can be removed. Careless or too rapid use of this instrument is likely to cause slips. Figure 1, *l* and *m*, shows two additional types of testicle removers. The type shown in *l* has a curved handle which brings the hand out of the line of vision, making it easier to see into the body cavity when using the instrument. A knife for making the incision into the body cavity is, of course, necessary. Almost any sharp-pointed, thin-bladed knife will answer the purpose well (see fig. 1, *c*). Some sort of spreader to spring apart the ribs far enough to allow the instruments to be inserted into the body must be used. A plain spring spreader, as shown in figure 1, *d*, or a sliding spreader (fig. 1, *e*), allowing the pressure to be gauged, will answer the purpose. A sharp-pointed hook (fig. 1, *h*). for tearing away the thin membranes, and a blunt probe, of which figure 1, *g*, is one type, for pushing aside the intestines, complete the necessary equipment. A pair of small tweezers or nippers (fig. 1, *f*) is also useful in removing any foreign matter from the body.

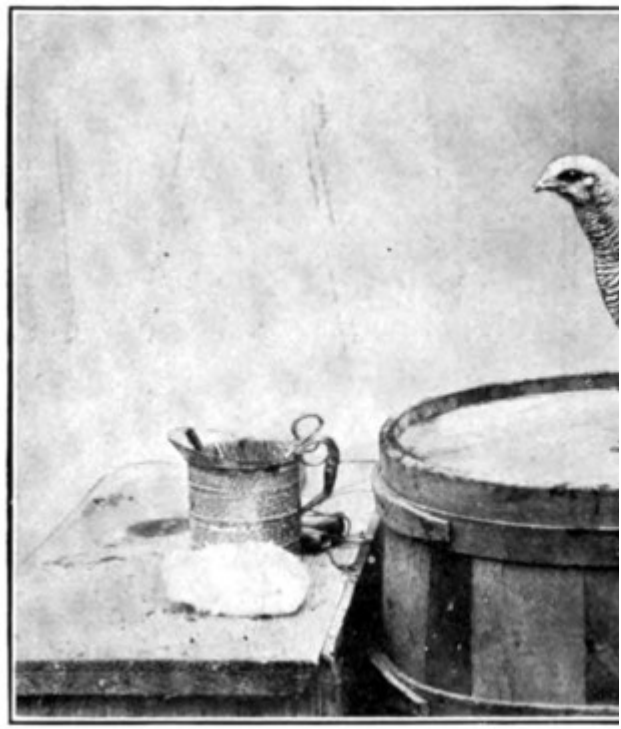


Fig. 2.—Barred Plymouth Rock cockerel of s

The Operation of Caponizing

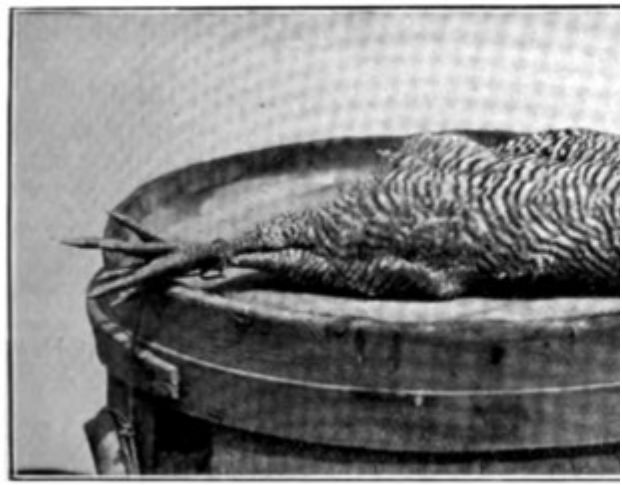


Fig. 3.—Method of securing fowl in position for th

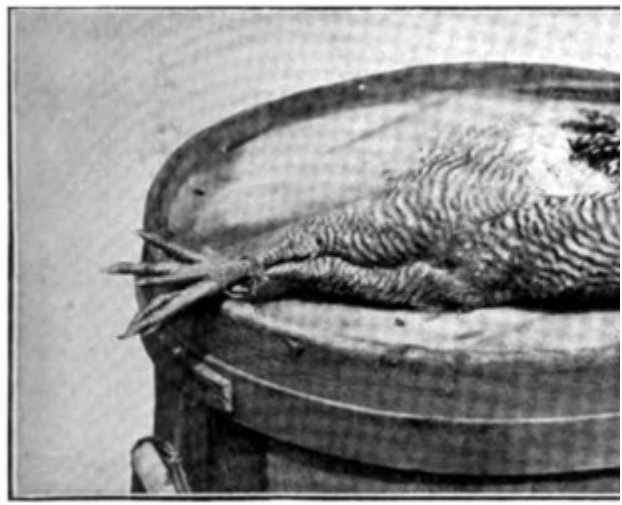


Fig. 4.—Feathers plucked away to make

Before beginning the operation two conditions are absolutely essential. If these are not favorable, do not attempt to operate. The first of these is that the intestines of the fowl should be completely empty, so

that they will fall away and expose the testicle to view. This can be accomplished by shutting up the fowls and withholding all food and water for 24 to 36 hours before the operation. Withholding water tends to make the blood thicker and consequently to decrease the amount of bleeding. Thirty-six hours is better than 24, especially for a beginner. The second condition is a good, strong light, so that the organs of the fowl may be clearly and easily distinguished. Direct sunlight is best for this, and in consequence it is well to operate out of doors on a bright day. Some operators have substituted the physician's head reflector and artificial light with good success. An ordinary incandescent electric bulb fastened to a gooseneck standard and provided with a reflector can be used to good advantage when caponizing indoors. It has been suggested that a probe consisting of a small electric bulb on the end of a slender rod and operated by small dry batteries, so that it can be introduced into the body cavity, could be manufactured and used with good success.

Methods of Holding the Fowl

When ready to operate, catch the bird and pass a noose of strong string about the legs. Do the same with both wings close to the shoulder joints. To the other end of the string are attached weights of sufficient size to hold down and stretch out the bird when placed upon the head of a barrel or box of convenient height, which is to serve as operating table. These weights are allowed to hang on opposite sides of the barrel or box (see fig. 3). A table, if so desired, may be arranged by boring holes through its top at proper distances from each other, allowing the strings to pass through these, and hanging the weights underneath. Still other ways of holding the

fowl in place have been devised, but these are unimportant so long as the fowl is held securely stretched out.



Fig. 5.—The incision made. Before making the cut, the skin over thigh and held there while the incision is made. When the bir back into its natural position. The cut in the skin is then not c result that the wound is closed and protected.

Details of the Operation

Having fastened the fowl, be sure that all the instruments are at hand. It is also well, though not necessary, to have ready some absorbent cotton and a dish of water to which have been added a few drops of carbolic acid or some other antiseptic. Having once started, carry the operation through as quickly as possible. Moisten and remove the feathers from a small area over the last two ribs just in front of the thigh (see fig. 4). With the left hand slide the skin and flesh down toward the thigh. Holding it thus, make the incision between the last two ribs (see fig. 5), holding the edge of the knife away from you

as you stand back of the fowl. Lengthen the incision in each direction until it is 1 to $1^1/_2$ inches long. Now insert the spreader into the incision, thus springing the ribs apart, as shown in figures 6 and 7. The intestines will now be visible, covered by a thin membrane called the omentum. Tear apart this membrane with the hook, and the upper testicle, yellow or sometimes rather dark colored and about the size and shape of an ordinary bean, should be visible close up against the backbone. By pushing aside the intestines this can easily be seen, and the lower one also, in a similar position on the other side of the backbone. Expert operators usually remove both testicles through one incision. This is a desirable practice, as it saves time and is not so hard on the bird. Inexperienced operators will usually find it well to attempt the removal of the upper or nearer testicle only and to make a second incision on the opposite side of the body for the removal of the other testicle.

If both testicles are to be removed through the same incision, remove the lower first, as the bleeding from the upper might be sufficient to obscure the lower. Each testicle is enveloped in a thin membrane. This may be and probably is best removed with the testicle, though some operators tear it open and remove the testicle only.

The delicate part of the operation is now at hand, owing to the close proximity of the spermatic artery, which runs just back of the testicle and to which the testicle is in part attached. If this is ruptured the fowl will bleed to death. The cannula, threaded with a coarse horsehair or fine wire, or one of the other forms of instrument previously described, now comes into use. If the cannula is used, allow the hair or wire protruding from the end to form a small loop just

large enough to slip over the testicle. Work this over the testicle, being careful to inclose the entire organ. Now tighten up on the free ends of the hair or wire, being careful not to catch any part of the artery. If the spermatic cord does not separate, saw lightly with the hair or wire. When the testicle is free, remove it from the body. The method of removing the testicle is shown in figure 8. If only the upper testicle has been removed, turn the birds over and proceed in exactly the same manner upon the other side.



Fig. 6.—Spreader in place. Tearing ope

After removing the testicle, if the bleeding is at all profuse it is well to remove a portion of the blood by introducing small pieces of absorbent cotton into the body by means of the hook or nippers, allowing them to become saturated and then removing them. Be sure to remove all blood clots, feathers, or foreign matters. After the testicles and all foreign matter are removed, take out the spreaders, thus allowing the

skin to slip back over the incision.

Losses Due to Caponizing

Even experts are sure to kill some birds, but the loss is small, seldom exceeding 5 per cent where any considerable number are caponized, and usually not more than 2 or 3 per cent. With beginners, of course, the percentage is much larger, but with a little practice and care this is soon overcome. Any fowls which may be killed in this way are perfectly good to eat and are therefore not wasted.

A great deal of practice is required to become expert enough to operate rapidly. Consequently it is quite common in localities where many capons are grown to hire experts to do the work. These men are able to caponize a fowl every two to five minutes, and charge from 3 to 6 cents a fowl for the service. It is most humane for the beginner to make his first trials upon dead fowls.

Slips

Many times, particularly with beginners, while the operation seems to be entirely satisfactory, the bird will turn out to be what is known as a “slip.” A “slip” is neither cockerel nor capon, but is between the two, possessing the mischievous disposition and the appearance of an ordinary cockerel, but, as a rule, being unable to reproduce. This condition is due to the fact that a small piece of the testicle is left in the body. This piece often grows to a considerable size. As the “slips” possess the same restless disposition as the cockerels, they grow and fatten little if any better, while they do not bring as good a price in the market as the capons. Consequently it is well to use every precaution in order to avoid “slips,” as they are unprofitable as compared with capons. With the

greatest care, however, “slips” are more common than are deaths due to the operation. The percentage varies all the way from 50 per cent with beginners down to 2 or 3 per cent with experts.



Fig. 7.—Spreader in place. The testicle can be observed ly

Care of Fowls After the Operation

Upon being released from the operating table the capons are usually put in a closed yard where they can find shelter, food, and water and can be kept quiet. No roosts are provided, as the less flying and jumping they do the sooner will the wound heal. The capons seem to be very little inconvenienced by the operation, and water and soft feed mixed with sweet skim milk can be given immediately. Some feeders give this in unlimited quantity, while others feed

more sparingly for a time. Some growers observe no precautions whatever, giving the birds full liberty immediately after the operation and allowing them to have any sort of feed.

For a week or 10 days the newly made capons should be carefully observed to see whether they become “wind puffed.” This is a condition caused by air gathering under and puffing out the skin near the wound. When observed it can be readily relieved by pricking the skin with a needle or knife and pressing out the air. In about 10 days or 2 weeks the incision into the body should be entirely healed, and, although no special antiseptic methods are employed in the operation, blood poisoning or any other trouble seldom results.

Feeding Capons

Capons are usually kept till they are about 10 months old. At this time the market is at its best and the birds have made their most profitable gains. The feeds used and the methods of feeding vary greatly, so much so, indeed, that it is futile to try to give specific directions. For several months after the operation a good growing ration and not a fattening ration is required. It may consist of whole grains, ground grains, or a combination of the two, as each feeder finds most profitable and best suited to his locality. As with other poultry, variety must be given for best results. Late in the fall, when the capons have no pasture, green feed, such as cut clover or vegetables, should be provided. A somewhat more fattening ration than that required for laying hens seems to give good results.

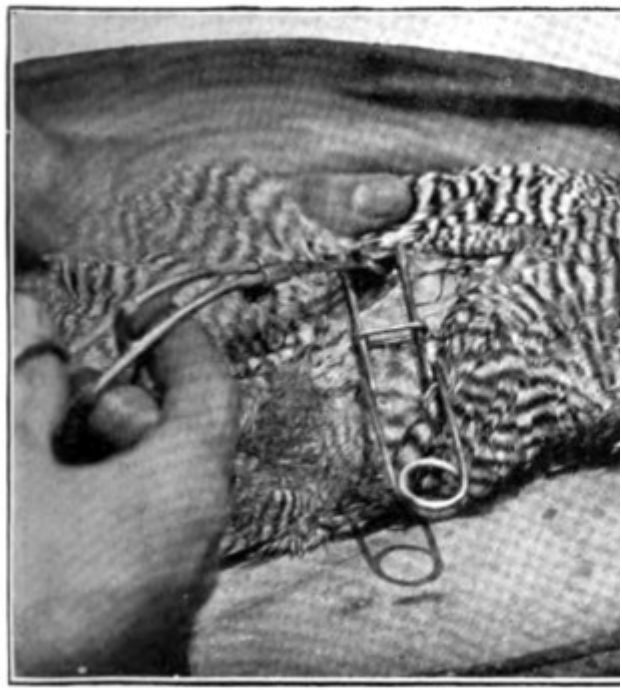


Fig. 8.—Removing the tes

As capons are not usually marketed before Christmas or the first of January they have to be housed during the late fall and early winter. Because of their quiet disposition they stand crowding quite well and have been successfully housed with only 2 or 3 square feet of floor space to a fowl. Free range for capons is very desirable, as it promotes their continuous, rapid, and economical growth.

During the last month or month and a half before marketing, the corn in the ration should be gradually increased until the fowls are on a full fattening ration. For the last two or three weeks it is desirable to shut them up and feed them in crates, for every possible ounce at this stage adds to the appearance and profit.

Killing and Dressing Capons for Market

Killing

The capons selected for killing should be confined for 24 hours without feed or water to completely empty their crops. The usual method of killing is known as the sticking method. The fowl is hung up by the feet, the head held in the left hand, and the whole body stretched to full length. The mouth is forced open, and by means of a sharp, narrow-bladed knife held in the right hand the blood vessels at the back of the throat are severed with a single sweep. The knife is then turned and the point plunged through the roof of the mouth to a point just behind and between the eyes. The brain is here reached, and if properly stuck all feeling is then lost. Convulsions ensue, the muscles are relaxed, and the feathers come out easily.

Picking

Capons should always be dry picked, as they look much better and some of the feathers should be left on. The feathers of the neck and head, the tail feathers, those a short way up the back, the feathers of the last two joints of the wing, and those of the leg, about one-third of the way from knee to hip joint, should be left on. These feathers, together with the head of the capon, serve to distinguish it from other classes of poultry on the market, and consequently should never be removed. In picking be careful not to tear the skin. If bad tears are made, sew them up. Capons scalded and picked bare bring very little, if any, better prices than other poultry in the same condition.



Fig. 9.—The spreader removed and the weights taken off the wi
incision so as to close

Drawing

Most markets require capons to be undrawn and the head and feet left on. Care should be used to cleanse the head and feet of all signs of blood or filth.

Cooling and Packing

After picking, the carcases are hung in a cool place until the animal heat has entirely left the body, when they are ready to be packed. Like other poultry they should be packed in boxes of convenient size, holding a dozen carcases, or in barrels. Every attention should be given to neatness and

attractiveness, as this helps the sale and the price. During the time of year when most capons are marketed—January, February, and March—no ice is necessary, but if for any reason they are shipped in warm weather they should be packed in ice.

Profits



Fig. 10.—Capons dressed for market. These illustrations show appe
perfect condition of fle

It is extremely difficult to make any general statement concerning the profits yielded by capons. That they do yield a profit in practically all cases is undoubtedly true, but whether the profit is sufficient to give up to them the time and room they require is

a question which must be settled by each man's experience and by local conditions. Many poultrymen think that they can do better to turn off their surplus cockerels as broilers as long as the market holds up and rely upon caponizing only for later-hatched chicks. The house room thus saved they use for pullets or other laying stock, feeling that they make more money in this way. It is certain, however, that many poultrymen find capon raising profitable enough to induce them to continue in the business. On several farms in Massachusetts 500 to 1,000 capons are raised annually, and the writer knows of one farm on which in one season 5,000 cockerels were held for caponizing. Although the industry is growing rapidly year by year, the supply does not yet equal the demand. The best prices are commanded by capons produced near to the market, and consequently perfectly fresh. The markets of the West usually do not quote as good prices as the eastern ones; hence most of the western-grown capons are shipped East, in which case the express rates cut down the profit materially. On the whole, the profit is probably rather greater for eastern producers than for those of the North Central States.

PLAN No. 241. LIQUID CARPET CLEANER

One of the very best carpet cleaners ever placed on the market is that put up in liquid form by a man living in a western town of 5,000 people, where there was no steam cleaning establishment. He used the following formula:

Solution soap, 120 ounces; ammonia water (10%), 60 ounces; gasoline, 120 ounces; chloroform, the cheap kind, 20 ounces; saltpetre, 10 ounces;

commercial oil of wintergreen, or other perfume, sufficient to give an agreeable scent.

(The solution soap named is made of cheap olive oil, 60 ounces; caustic potash, 12 ounces; wood alcohol and water, equal parts, to make 1,000 ounces.)

In making the liquid cleaner, dissolve the saltpetre in the water, add the ammonia to the soap solution, then the chloroform, oil and gasoline, shaking well after adding each ingredient, then add this to the water. This makes a milky white compound that must be shaken well before using. Citronella or other cheap perfume may be used instead of the wintergreen, if desired.

In making the soap solution, called for in the formula, put the oil into a suitable vessel, with half of the alcohol, then dissolve the potash in water, mix the two solutions, until it forms a nice soap, which can be determined by dropping a little of it in water. If it dissolves without forming oily drops, it is complete. Allow this to cool, add the rest of the alcohol and enough water to bring the measure up to 1,000 ounces. Then strain and filter.

Use the cleaner by applying freely with a sponge, and scrub briskly with a stiff brush, then wash off with warm water, which removes all grease, dirt, etc.

With a man to do the work, our friend went to the most prominent homes, as well as all the hotels in his town, and asked for the privilege of demonstrating his compound. This was granted in practically all cases, and he was given a large number of orders for cleaning carpets without removing them from the floor, at about half the price charged by regular cleaning establishments, yet which netted him a good profit after paying his man for the work.

He also advertised it through the smaller towns, and secured sales for it which brought him a good income every year.

PLAN No. 242. A WHITE SHOE DRESSING

The only objection to white shoes is that they soil so easily, but those who use the following formula will find their troubles on that score are over.

Precipitated chalk, 4 ounces; zinc oxide, 6 ounces; whiting, 8 ounces; pipe clay, 16 ounces; have all thoroughly dry and in fine powder, mix together very thoroughly and pass through a fine sieve. Now is where one of the tricks of the trade comes in. If the powder should have any yellowish tinge, as it most likely will, or does not seem to be just as dead white as it should be it may be brought up, by the judicious admixture of a very little bluing, just as is used in washing clothes and also is put in white granulated sugar for the same purpose. The blue must be in very fine powder and thoroughly mixed with the other powder, to give the proper results. Add it cautiously and be careful not to get too much. A good plan to work is, take some blue and rub it with three or four times its bulk of the powder in a mortar until thoroughly and evenly mixed, then use this powder for toning up your product. When this is done, mix a dram of powdered tragacanth and a dram of carbolic acid for each pound of the powder, with enough water to wet the whole thing into a stiff, putty-like mass. Fill this mass solidly into the boxes, and strike the upper edge. It will dry out, but that will not injure it at all.

Directions for use: Brush the shoes well, then rub over with a soaped cloth, to remove all stains, etc.

Wet a small sponge or cloth in water, rub it on the cake in the box until well loaded, then go over the shoes, evenly and rapidly. Set aside to dry, and with a dry cloth lightly remove spots in the dressing.

PLAN No. 243. A TRAVELING TYPIST

A young man who had been clerking in a men's furnishing store for $10 a week got an idea one day that turned out to be the means of giving him a good-paying business.

He noticed that there were many public stenographers located in the various office buildings of the city, and figuring that all their patrons had to come to them when wanting work done, why wouldn't it be a good thing to call at the different stores and offices of these patrons and do their typewriting.

He therefore bought a light but reliable typewriting machine, which could be carried easily from place to place, learned to operate it with accuracy and speed, and then began to work up a line of customers. He found them, too, lots of them, and every day he called at their places of business and wrote their letters.

He was kept busy all the time, and from the very beginning of his enterprise he made from $25 a week up, yet did his work at the rate of 10 cents per letter. He seldom used short-hand but took the letters on his machine.

PLAN No. 244. MAKING HENS LAY ALL THE YEAR

This is something that all poultry raisers would

give a good deal to know:

On every alternate day, mix cayenne pepper with soft food, at the rate of one teaspoonful of pepper to each dozen hens. Take good care to see that each hen obtains her share. In winter give each hen a half ounce of fresh meat each day, and see that they have plenty of water, grain, gravel and lime.

PLAN No. 245. HOW TO MAKE COTTAGE CHEESE ON THE FARM

K. J. MATHESON AND F. R. CAMMACK, of the Dairy Division.

Contribution from the Bureau of Animal Industry.

Acknowledgment is due to the U. S. Dept. of Agriculture, Washington, D. C., for the following plan:

Cottage cheese can be made on the farm or in the home with little labor and expense.

It is a palatable, nourishing product that furnishes a means of utilizing skim milk to excellent advantage.

The directions given in this plan are for manufacturing cottage cheese either for home use or for marketing on a small scale.



Preparing Cottage Cheese for

A Desirable Food Easily Prepared

Cottage cheese, a most palatable and nutritious product, is one of the few varieties of cheese which can be manufactured on a small scale. It furnishes a convenient and economical means for using skim milk as a human food, and supplies, more cheaply than meat, the protein or body-building part of the diet. In fact, pound for pound, it contains 25 per cent

more protein than a medium-fat side of beef and costs about half as much.

The haphazard methods used in the making of this product, together with the lack of simple and easily available directions, probably are responsible for the small quantities made and consumed in the farm home. Uncertainty of results and defects in the finished product also have been causes for discouragement to the beginner. It is hoped, however, that by following the directions given in this bulletin a better and more uniform product may be obtained.

For making the cheese in small quantities for home use a very simple process and ordinary household equipment will suffice. But if it is desired to market the product and to insure good, uniform quality it will be necessary to follow somewhat more elaborate methods. Details sometimes must be modified according to conditions, and only experience will give proficiency.

Quality and Its Requisites

Cottage cheese is judged by its flavor and texture. A high-quality cheese should have a clean, mild, acid flavor and a texture smooth, free from lumps, and uniform or homogeneous throughout. The undesirable flavors commonly found are described as unclean, tasteless, too acid, and sometimes even bitter. Flavor can be controlled by the use of clean, sweet skim milk and a good “starter,” but texture depends largely upon careful manipulation during the making process. Good, clean skim milk, clean utensils, and careful attention to the details of making are essential to good quality in the product.

Good Skim Milk Necessary

The first consideration in the production of good cottage cheese is the quality of the milk itself. Milk which is dirty or has undergone any abnormal fermentation is undesirable. The fresher the milk the more satisfactory it is for cheesemaking, because then it is possible to direct and control the souring. It is absolutely necessary to give the milk proper attention, both at the time of its production and in all its subsequent handling. The temperature at which it is kept from the time of production until made into cheese determines in a large measure the quality of the cheese. For best results milk should be kept cool, at 50° F. or lower, if possible, until it is to be made into cheese.

Cleanliness of Utensils

The material and construction of all equipment used in handling milk and in the manufacture of cheese should be smooth and free from crevices, so as to allow easy and efficient cleaning. The most scrupulous care should be exercised in order to keep all utensils sweet and clean. For cleaning utensils the following method is advised:

1. Rinse with cold water.
2. Wash and scrub with hot water to which a cleaning powder has been added.
3. Rinse in hot water above a temperature of 150° F.
4. Steam or immerse in boiling water for five minutes.
5. Place all equipment in a clean place free from dust.

A Simple Way to Make Small Quantities for Home Use

One gallon of skim milk will make about $1^1/_2$ pounds of cheese. If the milk is sweet it should be placed in a pan and allowed to remain in a clean, warm place at a temperature of about 75° F. until it

clabbers. The clabbered milk should have a clean, sour flavor. Ordinarily this will take about 30 hours, but when it is desirable to hasten the process a small quantity of clean-flavored sour milk may be mixed with the sweet milk.

As soon as the milk has thickened or firmly clabbered it should be cut into pieces 2 inches square, after which the curd should be stirred thoroughly with a spoon. Place the pan of broken curd in a vessel of hot water so as to raise the temperature to 100° F. Cook at that temperature for about 30 minutes, during which time stir gently with a spoon for 1 minute at 5-minute intervals.

At the conclusion of the heating, pour the curd and whey into a small cheesecloth bag (a clean salt bag will do nicely) and hang the bag on a fruit-strainer rack to drain, or the curd may be poured into a colander or a strainer over which a piece of cheesecloth has been laid. After 5 or 10 minutes, work the curd toward the center with a spoon. Raising and lowering the ends of the cloth helps to make the whey drain faster. To complete the draining tie the ends of the bag together and hang it up. Since there is some danger that the curd will become too dry, draining should stop when the whey ceases to flow in a steady stream.

The curd is then emptied from the bag and worked with a spoon or a butter paddle until it becomes fine in grain, smooth, and of the consistency of mashed potatoes. Sour or sweet cream may be added to increase the smoothness and palatability and improve the flavor. Then the cheese is salted according to taste, about one teaspoonful to a pound of curd.

Because of the ease with which the cheese can be made it is desirable to make it often so that it may be

eaten fresh, although if it is kept cold it will not spoil for several days. If the cheese is not to be eaten promptly it should be stored in an earthenware or glass vessel rather than in one of tin or wood, and kept in a cold place.

The Use of Starters

The first step in the making of cottage cheese is to sour or ripen the milk. If care has been used in the production and handling of milk, a good grade of cheese may be made by allowing the milk to sour naturally. Uncertainty of results and lack of uniformity in the cheese, however, have caused many to resort to a more definite means of controlling fermentation or souring by the use of starters. Some of the dangers and disadvantages of natural souring
are—

1. Slow coagulation or curdling.
2. Glassy and undesirable fermentations, causing loss of curd in whey.
3. Bitter and other undesirable flavors.
4. Lack of uniformity in the cheese.



Fig. 1.—Bottles of Starter.

When cottage cheese is to be produced in large quantities it is advisable to use a starter. Starters aid and hasten acid fermentation and tend to suppress and eliminate undesirable fermentation. A starter, in brief, is a quantity of milk in which the acid-forming bacteria have grown until the milk contains a great number of them. There are two kinds of starters, commercial and homemade.



Fig. 2.—Stirring in starter and rennet and taking temperature

Commercial Starters

When cottage cheese is to be made on a large scale it is advisable to use a commercial starter, obtainable from a reliable starter company or through a dairy-supply house. The small package of starter, which may be either liquid or solid, is added to a pint of pasteurized skim milk and the milk covered and set

away at 75° F. to sour. This is called a "mother starter." After curdling or coagulation, a teaspoonful of the "mother starter" is added to a quart of pasteurized skim milk, which, when coagulated, is used to ripen the milk for cheesemaking. In pasteurizing milk for starters, it is heated to 175° F. and held at that temperature for 30 minutes, after which it is cooled to 75° F. before the starter is added.

Homemade Starters

Homemade starters are made as follows:

1. Clean thoroughly and boil for five minutes several pint fruit jars or wide-mouthed bottles, together with tops or tumblers for covering them. (Fig. 1.) After boiling, keep the jars or bottles covered to prevent the entrance of bacteria.

2. Select several pint samples of fresh milk, put into the jars or bottles, cool to 75° F., cover and keep at that temperature until curdling occurs.

3. The curdling or coagulation should take place in about 30 hours. An ideal curd should be firm, smooth, marblelike, free from holes or gas bubbles, and should show little separation of the whey. To be a good starter the curd should have a clean, sharp, sour or acid flavor.

4. Select the sample that most closely meets these conditions and propagate it. This is done as follows:

a. Prepare, shortly before using, a quart jar or bottle and a teaspoon according to the method described in paragraph 1.

b. Fill the jar or bottle with fresh skim milk and pasteurize by heating to 175° F. and keeping at that temperature for 30 minutes.

c. Cool to 75° F. and add a teaspoonful of curdled milk or starter described in paragraph 3, and set

away to curdle.

d. Propagate the starter from day to day until one is found with desirable qualities. In doing this repeat steps *a*, *b*, and *c*, but in the last use the starter of the day before instead of that originally mentioned in paragraph 3.

Pasteurization

While for small-scale operations the pasteurization of milk may not always be practicable, it permits a better control of the fermentations, increases the yield of cheese, and renders the product safe from disease-producing organisms. *If milk is pasteurized it is absolutely necessary to use a vigorous starter for ripening.* Otherwise, great difficulty is found in draining the curd, and as a result the cheese probably is spoiled.

Skim milk is pasteurized for making cottage cheese by heating it in a pail, can, or vat to a temperature of 145° F. and holding it at that temperature for 30 minutes. The milk then is cooled quickly to 75° F., when it is ready for adding the starter.



Fig. 3.—Pouring curd upon drai

Making the Cheese on a Larger Scale

To make cottage cheese in considerable quantities and of good, uniform quality, especially if it is to be sold, it is desirable to follow a more exact method than that described for making small quantities for home use.

Setting

For natural souring without starter, fresh skim milk is placed in a clean pail or a "shotgun" can, covered, warmed to 75° F., and allowed to stand at that temperature until curdled. The temperature can be controlled by keeping the pail or can of milk in a tub, sink, or other vessel filled with water at the

same temperature.

When starter is used it is stirred into skim milk which has been warmed to 75° F. (Fig. 2.) The vessel of milk then is covered and set away at the same temperature to curdle. The quantity of starter used varies from 1 to 5 per cent; a pint for 3 or 4 gallons of milk usually gives good results. By the use of a large quantity of starter it is possible to ripen the milk and complete the making of the cheese in one day. Probably it is more convenient, however, to set the milk with starter at night, in which case the milk should be firmly clabbered by morning. For obtaining a desirable coagulum or curd that is firm and not easily broken into fine particles during heating, 75° F. seems to be the best temperature. When the skim milk has coagulated into a firm, solid curd which gives a sharply defined break as the finger is inserted, with whey collecting at the break, the curd is ready for cutting.

Cutting, Heating, and Stirring

The coagulum, or curd, is cut crosswise into 2-inch squares, with a long-bladed knife. The mixture then is heated quickly to 100° F. and is maintained at that temperature for about 30 minutes. During the entire heating process the curd is stirred with a spoon or a cream agitator every four or five minutes. The object of these operations is to remove the whey from the curd and to bring the product into a concentrated form. The texture of the cheese is regulated in a large measure by the manner of cutting, heating, and stirring the coagulum. Prolonged and vigorous stirring of the mixture is undesirable, since it causes a fine-grained curd which is slow in draining and has excessive curd losses in the whey. Heating at too high a temperature results in a tough, dry curd.

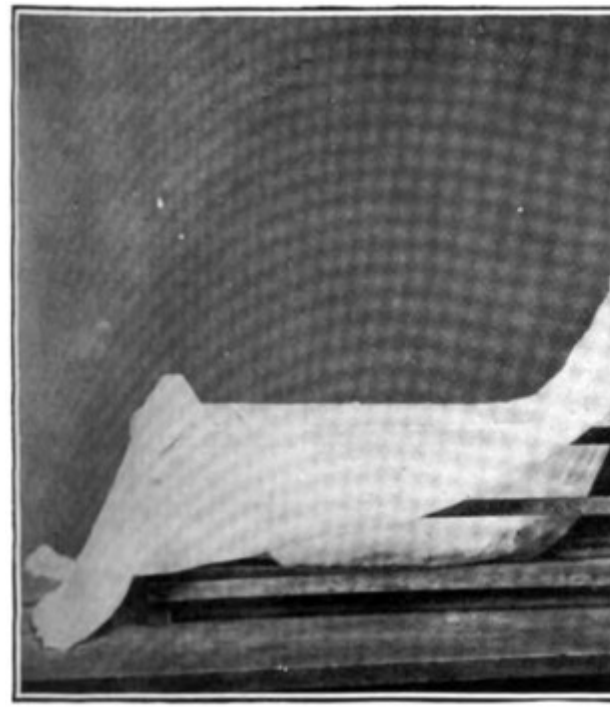


Fig. 4.—Raising and lowering draining clo

Draining

After heating, the mixture is poured upon a draining cloth, which is fastened over a pail or a specially constructed rack, in order to separate the curd from the whey. (See fig. 3.) The curd is allowed to drain undisturbed for 15 or 20 minutes, because if handled during that period it will tend to become mushy, a condition which renders the removal of the whey very difficult. Later, every few minutes, the sides of the cloth should be raised and lowered several times (as shown in fig. 4), which hastens draining. Draining should continue until very little whey separates upon standing, at which time the curd is rather soft and smooth. It is then ready for

salting.

Salting

For salting, the curd is placed in a pan or pail and salt added and mixed uniformly into the curd with a butter ladle or a spoon. The usual rate of salting is two heaping tablespoonfuls to $3^1/_2$ gallons of milk, or about $2^1/_2$ ounces to 10 pounds of curd, although there is some difference of opinion as to the quantity of salt needed. In case a scale is lacking it is possible to approximate the salt when it is known that a level tablespoonful of salt equals two-thirds of an ounce. Salt is added to the cheese to increase its palatability and to a certain extent to preserve it.

MAKING THE CHEESE WITH RENNET OR PEPSIN

Several advantages are found in making cottage cheese with rennet or pepsin, as follows:

1. A finer-textured and more uniform cheese results.
2. Making requires less time and attention.
3. Losses of curd in the whey are reduced.

Rennet is a substance which causes milk to coagulate and may be obtained either as commercial liquid rennet or as junket tablets. The former may be purchased from a dairy-supply house, while the latter may be obtained from grocery and drug stores.

If commercial rennet is used for making cottage cheese, about 3 drops should be added to each 10 pints or pounds of milk, or 10 drops to 30 pounds of milk. The rennet, after being measured, is diluted about 40 times with cold water (a half cupful is satisfactory) before it is added to the milk. For measuring a medicine dropper may be used with good results.

If the liquid rennet can not be obtained, junket

tablets may be used, one tablet having about the same strength as 1 cubic centimeter or 25 drops of the liquid. One tablet may be dissolved in 10 tablespoonfuls of cold water, then 1 tablespoonful of the mixture is sufficient for 10 pounds or pints of skim milk and 3 tablespoonfuls for 30 pounds of milk. Junket tablets are not always of the same strength, so it may be necessary to experiment somewhat before the right quantity to add is obtained.

Pepsin is a powder which has somewhat the same effect upon milk as rennet and may be used instead. It should be added at the rate of one-twelfth gram to 100 pounds of milk. For 30 pounds of milk this would be a quantity about half the size of a medium-sized pea. This should be dissolved in water and fractional portions used in a manner similar to that described for the junket tablet.

The milk is handled in identically the same manner as in the method already described with the exception that rennet or pepsin is added to it just after the starter is put in and the mixture stirred vigorously. When this is done the curd or coagulum may be poured directly into the draining cloth without cutting, heating, or stirring. If no starter is used it is desirable to let the milk stand at 80° F. for five or six hours before adding the rennet or pepsin.

When clear whey collects upon the surface of the curd in the can it is an indication that the curd is ready to be drained. At first it may not be possible to get the best results by this method, but after a few trials it should be possible to produce a fine, firm coagulum in from 12 to 15 hours.

The coagulum is now poured upon the draining rack covered with cotton sheeting. Because of the fineness of the curd a draining cloth with a smaller

mesh is more desirable than the one previously described. After a short preliminary drainage of perhaps 20 minutes the ends of the cloth are unfastened and the diagonally opposite corners drawn together and tied. Moderate weights, about 25 pounds, are then placed upon the bag of curd to hasten the draining. (See fig. 5.) A pail filled with stones or water will serve for this purpose. There is danger that the cheese curd may be pressed too dry when rennet is used, so it is advisable to watch the curd closely at this period. The pressing should be continued until the curd has reached about the same consistency as described under the preceding method.

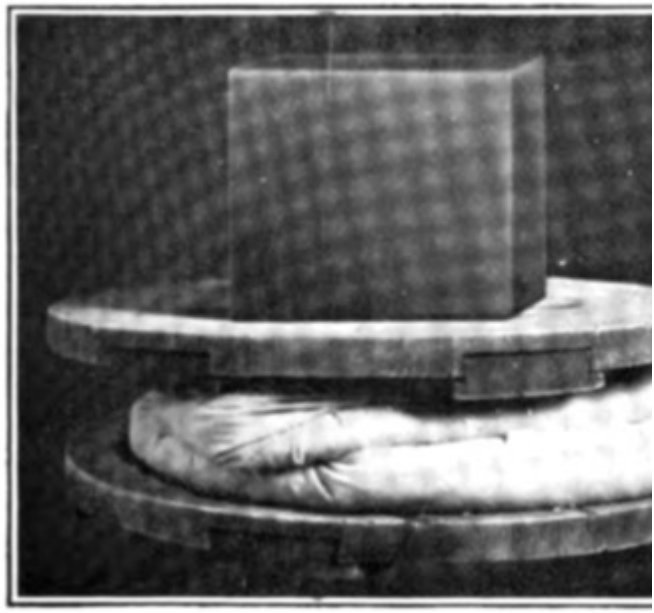


Fig. 5.—Boards and weight for pressing chees

After draining, salt is added in the same way as for ordinary cottage cheese.

Adding Cream and Peppers

A small quantity of sweet or sour cream added after salting, especially if the curd is a little dry, will improve greatly the quality and palatability of cottage cheese made by either process. Usually cream is added at the rate of half a pint to 10 pounds of curd.

Finely ground pimento peppers also add much to the appearance, taste, and attractiveness of the product, especially to the finer textured, rennet-made cheese. Peppers when used are added at the rate of 1 pound to 20 of curd.

If the product is to be marketed the additional expense of cream or peppers probably is warranted.

Yield of Cheese

The yield of cottage cheese depends upon the quality of the milk and the method of manufacture. Yields of from 12 to 22 pounds of cheese per 100 pounds of skim milk represent the limits, while a normal yield of from 16 to 18 pounds produces best results. A gallon of skim milk usually yields about $1^1/_2$ pounds of cottage cheese.

Marketing the Product

Although often marketed in bulk and sold by the pound, cottage cheese may be marketed best in single-service containers holding from 10 to 12 ounces. This makes a neat and convenient package which commonly retails for about 10 cents. These cartons are made of wood pulp treated with paraffin. For interstate shipping it is necessary to put the net weight of the cheese on the package, and it is desirable, for advertising purposes, to place on it the name and address of the maker. While the product may be molded into balls or prints and wrapped in

paraffined paper, the carton is strongly recommended as a marketing receptacle for such a perishable product as cottage cheese. The carton makes a nearly air-tight package which improves the keeping quality of the cheese.

It is advisable to keep cottage cheese at a low temperature until consumed. Holding the product at room temperature for only 36 hours may cause it to become slightly "off flavor," while in a longer period the deterioration may be so marked as to render it unsuitable for consumption. Cheese from which the whey separates spoils quickly and is very undesirable. It is better to have the cheese a little too dry than too moist, for the former defect may be corrected easily by the addition of a little cream or milk by the consumer.

Equipment for Making Cottage Cheese

Little equipment is needed for making cottage cheese, and for the most part it may be found in any home. When the cheese is made in large quantities a small outlay for equipment is warranted as a matter of convenience and satisfaction. In most homes, however, satisfactory substitutes may be found for some of the utensils mentioned here.

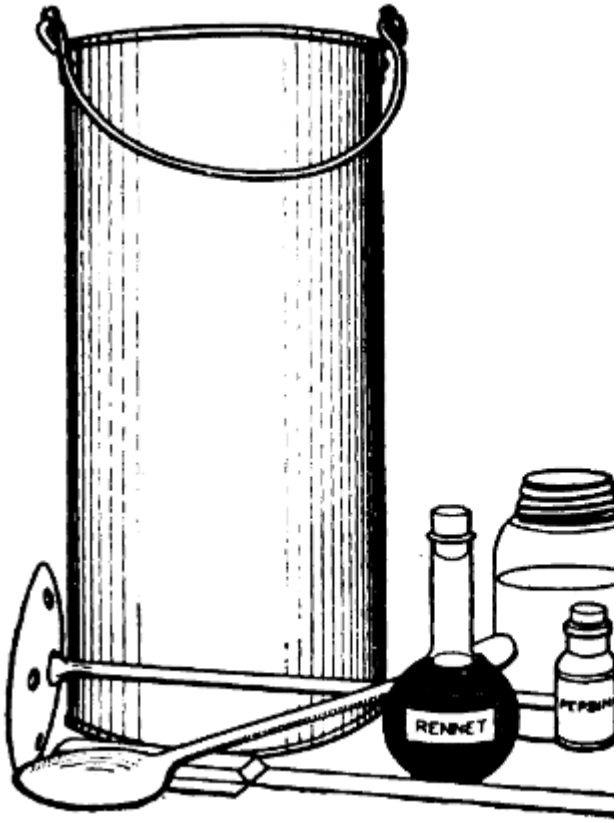


Fig. 6.—Equipment used in first stages of m

Starter bottles.—Quart milk bottles and tumblers are needed for holding the starter. Quart fruit jars will serve the purpose very well.

Cans or pails.—A "shotgun" can which may vary in size and material is very convenient; usually it is straight sided, 8 inches in diameter, 20 inches high, and holds about 4 gallons of milk. If such a can is not available, an ordinary 10-quart milk pail will be satisfactory.

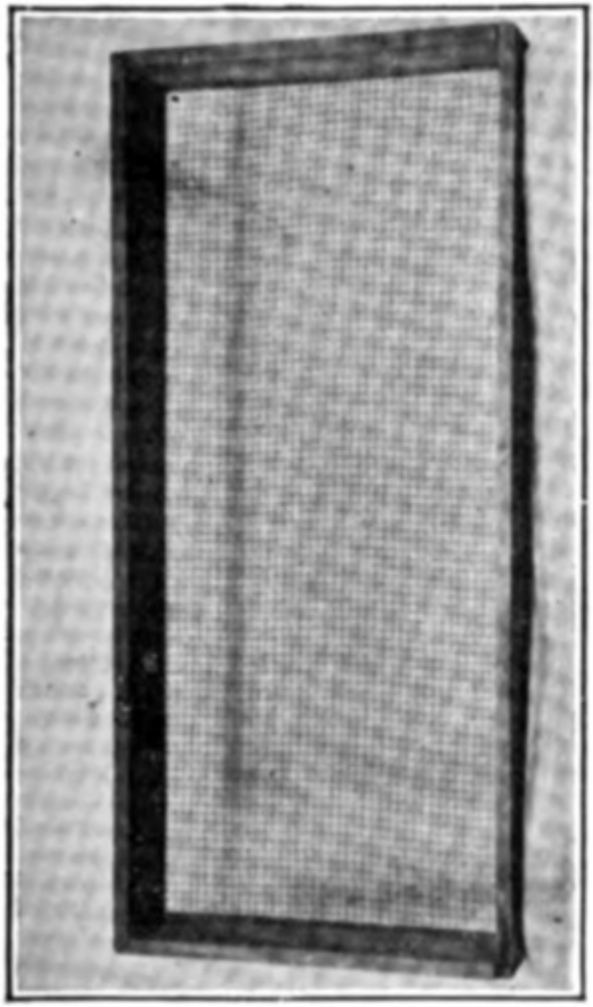


Fig. 7.—Wire-covered draining rack.

Milk agitator.—A stirrer of the kind shown in figure 6 is desirable for causing a uniform distribution of the starter and rennet prior to setting and for stirring the curd, but for making small quantities of cheese a spoon is entirely satisfactory.

Floating dairy thermometer.—The use of a reliable

and accurate thermometer is absolutely necessary to obtain uniformity in results from day to day. Because of the danger of breaking, it should be kept in a case when not in use.

Rennet or pepsin.—Either commercial liquid rennet or junket tablets are desirable when cottage cheese is to be made quickly. Powdered pepsin also may be used. Rennet always should be kept cold and in a dark place.

Draining racks.—An ordinary fruit-straining rack is very useful for small quantities of cheese. A colander also will answer the purpose. When larger quantities are made a special rack will be found to be very convenient. Such a rack is described below.

A wire-covered rack (fig. 7) consists of a rectangular frame, 20 by 52 inches and 6 inches high, upon the bottom of which is tacked one-half inch mesh woven wire. The rack should be made of hard wood and dovetailed at the corners. If it is placed upon a table slightly inclined, the whey is directed to a common point and collected in a jar or pail by the use of strips nailed to the bottom of the frame. The materials required for making the rack are two boards $^{7}/_{8}$ by 6 by 52 inches, two boards $^{7}/_{8}$ by 6 by 26 inches, and woven wire 26 by 52 inches.

Another kind of rack is rectangular, 13 inches wide, 36 inches long, and 10 inches deep. The corner posts extend $1^{1}/_{2}$ inches beyond the strips and top and bottom, with the top rounded, so that a ring may fit over them. The bottom slats fit loosely into notches and are removable for washing. The materials required are four corner posts $1^{1}/_{2}$ by $1^{1}/_{2}$ inches, nine strips 1 by $^{3}/_{8}$ by 36 inches, and six strips 1 by $^{3}/_{8}$ by $12^{1}/_{4}$ inches, notched to receive bottom slats, all made of pine. A cloth is fastened upon each frame and the contents of one can poured

into each cloth.

Draining cloths.—When the cheese is made without rennet, common cheesecloth is most satisfactory, but for cheese made with rennet, unbleached cotton sheeting is recommended. The quantity depends upon the size of the draining rack, enough being required to supply a single thickness, with an allowance for hems. All draining cloths should be hemmed.

Cartons.—Round, paraffined, sanitary, single-service containers are desirable for marketing the cheese.

Summary of Ordinary Process

The process of making cottage cheese without rennet or pepsin, on the basis of 30 pounds or about $3^1/_2$ gallons of milk, which will yield about $5^1/_4$ pounds of cheese, may be summarized as follows:

Obtain clean, fresh milk.

If starter is not used, warm the milk to 75° F. and hold it at about that temperature until curdled.

If starter is to be used, add 1 to 5 per cent, or about 1 pint of starter to 30 pounds of milk, stir, and set away at 75° F. to curdle.

If it is desired to pasteurize, heat milk to 145° F., hold at that temperature for 30 minutes, and cool to 75° F. If pasteurization is practiced, a starter must be used and should be added after pasteurization, as described.

Time for curdling when starter is used, 12 to 15 hours (usually overnight).

When starter is not used the time for curdling will be about 30 hours.

Cut and stir, and then heat to 100° F. and hold for 30 minutes. Stir gently at intervals.

Pour upon cheesecloth and drain for 20 or 30

minutes.

Place in pail or pan and salt at the rate of $2^1/_2$ ounces to 10 pounds of curd, or about 2 level tablespoonfuls for the cheese from 30 pounds of milk.

If desired, add sweet or sour cream at the rate of one-half pint to 10 pounds of curd, or about one-quarter pint of cream to the product from 30 pounds of milk.

Summary of Rennet or Pepsin Process

The following is an outline of the process with rennet or pepsin on the basis of 30 pounds or $3^1/_2$ gallons of milk, which will yield about $5^1/_4$ pounds of cheese:

Obtain clean, fresh milk.

When a starter is not used, after adding rennet or pepsin, warm the milk to 75° F. and hold it at about that temperature until curdled.

If starter is to be used, add 1 to 5 per cent, or about 1 pint of starter to 30 pounds of milk, and set away at 75° F. to curdle.

If it is desired to pasteurize, heat to 145° F., hold at that temperature for 30 minutes, and cool to 75° F. If pasteurization is practiced, a starter must be used and should be added as described.

Add rennet, junket tablets, or pepsin just before setting the milk away to curdle at 75° F., carefully stirring to insure a thorough distribution.

Add rennet at the rate of one-third cubic centimeter, or about 8 drops, diluted 40 times in cold water (half a cup of cold water is satisfactory) for each 30 pounds or $3^1/_2$ gallons of milk.

Or, dissolve one junket tablet in a pint of cold water and use one-third of the mixture.

Or, dissolve powdered pepsin (one-half size of pea)

in one-quarter pint of cold water and use the entire mixture.

Time for curdling when starter is used, 12 to 15 hours (usually overnight).

When starter is not used the time for curdling will be about 30 hours.

Pour upon cotton sheeting and drain for 20 or 30 minutes.

Tie the ends of the cloth together and press with weight (20 or 25 pounds) until the curd has attained the desired consistency.

Salt at the rate of $2^1/_2$ ounces to 10 pounds of curd. If desired, add sweet or sour cream at the rate of one-half pint of cream to each 10 pounds of curd, or one-quarter pint of cream to the product from 30 pounds of milk.

PLAN No. 246. MARKETING BUTTER AND CHEESE BY PARCEL POST

LEWIS B. FLOHR, Investigator of Marketing and ROY C.

POTTS, Specialist in Marketing Dairy Products.

Contribution from the Bureau of Markets, CHARLES J.

BRAND. Chief.

For the following plan we are indebted to the U. S. Department of Agriculture, Washington, D. C.

Because butter does not keep well unless good storage facilities are available, most families must purchase it frequently and in small quantities.

Parcel post has been found a desirable and useful means of sending butter from producer to consumer, and when favorable conditions exist and proper

methods are used in preparing and mailing, it carries satisfactorily by that method of transportation.

There are practically no difficulties in transporting cheese by parcel post. Frequently this method of marketing affords an economical and satisfactory way for obtaining cheese for family use.

Butter is highly perishable unless it is handled under proper conditions, yet the fact that many consumers obtain their supplies direct from producers by parcel post, proved by the quantity passing through many post offices, indicates that parcel-post marketing of butter is feasible. It is usually an economical method, as the cost of market distribution through the regular wholesale and retail channels of trade is relatively high in comparison with the cost of shipments by parcel post from the first and second and sometimes more distant zones.

Experimental Parcel-Post Shipments of Butter

Shipments of butter aggregating more than 10,000 pounds have been made by the Bureau of Markets, under various conditions and in packages carrying from 1 to 10 pounds, over both long and short distances, in order to test various kinds of shipping containers, methods of packing, and the possibilities of parcel-post shipping of butter during the summer and other seasons. These experimental shipments consisted of (1) shipments of fresh butter from four creameries to this bureau, and (2) shipments of the butter received from the creameries by the bureau to experiment stations and return shipments of the same. The summarized results of the shipments from the four creameries are presented in the following table:

Table I.—*Experimental shipments of butter by parcel*

post in 2, 3, 5, and 10 pound parcels from creameries to the Bureau of Markets.

Creamery.	Distance from Washington (miles).	Hours in transit.	Months covered.	Number of shipments.
A	375	22	April to October	222
B	536	48 to 60	August and September	61
C	187	18 to 20	June and July	82
D	266	18 to 20	April to January	89
Total				454

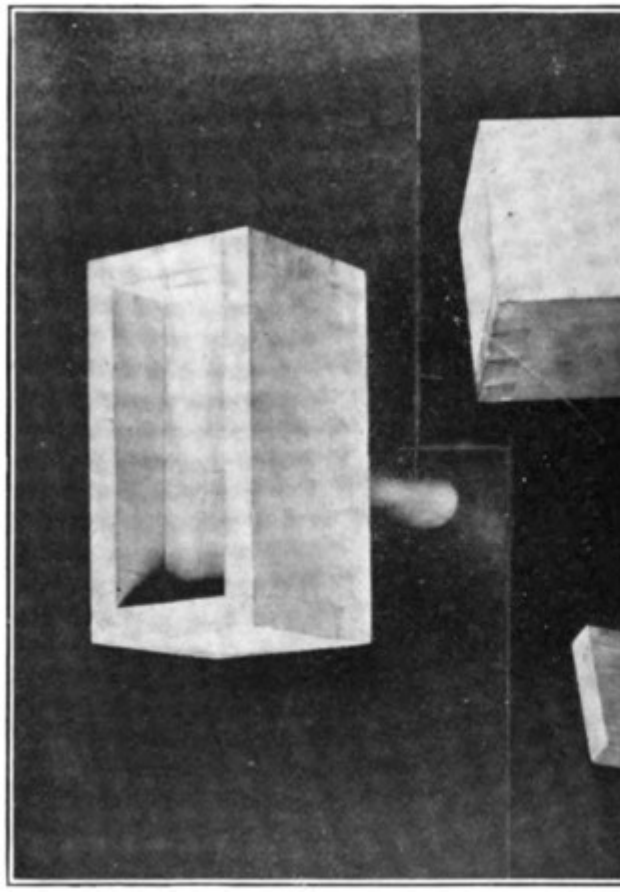


Fig. 1.—Two views of hand printer fo

Although many of these shipments were made during the heat of summer, only 14 of the 454 shipments, or 3.1 per cent, were received in an unsatisfactory condition. These very satisfactory results may be attributed to the care exercised in the proper packing of butter in suitable shipping containers and the pre-cooling or thorough hardening of the butter at the creameries before

shipment.

The experimental shipments to the State experiment stations were satisfactory where the temperature and distance were not too great. Butter which had softened much in transit from the creamery to the bureau when later shipped to the experiment stations did not arrive in as good condition as that in which the grain had not been previously injured. In general, the shipments from Washington were successful when forwarded as far north as Maine and as far west as Michigan and Indiana. Shipments into the South were successful for shorter distances.

The results of these experimental shipments indicate that well-made butter, thoroughly chilled before shipping, when packed in a suitable container, may be marketed satisfactorily by parcel post when extreme high temperatures are not encountered. Under ordinary conditions, where the butter does not melt and a firm or semifirm condition is maintained, the shipping of butter by parcel post generally may be successful. Even though proper safeguards were taken, the shipments made during extremely hot weather frequently arrived in an oily and unsatisfactory condition.

Quality and Condition of Butter

As parcel-post shipments of butter are likely to be subjected to conditions, especially during the summer, which may cause deterioration and injure the quality of the butter, it is highly desirable that every possible precaution be taken before shipment. Particularly is this true of farm-made butter, because conditions affecting its quality and condition usually can not be controlled as easily on farms as in creameries. However, farm-made butter should be

marketed just as satisfactorily as creamery-made butter when it is properly made and prepared for shipment.[6]

[6] Those desiring information on making farm butter may secure, upon request to the Division of Publications of the United States Department of Agriculture, a copy of Farmers' Bulletin No. 876, entitled "Making Butter on the Farm."

It is necessary to maintain proper conditions in the care of the milk and cream and the making of butter if a marketable product is to be produced. Too much importance can not be given to the maintaining of cleanly conditions in the stable and in other places where the milk, cream, or butter are produced or kept, for they absorb odors and spoil very quickly. It is important, too, that these products be kept in a cool place. High temperatures should always be avoided as heated cream or butter produces a soft, oily condition in the finished product which is undesirable. In manufacturing butter on the farm or in a factory the buttermilk must be removed and washed out, and the proper amount of salt must be incorporated evenly. Frequently parcel-post shipments of farm butter are unsatisfactory to customers because proper methods were not used in making it, and thereby the quality and condition of the butter were injured before it was shipped. For the satisfaction of customers it is important that a uniform quality of butter be produced.

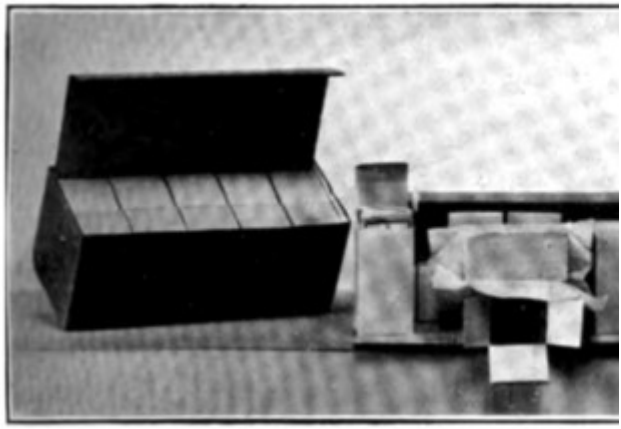


Fig. 2.—Three stages of a parcel-post package of butter; Wra

Preparation of Butter for Parcel-Post Shipping

The methods used in preparing butter for parcel-post shipping depend largely upon the local conditions and the style of package used. To insure delivery in the best possible condition, butter, after being packed or printed and placed in cartons, should be chilled or hardened thoroughly before it is shipped.

One of the most satisfactory ways of preparing butter for shipment is in the form of regular 1-pound prints. The standard print measures $2^1/_2$ by $2^1/_2$ by $4^5/_8$ inches. A hand butter printer or mold should be used in forming the prints. The printer shown in figure 1 is so made that it can be taken apart readily and thoroughly cleaned. The print of butter is easily removed from the mold by the false bottom. Another style is made with the sides and ends hinged to the bottom and held in place by hooks across the ends. After the butter is packed in the mold the sides are unhooked, so that the butter can be removed from the printer. One-pound hand printers similar to these

styles may be secured from dairy-supply companies or they may be made on the farm.

Each pound print should be neatly wrapped in regular butter parchment or paper. A second thickness of such paper has been found to add materially to the carrying possibility of the butter. Waxed paper may be used for the second wrapping. As a further protection to the print, it should be placed in heavy manila paraffined cartons, which may be obtained from folding paper-box companies for about one-half cent each when unprinted or at a slightly additional cost when printed as a stock carton or with a special private brand.



Fig. 3.—Actual parcel-post shipment of 3 pounds of butter wrapp newspaper, corrugated paper-board carton, and finally an outs

Shipping Containers for Butter

Corrugated fiber board shipping containers of various sizes may be obtained for shipping 1-pound prints of butter. (See fig. 2.)

These boxes or containers practically insulate the butter and furnish much protection against heat. Further protection may be obtained by wrapping the container in stout wrapping paper. The whole should be tied securely with a strong cord. In tying the twine, it should be drawn tightly around the package so as to insure its proper carriage. Not infrequently packages are broken open or otherwise damaged because they are insecurely tied. The corrugated containers are also useful for carrying shipments of butter put up in other styles.

Some persons ship butter by parcel post in improvised or "home-made" containers. Clean, discarded, corrugated paper-board cartons are obtained from the grocer or other merchant at small cost or frequently without cost. It is possible to cut a piece of paper board in such shape and size that when it is folded it will form a satisfactory carton. In figure 3 is shown a piece of paper board that is cut so as to provide a carton for shipping 3 pounds of butter that is wrapped in parchment paper and several thicknesses of newspaper.

For this carton the paper board was so cut that it was $7^1/_2$ inches wide and 25 inches long with projections in the middle of the length which were $4^1/_2$ inches wide and extended $8^1/_2$ inches on each side. This provided a carton with dimensions, when folded, as shown in the illustration, of $4^1/_2$ by 6 by $7^1/_2$ inches.

Butter shipped in an improvised container should be wrapped in parchment paper and several thicknesses of newspaper and then should be

securely tied with string. The package should then be inclosed in the piece of corrugated paper board with the projections of the paper board so folded as to form a container. The container should then be tied with twine, wrapped in heavy wrapping paper, and again tied securely with a strong twine.

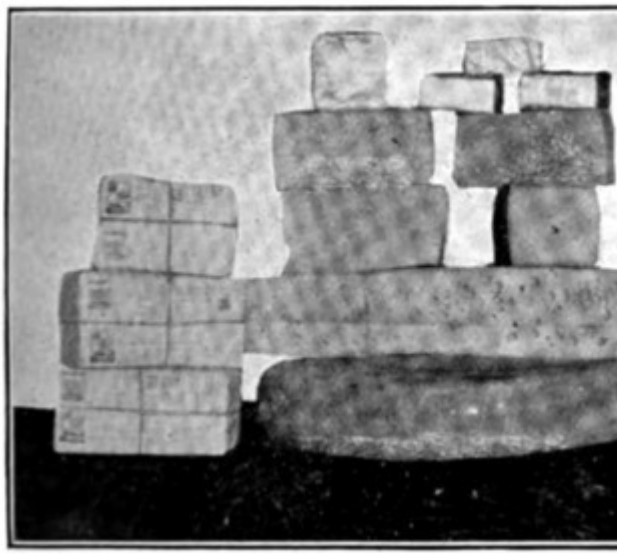


Fig. 4.—Cheese for parcel-post mailing. In some of the importa varieties of cheese are frequently cut into suitable blocks for p

If butter that is prepared for shipment in this manner is thoroughly chilled before being mailed, it should carry safely even in warm weather if it is not in transit over 24 to 36 hours.

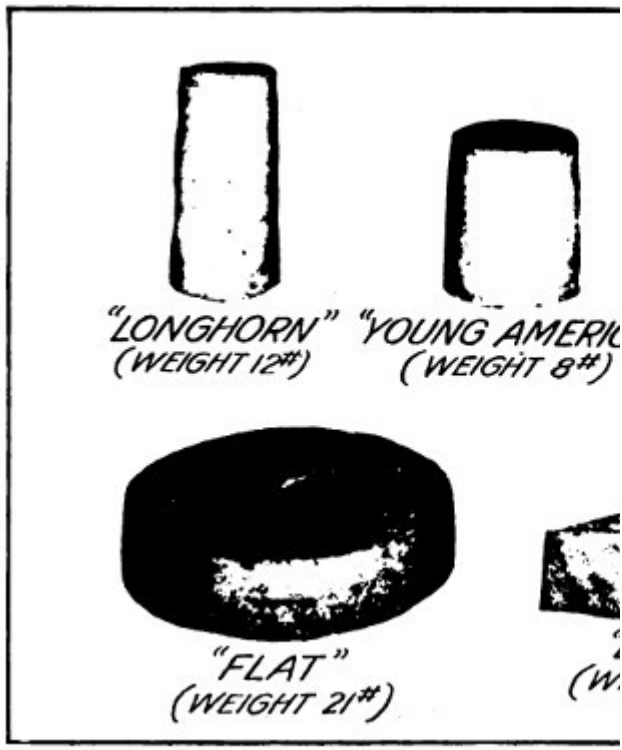
Examples of Successful Marketing of Butter by Parcel Post

A few of the many instances which have come to the attention of the bureau will indicate with what success butter may be marketed by parcel post.

A farmer's wife who was making a good quality of butter was securing but little more than half retail price a pound for it when a trial shipment was made by parcel post to a consumer in a large city.[7] As the result of this shipment, a demand was developed and customers obtained for the entire product at an advance in price to the farmer's wife and with a considerable saving to the customers under the retail price of the best creamery butter.

> [7] Those desiring to obtain suggestions regarding parcel-post business methods should make request to the United States Department of Agriculture for a copy of Farmers' Bulletin No. 922, entitled "Parcel-Post Business Methods."

A number of creameries have developed an extensive parcel-post business. One which has a large output markets practically its entire product direct to consumers or retail distributers, except in the flush of production in spring and early summer. Another has developed a substantial parcel-post trade by sending out a weekly price list. Formerly this creamery used newspaper advertisements, but the manager says that the quality of the butter is sufficient advertisement.



"LONGHORN"
(WEIGHT 12#)
"YOUNG AMERIC
(WEIGHT 8#)
"FLAT"
(WEIGHT 21#)

Fig. 5.—Various styles of American Cheddar cheese s

Essentials for Success in Marketing Butter by Parcel Post

Successful parcel-post marketing of butter requires that extreme care be taken to insure the delivery of a satisfactory product to the customers. The following are a few of the important considerations to be

observed to market butter successfully by parcel post:

1. A uniformly high-quality product should be produced.
2. It should be properly packed in neat and attractive packages.
3. The shipping container used should amply protect the butter from deterioration and damage.
4. The packages should bear the address of the sender and be properly addressed to the customer.
5. The most expeditious mail service from the mailing office should be used to insure the delivery of the butter in the best condition.

Varieties and Styles of Cheese

Most varieties of cheese, being firm and not so subject to damage by high temperature as butter, may be shipped any distance by parcel post without difficulty. (See fig. 4.)

The two important varieties of cheese produced on farms are cottage cheese and American (full cream or whole milk) cheese. Cottage cheese is soft and quickly perishable, therefore it is consumed while fresh. When made rather dry and packed in moisture-proof packages it may be shipped to points where delivery may be made within 24 to 36 hours. The first and second zones are usually the practical limits of shipping cottage cheese by parcel post.[8]

[8] Those desiring to obtain suggestions regarding parcel-post business methods should make request to the United States Department of Agriculture for a copy of Farmers' Bulletin No. 922, entitled "Parcel-Post Business Methods."

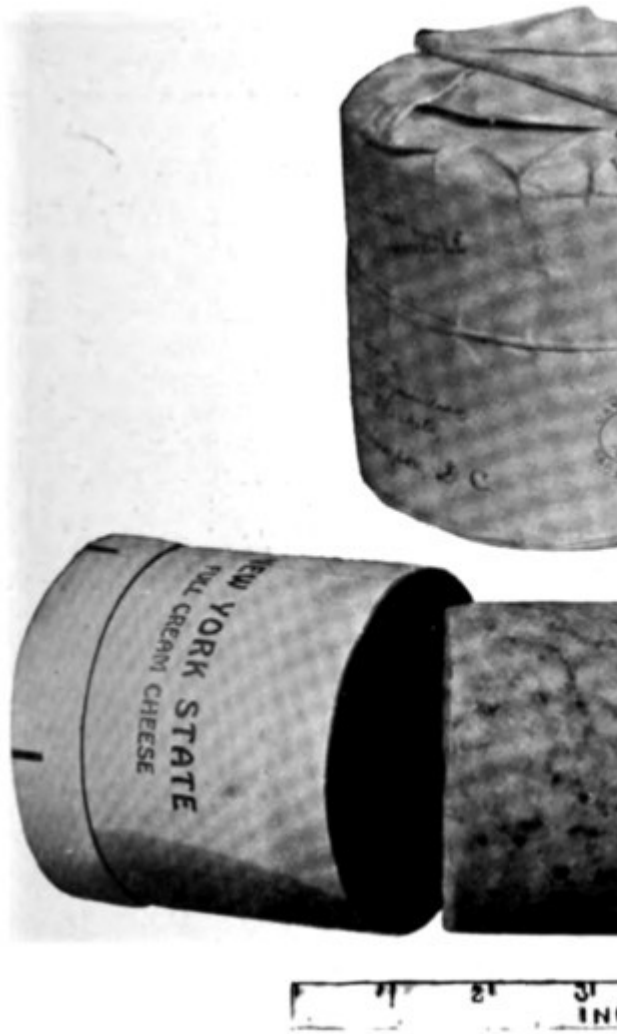


Fig. 6.—Suitable container for shi

As American, Swiss, Brick, and several other of the firmer varieties of cheese are ripened or cured and paraffined before they are marketed, they can be more successfully shipped by parcel post then the soft varieties such as cottage cheese. The more

common styles or forms in which the firmer varieties of cheese are marketed are prints, bricks, and cylindrical shapes. The prints are made by cutting the larger styles of cheeses into square "prints" weighing usually 1 pound each. Bricks are made in molds of the desired size. Cylindrical-shaped cheeses, both flat and long, are commonly known by various trade names such as Midgets, Picnics, Young Americas, Long Horns, Daisies, and Flats. On the Pacific coast a type of cheese called "Jack," which closely resembles the "Daisy" size, is marketed by parcel post. The usual weight and shape of several styles of cheese, suitable for parcel-post shipping, are shown in figure 5.

The Packaging of Cheese for Parcel-Post Shipping

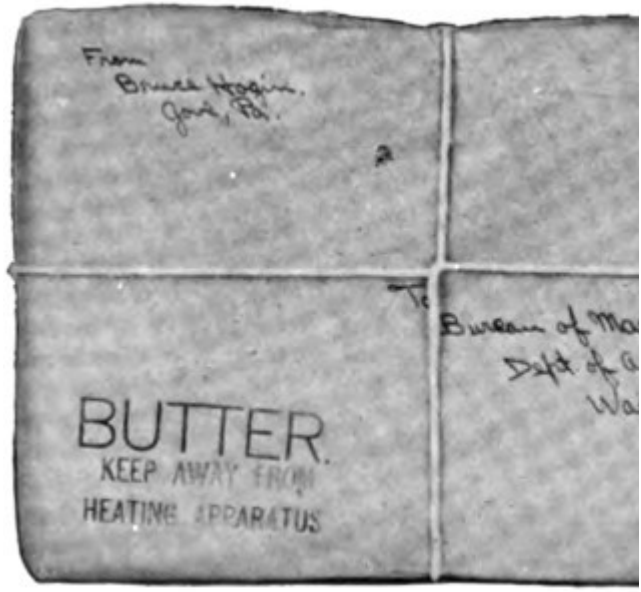
General care should be exercised in the packaging of cheese for shipment by parcel post. The surface of the cheese should be clean and, if necessary, paraffined. As a protection to the cheese it should be wrapped in several layers of paper, preferably with a waxed paper next to the cheese. Corrugated or other fiber-board containers or wooden boxes may be used as shipping containers. (See figure 6.) When rather weak fiber board or wooden boxes are used they should be wrapped with several sheets of tough paper.

Addressing and Mailing Parcel-Post Packages

Parcel-post packages, like other mail matter, should be carefully addressed, including the street number of the person to receive the parcel. In the upper left-hand corner the name and address of the sender should be plainly written. It is preferable to place all addresses on the package itself rather than

on a tag tied to the package, for if the tag becomes detached the addresses of both the sender and receiver are lost. A rubber stamp for butter shipments bearing the statement: “Butter—keep away from heating apparatus,” may be used to show that the parcel is perishable and should be handled accordingly by the postal employees. The letters in the word “Butter” should be one-half inch high, the others one-fourth inch high.

In shipping by parcel post such a perishable product as butter, which is affected by exposure to heat, inquiry should be made of the post office regarding the daily mail service for parcel matter from that point to the destination of the shipment. Arrangements should be made to post the packages as near as practicable to the mail time in order to obtain delivery in the quickest possible time.



Parcel Post Package Ready for Send

Consideration should be given to the practicability of using night mail service when available, as the temperature is usually cooler at night than in the daytime. Night shipments to points within the first and second zones ordinarily are delivered early the next day.

In a general way the foregoing precautions suggested for butter should be observed in shipping cheese.

Postal Requirements

Postal regulations provide that—

> When it (butter) is so packed or wrapped as to prevent damage to other mail, it will be accepted for local delivery either at the office of mailing or on any rural route starting therefrom.
>
> Butter will be accepted for mailing to all offices to which in the ordinary course of mail it can be sent without spoiling when suitably wrapped or inclosed or when packed in crates, boxes, or other suitable containers to prevent the escape of anything from the package, and so constructed as to properly protect the contents. More than 50 pounds can not be sent beyond the third zone.

The firmer varieties of cheese, not being liable to cause damage in the mails, need no special consideration when properly packaged. In some cases it will be found that the express can be used to better advantage than the parcel post.

The rates on parcel-post packages vary according to their weight and the distances shipped. Persons not familiar with the postal regulations governing parcel-post shipments may obtain specific information at any post office regarding the rates and limits of weight and measurement applicable to shipments to any other office.

PLAN No. 247. MADE SHIRTS FOR MEN

A woman had heard her friend's husband complain of the poor-fitting quality of ready-made shirts, and tried her hand at making him some. She carefully took his measure, bought a good shirt pattern and made him two. He was so well pleased that he ordered six more, and after that she had all she could do in making shirts for men, charging a price depending upon the style of shirt. This insured her a good living each year.

There are other men who want shirts made, and other women who can make them—and make money at it, too.

PLAN No. 248. SECRET OF SHOWING SAMPLES—COMPANY AGENT BECOMES A WELCOME SALESMAN

While other canvassers were complaining that they did not get a chance to show their goods or samples at every house they visited, many doors being shut in their faces, an English brush company thought of a good plan.

They furnish their salesmen with post cards saying:

"Dear Madam: This card entitles you to one of our 15-cent sink brushes, which our agent will deliver to you at your home tomorrow. You don't have to buy a thing—just let him show you our full line of brushes."

The next day after mailing this card, the agent calls with the brush, and of course Madam is civil enough to accept it and "look at the others."

That "look" nearly always means a sale, and this happens at almost every house, so the agent finds himself admitted to every home and a chance to

have a popular hearing.

This is given as a tip to other agents who have had the cold reception usually accorded agents and peddlers.

PLAN No. 249. ASSIST MUSICAL COMPOSERS

This plan, which was successfully operated by a Chicago man, not only brought many struggling authors of musical compositions into considerable prominence, but proved a profitable business for himself. He was engaged in publishing sheet music, and was in close touch with musical people all over the country.

He inserted an ad. in the classified columns of the big city dailies, addressed to composers who had failed as their own publishers, the ad. asking them to write for a proposition. Hundreds of them did so, and he made them the following offer: If they would send the plates of their composition, and sign over their rights in the same to him, he would publish them, with their names prominently displayed as authors, send the authors fifty copies of each composition, and give a wide distribution to the main issue of the same; that he would also prominently mention their names in his publicity matter, and thus greatly increase their reputations as authors.

Practically all of them accepted this offer, and he faithfully carried out his part of the contract, so that, just as he said, they became widely known in the musical world, and were soon doing business with the leading music publishers of the country. He realized a good income from publishing their compositions, as some of their compositions met with good sale while he sold some of all the rest.

PLAN No. 250. HONING RAZORS BY MAIL

A Seattle man who carried a line of barbers' supplies, decided to increase his mail-order business by making it an object for men in the country and small towns to have their old-style razors honed, at no cost if not satisfactory.

He inserted an ad. in some country newspapers, offering to make "dull razors sharp or no pay," to return the razor, post paid, in twenty-four hours, and if the customer was satisfied, he was to send him 25 cents.

A lot of them came in, all were sharpened and returned, and most of them were paid for. But he had a good list of names, secured in this way, and to these he sent a neatly written booklet, containing illustrations of many articles in the way of shaving supplies he carried in stock, and the orders he received from these made him a good profit, besides the amount he was ahead on the razors he honed. The few losses did not count, for he was out only 2 cents on each for postage, and those that did pay placed him far ahead.

PLAN No. 251. SUCCESSFUL SALE, YET DIDN'T ADVERTISE

It isn't often we hear of anyone who succeeds in selling a product without newspaper advertising, but here is the case of a young man in a small city who did.

This young man was putting up a very good cough remedy, and the first he made he left with the druggists to sell. They liked it, and sold it rapidly. Then he watched for the country merchants at the

court house, the hotels, and other places, and many of them agreed to carry his remedy and push it, which made a great many more sales. In a few months every store within 15 miles of his home town was selling it. Then a wholesale grocery house took it up and, through its 15 traveling salesmen, introduced it in three states, covering several hundred miles. He demonstrated the wisdom of covering a small territory in the beginning, and gradually increased it.

PLAN No. 252. LOCAL VIEW CALENDERS

A young printer in Los Angeles made money by getting a number of excellent photographs of local views, and printing calendars for city merchants, with these views as the prominent feature of each calendar.

PLAN No. 253. AMATEUR PRINTER AND HAND PRESS

A very young man who had worked in a printing office for a couple of years decided to go into business for himself on a small scale, so he bought a small hand press that could be carried from place to place, and visited country fairs, picnics, summer resorts, and other places where people gather for recreation, and did a nice business printing calling cards and other small jobs. When he had a little leisure, he went among the smaller merchants in out-of-the-way sections of the country and printed letter heads, envelopes, business cards, etc., and in this way made a good living.

PLAN No. 254. MAKING CUSHIONS, PILLOWS, ETC.

A Chicago man, who has good taste in designing pillows and cushions earns a living by making artistic cushions, pillows, etc., for use in cosy corners. He goes to the homes of wealthy people, shows them his samples, and almost invariably receives an order for a number of these articles. His prices are rather high, but his work is so artistically done that it is well worth all it costs.

PLAN No. 255. BATHROOM EXCLUSIVELY FOR WOMEN

In a northern city of 10,000 inhabitants, a woman fitted up a neat, tasty and well equipped bathroom exclusively for women. It became very popular. Women who had no bathroom of their own, disliked going to one patronized by men, at once became her regular customers.

PLAN No. 256. THE GUINEA FOWL

ANDREW S. WEIANT
Scientific Assistant in Poultry Investigations Animal Husbandry Division.

Contribution from the Bureau of Animal Industry
A. D. MELVIN, Chief

For the following plan we are indebted to the U. S. Dept, of Agriculture, Washington, D. C.

Guinea fowl are growing in favor as a substitute for game birds, with the result that guinea raising is becoming more profitable.

They are raised usually in small flocks on general farms, and need a large range for best results.

Domesticated guinea fowl are of three varieties, Pearl, White, and Lavender, of which the Pearl is by far the most popular.

Guinea fowl have a tendency to mate in pairs, but one male may be mated successfully with three or four females.

Guinea hens usually begin to lay in April or May, and lay 20 to 30 eggs before becoming broody. If not allowed to sit they will continue to lay throughout the summer, laying from 40 to 60 or more eggs.

Eggs may be removed from the nest when the guinea hen is not sitting, but two or more eggs should be left in the nest.

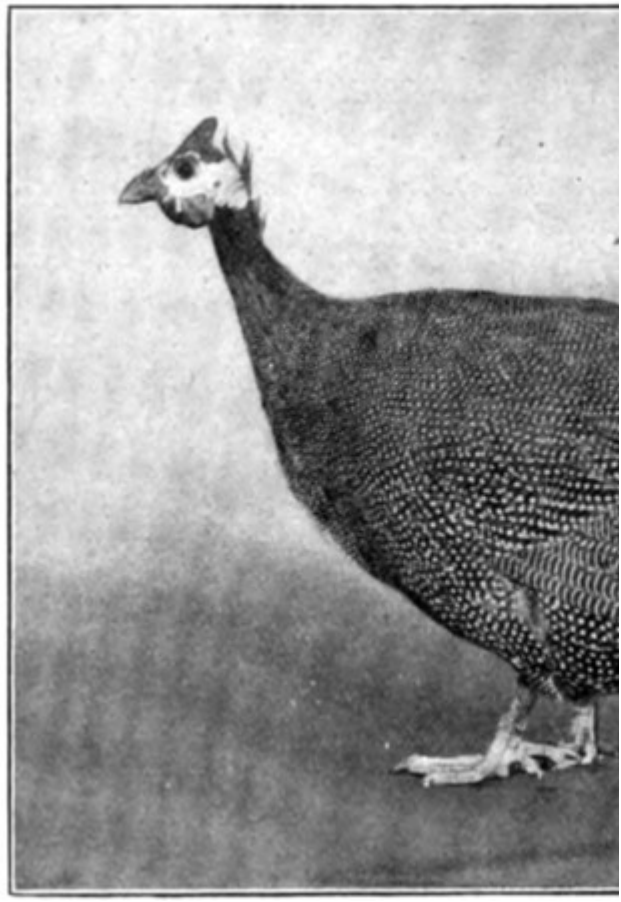
Ordinary hens are used commonly to hatch and rear guinea chicks, but guinea hens and turkey hens also may be employed successfully, although they are more difficult to manage.

Guineas are marketed late in the summer, when they weigh from 1 to $1^1/_2$ pounds at about $2^1/_2$ months of age, and also throughout the fall, when the demand is for heavier birds.

Demand for Guinea Fowl in the United States

The value of the guinea fowl as a substitute for game birds such as grouse, partridge, quail, and pheasant is becoming more and more recognized by those who are fond of this class of meat and the demand for these fowls is increasing steadily. Many hotels and restaurants in the large cities are eager to secure prime young guineas, and often they are served at banquets and club dinners as a special delicacy. When well cooked, guineas are attractive in appearance, although darker than common fowls, and the flesh of young birds is tender and of

especially fine flavor, resembling that of wild game. Like all other fowl, old guineas are very likely to be tough and rather dry.



Guinea Fowl.

A few of the large poultry raisers, particularly those who are within easy reach of the large eastern markets, make a practice of raising a hundred or so guineas each year, but the great majority of guineas are raised in small flocks of from 10 to 25 upon

farms in the Middle West and in the South. Many farmers keep a pair or a trio of guineas more as a novelty than for profit, and from these a small flock is raised. The guinea fowl doubtless would be more popular on farms were it not for its harsh and at times seemingly never-ending cry. However, some people consider this cry an argument in the guinea's favor, as it gives warning of marauders in the poultry yard. Similarly, their pugnacious disposition, while sometimes causing disturbances among the other poultry, also makes them show fight against hawks and other common enemies, so that guineas sometimes are kept as guards over the poultry yard. Often a few guineas are raised with a flock of turkeys and allowed to roost in the same tree, where they can give warning if any theft is attempted during the night.

Price of Guinea Fowl

The highest prices for guinea fowl are paid in the large eastern markets. Guinea raisers, who are near these markets, or who have developed a trade among private customers receive prices that make this industry very profitable. One poultryman located near a New England summer resort has raised as many as 400 guineas in one season, selling them in August, when they weigh about 1 pound each, at $1.25 per pair. Wholesale prices in New York usually range from 75 cents to $1 per pair for dressed spring guineas weighing 2 pounds to the pair, and from $1.25 to $1.50 per pair for those weighing 3 to 4 pounds to the pair. Old guineas are not wanted and seldom bring more than 50 or 60 cents a pair.

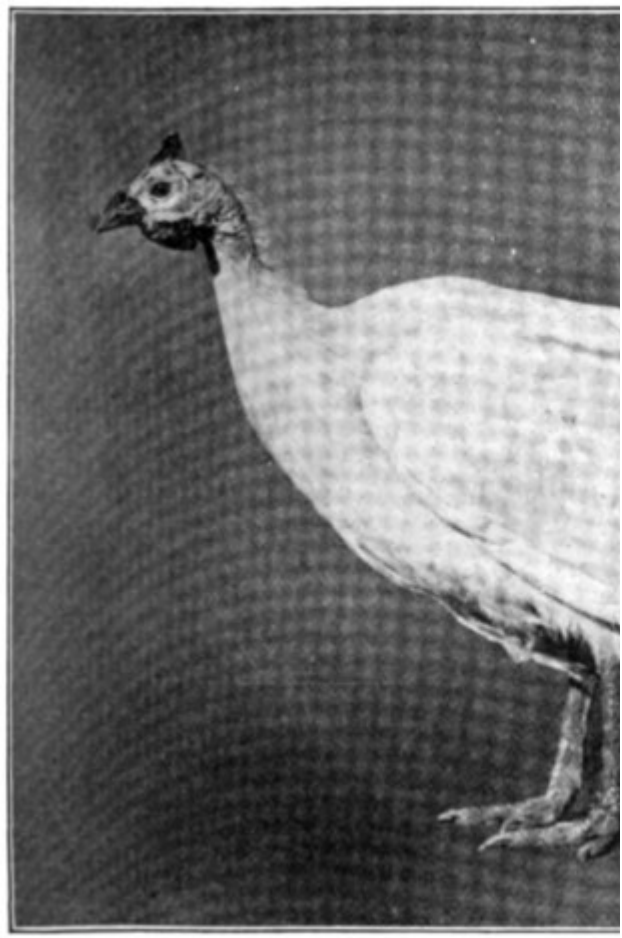


Fig. 1.—White guinea, m

In the city markets of the Middle West and South the demand for guinea fowl is small, and the prices are correspondingly low, the average price received by the producer being from 20 to 30 cents each. The ordinary retail price for guineas in Birmingham, Ala., is from 30 to 40 cents, while in St. Louis and Chicago the retail price usually is about 75 cents, and in New York $1. On the Pacific coast very few guineas are

raised and only occasionally can they be found even in the largest markets.

Breeding Stock and Eggs for Hatching

The demand for guinea fowls as breeding stock is considerable, most of them being sold in pairs and trios. Breeders of the purebred Pearl, White, or Lavender varieties who have a reputation for high-class birds usually have little difficulty in disposing of surplus stock at prices ranging from $2 to $3.50 a pair and from $3 to $5 a trio. The demand for eggs for hatching is greater than for breeding stock. From 75 cents to $1 for 15 eggs from pure-bred birds is an ordinary price. During the last few years a limited market for guinea eggs has developed among commercial hatcheries which have an outlet for a few day-old guinea chicks along with their ordinary chicks, ducklings, goslings, and turkey poults. One hatchery near Boston has sold as many as 2,000 guinea chicks in one season, the eggs being purchased from an extensive breeder in Ohio and shipped by express in crates containing 360 eggs each.



Fig. 2.—Splashed guinea (cross between Wh

Varieties of Guinea Fowl

Several species of wild birds known as guinea fowl are found in Africa, and derive their name from Guinea, which is situated on the West Coast of that continent. From one of these wild species (*Numida meleagris*) the common domesticated guineas are descended. They have long been domesticated, having been raised as table birds by the ancient Greeks and Romans, and were introduced into this

country by the early settlers. In Africa, where there are still many wild flocks, they are highly prized by hunters as game birds, and in England they sometimes are used to stock game preserves. Even in this country a few flocks left to shift for themselves have become so wild as to afford excellent hunting.

Domesticated guinea fowl are of three varieties—Pearl, White, and Lavender. The Pearl is by far the most popular. It has a purplish-gray plumage regularly dotted or "pearled" with white and is so handsome that frequently the feathers are used for ornamental purposes. The White guinea fowl (fig. 1) is of pure-white plumage, and the skin is somewhat lighter in color than in the Pearl variety. Lavender guineas resemble those of the Pearl variety, except that the plumage is of a light gray or lavender, regularly dotted with white instead of a dark or purplish gray dotted with white. By crossing the Pearl or Lavender varieties with the White, what is known as the "Splashed" guinea is produced, the breast and flight feathers being white and the remainder of the plumage being Pearl or Lavender (fig. 2). Crosses between guinea fowl and other poultry, particularly chickens and less commonly turkeys, are not unknown, but such birds without exception are sterile.

The young guinea chicks are very attractive, those of the Pearl variety resembling young quail. They are brown in color, the under part of the body being lighter than the rest, while the beak and legs are red. The first feathers are brown, but these are replaced gradually by the "pearled" feathers until at about 2 months of age the brown feathers have disappeared completely. About this time also the wattles and helmet begin to make an appearance.

As yet no standard of perfection has been set for

guinea fowl, the birds not being recognized by the American Poultry Association. They are exhibited at poultry shows throughout the country, however, and most of these shows offer prizes for the best birds. In judging guinea fowl, the points regarded as most important are good size and uniform color. White flight feathers in the Pearl and Lavender varieties are the most common defects. In weight, guineas average from 3 to 4 pounds at maturity for both male and female.

Distinguishing Sex

The male and the female guinea fowl differ so little in appearance that many persons have considerable difficulty in making a distinction. Indeed, it often happens that those who are inexperienced in raising these fowl will unknowingly keep all males or all females as breeding stock. Usually the males can be distinguished by their larger helmet and wattles and coarser head (fig. 3), but to be positive one should listen to the cry made by each bird. That of the female resembles “buckwheat, buckwheat,” and is decidedly different from the one-syllable shriek of the male. When excited, both the male and the female emit one-syllable cries, but at no time does the male imitate the cry of “buckwheat, buckwheat.” Sex can be distinguished by this difference in the cry of the male and female when the birds are about 2 months old.

Breeding

Like quail and most other wild birds, guinea fowls in their wild state mate in pairs, and this tendency prevails among domesticated guineas also, provided the males and females are equal in number. As the breeding season approaches, one pair after another

separates from the remainder of the flock and ranges off in the fields in search of a suitable nesting place. Once mated in this way, the male usually remains with his mate throughout the laying season, standing guard somewhere near the nest while the hen is laying and ready to warn her of any approaching danger. However, it is not necessary to mate them in pairs under domestic conditions to secure fertile eggs, and most breeders keep but one male for every three or four females. When mated in this way the hens are more apt to lay near home, and several usually lay in the same nest, thus making it much easier to find the nests and gather the eggs.



Fig. 3.—Distinguishing between male and female. The helmet and
those of the female.

Most guinea raisers allow their breeding stock free range of the entire farm at all times, and this helps to keep the birds strong and vigorous. During the winter the breeders should be fed a grain mixture of corn, wheat, and oats twice a day, and where no green feed is available on the range at this time of the year, vegetables, such as potatoes, turnips, beets,

and cabbage, should be substituted. Animal feed is essential to best results and can be supplied by feeding meat scrap or skimmed milk. Given free range, where the supply of natural feed during the winter and early spring is ample, as it usually is in the southern portion of the United States, the guineas can be left to pick up a considerable part of their feed. Free access to grit, charcoal, and oyster shell is necessary throughout the breeding and laying season. Avoid having the breeders too fat, but keep them in good firm flesh.

While guineas can be kept in the best breeding condition upon free range, still they can be confined, if necessary, and satisfactory results obtained. One extensive guinea raiser has confined as many as 45 hens and 15 males in an acre pen throughout the breeding and laying season and been successful. This pen is inclosed with a wire fence 5 feet high and the birds are prevented from flying over by clipping the flight feathers of one wing. Within the pen is a grass pasture with bushes here and there where the hens make their nests by scratching out a bowl-shaped hollow in the ground. The winters being severe, a roosting shed is provided, having a cleated board reaching from the floor to the roosts for the wing-clipped birds to walk up.

Guinea Eggs

As profitable egg producers guinea hens can not compete with ordinary hens, but during the latter part of the spring and throughout the summer they are persistent layers. The eggs are smaller than hen eggs, weighing about 1.4 ounces each, while eggs of the common fowl average about 2 ounces each; consequently guinea eggs sell at a somewhat lower price. There is no special market for guinea eggs and

they are usually graded by dealers as small hen eggs. Owing to the natural tendency of the guinea hen to nest in a patch of weeds or some other well-hidden place, many of the eggs are not found until they are no longer fit for market. The shells of guinea eggs are so thick and often so dark that it is difficult to test them by candling, and for this reason, and also because the eggs are small, dealers do not like to handle them. For home use, however, guinea eggs can be made to take the place of hen eggs, and many regard them as superior in flavor. In composition the greatest difference is that the shell is thicker and the yolk makes up a slightly larger proportion of the total egg contents than in the case of hen eggs.

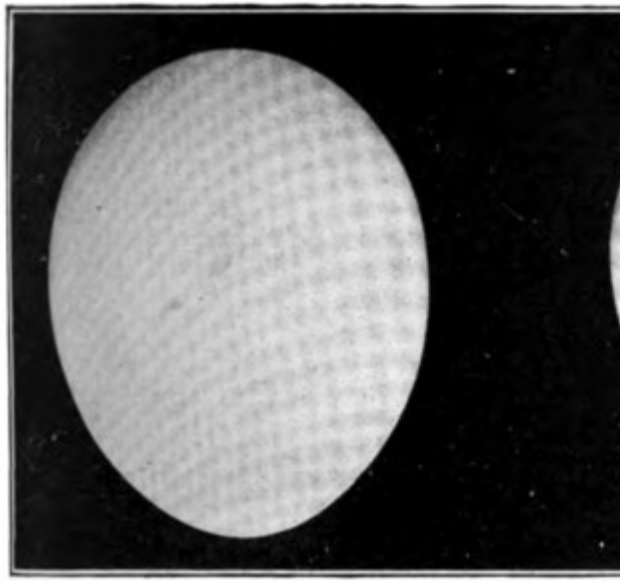


Fig. 4.—Relative size of eggs of ordinary hen (l

LAYING

Guinea hens usually begin laying in April or May, those in the South laying earlier than those in the

North. A short time before the opening of the laying period the hens with their mates begin searching for suitable nesting places among the weeds and brush along the fences or in the fields. In this search the male takes as active an interest as his mate, and when a suitable location is found both help to dig out the nest and make it into a suitable shape. Each day as the hen goes to the nest to lay the male accompanies her and remains near by until she comes off. Should anyone approach he shrieks in warning and thus betrays the whereabouts of the nest, which might otherwise be difficult to locate. If several guinea hens are mated with one male they usually all lay in the same nest, but sometimes a hen after mating will wander off by herself to make her own nest. At other times the male bird, after helping one hen to make her nest, will then desert her and pair off with another hen to make another nest.

From 20 to 30 and often more eggs are laid before the guinea hen becomes broody, at which time she can be broken of her broodiness easily by removing the eggs from her nest, when she will soon begin laying again. If not allowed to sit, guinea hens will continue to lay throughout the summer, laying from 40 to 60 and in some cases 100 eggs during the season.

Gathering the Eggs

The wild nature of the guinea hen asserts itself in her nesting habits. Instinct demands that the nest be well hidden from all enemies, such as crows, dogs, skunks, opossums, rats, foxes, coyotes, and other predatory animals. If the hen becomes frightened by the intrusion of some enemy, or if her eggs are removed from the nest, more than likely she will change her nesting place to a safer location. For this

reason she should not be disturbed while she is on the nest, and the eggs should not be removed without leaving a few nest eggs in their place. If a number of eggs are removed at one time, half a dozen left in the nest usually are sufficient to keep the hen from seeking a new nest. If the eggs are gathered every day, two or three usually are enough to leave as nest eggs. It is unnecessary to remove the eggs with a spoon or to scrape them out with a stick, as is sometimes done to prevent the hand from coming in contact with the nest and leaving a scent. After the eggs are gathered they should be handled with as little jarring as possible and should be set while fresh, never holding them more than two weeks if it can be avoided.

Incubation

Ordinary hens are used commonly to incubate guinea eggs, but guinea hens, turkey hens, and incubators also can be employed successfully. The usual sitting for a guinea hen is about 14 eggs, for a hen of one of the general-purpose breeds such as a Plymouth Rock, 18 eggs, and for a turkey hen, about 24 eggs. The incubation period for guinea eggs is 28 days, although frequently they start hatching on the twenty-sixth day and are all hatched by the end of the twenty-seventh day.

If the nest in which the guinea hen becomes broody is safe from any disturbance, she may be trusted with a sitting of eggs and more than likely will hatch out every egg that is fertile, provided all hatch at about the same time. As soon as the guinea chicks begin to leave the nest the hen will leave with them, and any eggs that are late in hatching are ruined unless they are placed in an incubator or under a broody hen before they become chilled.

Guinea hens usually are too wild to be set anywhere except in the nest where they have become broody, and often such a nest is unsafe. Because of these disadvantages and the fact that guinea hens do not make the most satisfactory mothers for guinea chicks, ordinary hens are most often used to do both the incubating and the brooding, at least until late in the summer, when the guinea hens often are allowed to sit and raise a brood without much attention being given them. Broody turkey hens, when not needed to incubate turkey eggs, often receive a sitting of guinea eggs, and they hatch them quite as well as ordinary hens and also are able to cover more eggs.

Artificial Incubation and Brooding

Incubators are used as successfully in hatching guinea eggs as in hatching hen eggs. They are operated in exactly the same way for either kind, except that the thermometer is lowered sufficiently to make its relative position above the guinea eggs similar to its former position above the hen eggs.

Little has been done in the way of brooding guinea chicks artificially. They are naturally of a wild nature and require free range to grow into strong, vigorous birds. Nevertheless in one case a New England poultryman hatched 200 guinea chicks and succeeded in raising about 125 by brooding them in exactly the same way as common chicks in a hot-water brooder house. On bright warm days the chicks were allowed to run in a yard about 50 by 100 feet, which had been planted to corn, and thus afforded some green food for them to pick at. This yard was inclosed by a 5-foot wire fence of 1-inch mesh, with 2 feet of $^1/_2$-inch mesh around the bottom. The guineas began flying over the fence when they were about 6 weeks old, and from then on

they had free range and were allowed to roost in the trees. Other poultrymen who have tried brooding guinea chicks artificially report utter failures, sometimes due to white diarrhea, and at other times the birds seem to become weak and die from no apparent cause except too close confinement.

Natural Brooding of Guinea Chicks

Ordinary hens make the best mothers for guinea chicks. Given warm, dry weather and plenty of range, turkey and guinea hens can be used successfully, but should a rain or heavy dew occur, the mother turkey or guinea hen is apt to drag the chicks through the wet grass and many are lost from becoming wet and chilled. Neither turkey nor guinea hens can be induced to seek the shelter of a coop at night and during storms, but will remain out in the fields to hover their broods wherever they happen to be when nightfall overtakes them. When the guineas are old enough to roost they can be trained to roost wherever desired by driving them to the roosting place and feeding them there regularly. After the first few nights they will come to the place themselves, but until they are old enough to roost many of the young guineas that are being raised with turkey or guinea hens are likely to be killed by exposure to cold and dampness or by being led over so wild a range that they become exhausted and are unable to keep up with the remainder of the flock.

If ordinary hens are used as mothers, it is very easy to raise a large percentage of the total number of guinea chicks hatched. Each hen that is to have a brood should be allowed to hatch out some of the eggs herself, after which she will mother all that are given her. A Plymouth Rock hen can care for 18 easily. After the hatch is completed and the chicks

are strong enough to leave the nest, the hen and brood are ready to be removed to the coop provided for them. The greatest fault of the hen as a mother is that on the average farm she has become accustomed to staying about the barnyard, and if allowed to do so, she will keep her guinea chicks there also. Conditions about the barnyard are entirely unsuited for raising guineas, and to prevent the hen keeping them there the coop should be placed in a distant pasture or field. Here the hen should be induced to remain until the guineas are old enough to go to roost.

For the first two days the hens should be confined to the coop, allowing the chicks to run in and out at will. They will not stay away unless there is another brood near by which they are apt to join. After the first few days the chicks become so attached to their foster mother that they will never leave her. By the third day the hen will have recognized the coop as her home and can have free range without fear of her wandering far away. At night she will return to the coop with her brood and can be shut in to protect her from foxes or any other night prowlers. After the dew is off the grass in the morning the coop can be opened and the hen and her brood allowed free range again. Should a rain come up they can easily be driven to the coop and the chicks will be kept warm and dry. The coop should be rain proof and built without a floor. If it is moved a short distance every day, the ground beneath it is kept fresh and clean.

Lice

Hens to be used in brooding guinea chicks should first be completely freed from lice. This can be done by dusting them with some good lice powder at the

time they are set and repeating once a week during the period of incubation. Guineas are less likely to have lice than common fowl, but when they are raised with hens care should be taken to keep them from becoming infested. Examine the young chicks about the head and along the wing bar at the base of the quill feathers, and if lice are found grease these parts lightly with lard. As the guineas grow older they take great delight in dusting themselves and usually are able to keep free from lice.

Feeding

Guineas are fed in much the same way as chickens, but they require less feed, as they are natural rangers and can be trusted to find enough seeds of weeds and grasses, buds, insects, and green vegetation in the fields to supply much of their living. For the first 36 hours after hatching no feed is required, as the sustenance from the egg is sufficient to nourish them for this period. The first meal may consist of a little hard-boiled egg mixed with bread crumbs, or bread may be soaked in milk, squeezed partly dry, and fed in small bits. Clabbered milk also is very good. Three times a day is as often as they need to be fed, one feed consisting of clabbered milk or the bread and egg or bread and milk mixture, and the other two of chick feed. If the coop is placed in a field or pasture where green feed is available, the guinea chicks can secure this for themselves; otherwise, sprouted oats, dandelion leaves, lettuce, or onion tops cut fine should be furnished. Water, grit, and fine oyster shell should be before them always.

By the end of the first week the young guineas will be finding enough worms and insects to take the place of the egg or milk feed, so this may be eliminated and chick feed given morning and night.

If clabbered milk is available, however, it can be continued with excellent success, since guineas are very fond of variety in their ration and it is conductive to quick growth. As the birds grow older, whole wheat, oats, and cracked corn can be substituted gradually for the chick feed.

Roosting

When guinea fowl are from 6 to 8 weeks old they will leave their coop and start roosting in some near-by tree or other roost that may be provided for them. They prefer roosting in the open, but if they have been raised with a hen they can be induced to follow her inside a poultry house and roost there. It is advisable to have them become accustomed to going in a house or shed of some sort, for otherwise it is almost impossible to catch them when they are wanted for the market. Guineas, even after they are grown, will not allow the mother hen to leave. When she goes to her nest to lay, they follow and wait near by until she is ready to leave again. This attachment affords an easy method of controlling the natural wild instincts of the guinea fowl and makes raising them under domestic conditions much simpler.

Marketing

The marketing season for guinea fowl is during the latter part of the summer and throughout the fall. At this time the demand in the city markets is for young birds weighing from 1 to 2 pounds each. At about $2^1/_2$ months of age guineas weigh from 1 to $1^1/_2$ pounds, and at this size they begin reaching the markets in August. As the season advances the demand is for heavier birds. During the fall of 1916 New York wholesale quotations for dressed guineas were as follows:

Sept. 1, guineas, spring, 2 pounds to pair, per pair	$1.00
Sept. 1, guineas, spring, 2½ to 3 pounds to pair, per pair	$1.25 to 1.37½
Oct. 1, guineas, spring, 2 pounds to pair, per pair	1.00
Oct. 1, guineas, spring, 3 to 4 pounds to pair, per pair	1.25 to 1.50
Nov. 1, guineas, spring, 2 pounds to pair, per pair	.75 to 1.00
Nov. 1, guineas, spring, 3 to 4 pounds to pair, per pair	1.50 to 1.75

The usual practice in marketing game birds is to place them on the market unplucked, and in most markets guineas are sold in this way (see fig. 5). They look more attractive with the feathers on and sell more readily. When dressed the small size and dark color of the guinea are likely to prejudice the prospective customer, who may be unfamiliar with the bird's excellent eating qualities. For hotel and restaurant trade, however, guineas should be dressed in the same way as common fowl. Before shipping any birds to a market, it is advisable to inquire of the dealer to whom they are to be shipped whether the feathers should be removed.



Fig. 5.—Guinea fowl usually are marketed unplucked, except for l
dressed like ordinary fo

If the guineas are to be marketed with the feathers on, all that should be done is to bleed them by severing the vein in the roof of the mouth, allowing them to hang head downward until bleeding is complete. If the feathers are to be removed, this should be done by dry picking. The vein in the roof of the mouth is severed first to insure thorough bleeding, and the knife then thrust through the groove in the roof of the mouth into the brain. When the brain is pierced the feathers are loosened by a convulsive movement of the muscles and can be removed easily.

PLAN No. 257. SOUVENIR POST CARDS

A Spokane man, whose total capital was $75, perfected a plan for making money out of post cards,

and realized a profit of about 90 per cent.

He bought 9,000 post cards of different designs, including embossed floral, birthday greetings, best wishes, air-brush embossed fruit and flowers, live series, embossed and family mottoes, cards for all the holidays and seasons, etc. These he bought at $4.00 per 1,000 for $36. To send out these cards in registered packages of 100 each, cost $14.50, a total of $50.50.

The next he secured the names of several hundred general store keepers in towns of 700 or under, and selecting 90 of these at one time, he sent each of them 100 of the assorted cards, offering to accept $1.00 for the lot if paid inside of ten days, or $1.25 for the 100 cards if kept more than 10 days before remitting. He added that if they did not want to keep the cards, he should be notified at once, and he would send postage for their return. He also enclosed a price list of other cards, and asked the merchants to compare the quality and prices of his cards with other cards, and note the saving made by patronizing him.

In practically all cases the $1 was remitted inside the ten days named, and his gross receipts from the cards that cost him $50.50 was $90, or a net profit of $39.50. This afforded him a comfortable income by the year.

PLAN No. 258. NOVEL CANVASSING METHOD

An enterprising agent who had secured several formulas, had them printed separately on good paper, with the selling price marked at 50 cents each.

He made up a small quantity of each article

mentioned, for demonstration purposes, and bought a gross of cheap silverene sugar spoons at a cost of less than 5 cents each, to be used as premiums, and started out on a house-to-house canvassing expedition.

He would call at a house and ask the lady if she had any clothing that was soiled with grease or paint or a soiled glove that she would allow him to clean without charge. Almost every housewife had exactly what he mentioned, and quickly brought it out, as it would cost her nothing to have it cleaned. Having thoroughly cleaned the clothing or gloves he would then rub a little of the furniture polish on a chair, and clean a silver spoon or the nickel on the stove with his metal polish, and by this time he would have her deeply interested. Then he took from his grip one of the silverene spoons, with the remark that he was not selling the cleaners or polishers but simply the formulas for making them from ingredients procurable at any drug store, and that she could have any two of the 50-cent formulas for 50 cents and he would throw in the sugar spoon as a premium. Usually he got the half dollar without further argument, but if the lady hesitated he would add another formula or two more if necessary, as they cost him nothing but the printing, and the spoon cost but 5 cents, so he would have been away ahead if he had given her one each of all the formulas and the sugar spoon besides.

PLAN No. 259. A CIRCULATING LIBRARY IN SMALL TOWN

There are several ways of establishing circulating libraries, but probably the best plan yet devised is

one worked out by a young man living in a middle-western city.

Going into a town of not less than 800 or 1,000 people, he first arranges with some trustworthy merchant, usually the local druggist, to handle the books and make his place the library headquarters. The druggist is glad to do this without charge, as it will bring many people to his store who have not been coming there before, and probably mean a number of new customers.

He then canvasses the town for members, on a basis as follows: The membership fee to be $1.75, and for two years will entitle the members or their families to the use of any of the books in the circulating library, one book to be placed therein for each member secured, but at least fifty members must be secured, thus giving each one the chance to read the fifty books in the two years for $1.75. Of course, more than fifty members are secured, if possible, and the membership fee is to be paid to the druggist or merchant handling the same, upon the arrival of the books.

When all the members possible have been secured, the originator of this plan orders the books forwarded to the resident manager, who is the druggist or merchant already mentioned, and the membership fee is collected and sent to the home address of the man who established the library, while he goes on to the next town to start another library. It does not require more than a week in each town, and as the books are bought in quantities at a very low figure, he makes a good living each year from this plan.

PLAN No. 260. A NEW WAY TO SELL MEMORIALS

A young man living in a southern city originated a plan by which he was able to sell thousands of memorials all over the country, while not appearing to be selling anything.

Supplying himself with an impressive looking blank book, in which long lists of names could be written, he called at every house in the territory he was canvassing, and informed the lady at each place that he was compiling a list of the deaths in the county for statistical purposes. In those cases where deaths had occurred in the family he would ask for the names, dates of births and death, and having secured these, he would say, as he was leaving:

"These records are going to be very beautiful, and the lady next door has asked me to show her what they will be like. If you wish, I can bring yours at the same time, so that you may see if I have all the facts correctly stated."

Having bought several hundred memorials at a low figure, those with angels on them predominating, and selecting from books of poetry stanzas appropriate to each of the memorials, he had these, together with the names and dates, printed in gold letters, pasting the printed slips on the memorials, near the bottom, thus making them very attractive.

Returning to the route he had formerly canvassed he would call at each house where he had procured names and dates and say to the lady that, in compliance with her request, he had come to show her the record. It was so beautifully done that in practically every case the lady would ask if it were for sale. He would sell the record for $1.60 or $2.00, and as at least half of this was clear profit, and he sold many thousands of memorials in this way, some idea of his earnings may be gained.

PLAN No. 261. GROWING AND SELLING POTTED PLANTS

An Illinois woman, wishing to earn a little money for herself, obtained catalogs from various seed firms, and sent 50 cents to one of them for geranium seeds.

She planted them in shallow boxes, and got more than 200 plants from them. She shifted these plants from the boxes to small tin cans, and sold them to her neighbors for 10 cents each, thus receiving $20 for her 50-cent investment.

Succeeding so well in her first venture, she sent for more seeds, some plants and thumb pots, and bought collections of small plants, from which she took cuttings when they had grown larger.

She soon had more orders for plants than she could fill, so she built a low shed on the south side of her house, with old window frames and glass for a roof, and produced on a larger scale. She found that geraniums, begonias and ferns were most in demand, and she specialized in these. In a year or two she had a business of her own that was not only pleasant and fascinating but profitable enough to give her an independent income.

PLAN No. 262. MONEY FROM GEESE

Very few people seem to know that although geese pay greater profits than any other domestic bird, they cost much less to raise than other species of fowl. But a farmer's wife in Kansas knew this, and she utilized her knowledge in a very profitable way.

She realized that the market for live goose feathers never could become glutted, and that dressed geese for Thanksgiving and Christmas time brought

enormous prices.

She began early in the summer as she knew they were expensive to keep over winter. She bought one pair and a setting of eggs and from these she raised fifteen fine young geese within the first three months. Another setting brought out twelve more, and by fall she had a nice flock of thrifty young ones. By late November they were almost full grown, raised entirely on green stuff, so that just before Thanksgiving she plucked them all, including the old ones, and had a fine lot of fresh, clean feathers which later sold for very high prices. Then, after plucking the birds, she killed them all, dressed them, and sold every one of them before Thanksgiving. She could have sold many more for they were choice, fat birds, and all young except the two she started with.

When she counted up her total receipts from the sale of the feathers and the dressed geese, she was surprised, and the next year she went into the business on a much larger scale, with correspondingly increased profits, which were sufficient to make her livelihood.

PLAN No. 263. STARTED WITH THE LIBRARY COLUMN IN NEWSPAPER

A literary woman in a small city, realizing the inability of many people to make proper selections of books from the public library, in conjunction with the librarian, induced the editor of the local daily paper to let her establish a “library column” in the Saturday issue, in which she sought to instruct the public regarding the choice of books, the use of the card catalog, the consultation of shop lists, the periodical index, and various reference works. She

was to be paid $5.00 a week, if she "made good," which she did.

Then she inaugurated a "club column" in the same issue of the paper, and gave interesting news of club meetings, with comments upon the work done, etc., and for this she received another $5.00.

Later the editor urged her to add a "home department" to her work, at still another $5.00 a week, and on this modest salary she managed to live comfortably. In two years, however, she was offered the control of the home department of the Sunday edition of a large city daily at more than twice her $15 a week in the small town, and she promptly accepted it.

PLAN No. 264. CANNING FOR CITY PEOPLE

A farmer's wife, who had plenty of fruits, small fruits, berries, vegetables, etc., but had very few jars in which to put them up, arranged with a number of families in the city to have them furnish the jars, while she would furnish the fruits and the sugar, and do the canning, for 20 cents per jar. As the fruit thus put up was worth at least 50 cents per quart jar, the city people obtained it cheaply enough, while the farmer's wife made $80 by putting up 400 jars during the season. This made it profitable all around, and saved a lot of farm products that would otherwise have gone to waste. This plan can be worked on a larger scale to afford any one a good living each year.



Plan No. 265. He Loves the Out

PLAN No. 265. "LANDSCAPING" CITY LOTS

Two landscape gardeners, who lived in a residence part of the city where scant attention was paid by the owners to the appearance of their lawns and parking strips, undertook to change the looks of the neighborhood, and create a good business for themselves.

Selecting ten blocks on a graded street, along which were good houses and many trees, most of

them sadly neglected, they proposed to the owners of the various houses on both sides of the street to give it the careful and skillful attention the places needed, at so much a month.

Most of the owners signed contracts for this work, and at the end of the season each property so cared for by these men had improved better than 100 per cent in appearance. The result was that several owners were offered higher prices for their property than they had ever thought it worth, and the next year those who had at first refused to employ the landscape gardeners were the first to sign up for the season just starting.

PLAN No. 266. BOSSING OTHER PEOPLE'S GARDENS, OR GARDEN MANAGEMENT

A suburban resident who knew all about gardens and gardening, yet realized the utter ignorance of the average suburbanite regarding the planting and care of gardens, the prevention and extermination of insect pests, and a lot of other things necessary to know, decided one spring that he would not raise a garden that year, but would make a good living by taking care of other people's gardens, not doing the work himself, but taking general supervision of it and telling the owners just how it should be done, if they wished to make a success of gardening.

Most of the people in that suburb wanted to raise gardens, but didn't know how to do it themselves, so they were glad enough to secure the services of this expert at so much for the season, and do as he told them.

He made a careful survey of every garden under contract, noting the soil, slope and general

characteristics of the location, named the kind and quantity of seeds or plants, to be given a certain amount of space, the kind of fertilizer, if any, that must be used, the time of planting, the method of cultivation, the symptoms of insect pests, and the kind of spray to be used in their destruction, and every other item of knowledge needed by those who didn't know but were willing to learn.

The outcome of it all was that that particular suburb was frequently mentioned in the city papers as the one possessing the prize gardens for many miles around, and the owners found them the source of profit instead of loss, besides having the satisfaction of knowing how to do it next year.

And the expert was equally pleased for he had made $2,000 that season by simply telling other people what to do.

PLAN No. 267. REPAIRING LAWN MOWERS

One would scarcely think there could be much of a living in simply traveling around and repairing lawn mowers, but a man in a western city, who is "handy with tools," and has a taste for machinery, makes a good living for himself and a large family.

The mechanism of a lawn mower is easily learned by carefully studying its construction, finding out what each particular piece is for, how it gets out of order, how to repair it, in short, to become a master of the machine.

He not only covers a large territory in his home city, where all work in that line is reserved for him, by those for whom he has already done repairing, but he occasionally finds time to take in one or two outside towns where, in a few days, he takes all the

lawn mowers that need repair and puts them in first class working condition.

His charges are 50 to 75 cents an hour. He makes a living, and has bought and paid for a nice home.

PLAN No. 268. MONEY FROM SMALL LUNCHES

That "many a mickle makes a muckle," is pretty well exemplified in the case of a young man living in Buffalo, who has built up a very good business of his own through supplying soda water counters, small lunch rooms, tourists, school houses, factories, etc., with what he calls "nut sandwiches." These he makes from shredded wheat "triscuits" by cutting them in two and spreading peanut butter between the two sides. He puts these up in wax paper and retails them at a low price, yet one that enables him to make a discount when selling them in quantities.

PLAN No. 269. A NOVEL LUNCH PLAN

There is a concern in a southern city that puts up and delivers lunches in any part of town, to those who cannot go home to their mid-day meal. A lunch they sell and deliver for a comparatively small sum, which includes two ham sandwiches, one cheese sandwich, a piece of pie and a piece of cake, packed in a paper box, with paper napkin, toothpicks, etc. Less elaborate lunches are sold for 10 cents, and more complete ones for a higher price, and deliveries are made by boys on bicycles, who are hired for two hours each day.

As the expense has been reduced to a minimum, the young fellows at the head of the concern are able

to send out a better lunch than can be bought at the restaurants, for the same price and yet make a good profit out of the business for themselves.

PLAN No. 270. OLD STREET-CAR BECOMES DINING ROOM

A lady in southern California motored to a little tourist town up the mountain side to look at some property she thought of buying. Noticing an abandoned street car in the rear of a gift shop, she leased it from the owner and converted it into a "dining car." Taking out the seats, she put in adjustable tables and chairs, electric lights and pretty cretonne hangings. The tables she painted buff, with black enamel tops; the dishes were in conventional designs of the same coloring, while quaint birds and flowers were the shapes given the salt and pepper shakers. Table runners and napkins she made of soft Indian-head, hand-hemmed.

A kitchen was built at one end of the car and reached by a protected platform, so no kitchen odors reached the car.

The menu was of the "homey" variety, and light lunches were served all day, with a 6-o'clock dinner.

The patronage of hungry motorists from cities on the coast, as well as the people of the little mountain town, makes it lively at all times, and a very profitable as well as pleasant business.

Other disused cars all over the country could be put to the same practical and profitable use, if people only thought of it.

PLAN No. 271. FRUIT PRESERVED AND

MARKETED BY A WOMAN

To help her husband rise from a $10-a-week clerkship to a factory of his own, where he is making more money in a day than he formerly made in a month as a "hired man," is what a New York woman accomplished by a little idea that came to her one day.

Having made a practice of visiting the large markets late in the evening, and buying over-ripe fruit for a small price, as much of it would not keep over night, she suggested to her husband that, as he quit his work at 5 o'clock every day and had a half-holiday on Saturdays, he should visit these markets as late as possible on Mondays, Wednesdays, and Saturdays, buy fruit at low prices, bring it home and let her can or preserve it. Then on Tuesday, Thursday and Friday evenings, he could carry samples of the canned or preserved fruits on his bicycle to clubs, hotels and the best residences, let the chefs and cooks sample them, and take orders.

Her husband thought the suggestion a good one, so he bought the fruits, berries, etc., as cheaply as possible, near closing time of the markets, and she canned or preserved them in the best way.

The fruit sold readily; he found many orders waiting for him when making his second calls, and the first week their profits were $30, or three times the amount of the husband's salary. Of course, he resigned at once, and they enlarged the scope of their operations to such an extent that in a year or two they had removed to a suburb, rented a piece of ground, where they raised cucumbers for pickles, which she pickled according to a recipe that created a tremendous demand for them, and later they established a factory for putting up fruit which has made them good profits every year since it started.



Plan No. 272. “Not What I Have, but Wha

PLAN No. 272. A WOMAN LANDSCAPE ARTIST ASSISTED AN ARCHITECT

An architect living in a western city has a wife who possesses excellent taste and marked talent in the matter of planning surroundings for homes, and her own little cottage is an example of what a woman with excellent taste can do.

Her husband had designed many houses in a good residence district, but as the owners lacked the taste

necessary to add attractive surroundings, they did not present a pleasing appearance.

In order to assist her husband she volunteered to furnish plans for laying out and decorating the grounds free of charge, and in every case made a great improvement in the appearance of the place. So favorable was the impression created by her work that she was paid for her plans and her services which greatly assisted her husband's business.

A couple of years later her husband was given a contract for designing all the houses to be built by a land company on a large tract, and she was given a contract for all the landscape gardening.

PLAN No. 273. A WOMAN MADE HUCKLEBERRY PIE

Just because she knew that almost every man on earth likes huckleberry pie, a woman started out on a capital of one dollar to help her husband to rise from a job in a cotton mill to a business of his own.

The husband went for a two-weeks, much needed, vacation and rest in the mountains, and on that very morning a colored boy came to the door with two pails, one filled with huckleberries, the other with blackberries, both of which he offered to sell for 25 cents.

She wanted the berries, but she couldn't break that dollar, the last bit of money she had on earth, and the boy turned tearfully away. Just as he reached the gate, an idea struck her, and she called him back, paid him the quarter and took the berries. It was then ten minutes to 8 A. M.

At 11.30 she had sixteen delicious huckleberry and blackberry pies out of the oven and in a basket. Then

she hurried over to the factory where her husband worked, and asked and received permission to stand at the exit of the cotton mill and offer her pies to the workmen as they came out at 12.

When they came out and saw those pies, and were told they could buy them at a low price, inside of ten minutes every pie was gone, and she went home with a good profit as the result of her first day's pie-making. The next day she had pies for all the workmen, and her business grew so fast that at the end of the fourth day she wired her husband to come home and help her.

Today they own a big pie house that is making several thousand dollars a year, and it all came from the start the wife made on one dollar.

PLAN No. 274. LITTLE GIRLS' COOKING SCHOOL

Establish a school in which, for a small weekly sum, you can teach little girls the art of cooking. Vacation is the best time to start this, when teachers and pupils are both at leisure. A large class should be easily formed for this purpose.

PLAN No. 275. GIRLS' SEWING SCHOOL

Those who cannot combine the teaching of cooking and sewing in the same school, will find a separate school a profitable occupation, or both together could be turned into a domestic housework school.

PLAN No. 276. A HOME STORE

Anyone who has a house with a window fronting on the street, or near it, can start a little store in which most of the goods are home-made, and so show a large profit and make a good deal of money. It all depends on the enterprise of the storekeeper.

PLAN No. 277. COLLECTING AND SELLING NAMES

For one who lives in the country there is a profitable business in collecting names and addresses of residents in each rural community and selling them to the publishers of farm journals. They will pay well for these names. In the city it is an easy matter to find a market for the names.

PLAN No. 278. A MAILING BUREAU

Operating a folding, addressing and mailing bureau is a pleasant and profitable home business that will grow and make money for the person who owns it.

PLAN No. 279. CARDBOARD KITCHEN LIST

Print on a good, strong piece of cardboard a list of articles needed in the home from day to day, with the heading, “Lest We Forget,”—the housewife is to stick a pin in each article wanted on the list, which begins with apples and ends with yeastcake.

All around the sides of this list have spaces for ads. which the merchants will gladly pay for, as the list is consulted several times every day, and the names of

advertisers become familiar to the entire household.

Distribute free of charge the cards to the housewives. Such a medium is valuable to the advertiser and will yield a good advertising solicitor a good living.

PLAN No. 280. THE CITY HOME GARDEN

For this following plan we are indebted to the United States Department of Agriculture, Washington, D. C.

Fresh vegetables for an average family may be grown upon a large back yard or city lot.

The use of fresh vegetables conserves meats, grains, and other foods produced on farms.

The production of vegetables at home relieves transportation difficulties and solves the marketing problem.

The city home garden utilizes idle land and spare time for food production.

Thousands of acres of idle land that may be used for gardens are still available within the boundaries of our large cities.

Some of the problems that confront the city gardener are more difficult than those connected with the farm garden, and it is the object of this article to discuss these problems from a practical standpoint.



City Farming.

The problems that confront the city gardener are vastly greater than those of the farmer, who is free to select the choicest plat of ground upon the farm for his vegetable garden. The city-lot or back-yard garden as a rule offers little choice of soil or location. The available land is often shaded a part of the day, and the soil frequently consists of hard clay or is covered to a depth of several inches with cinders, broken stone, or other materials unfit for growing plants. The city gardener is usually handicapped by lack of practical experience and for want of suitable tools with which to do the work. Hand methods must be employed for the most part, and numerous local difficulties must be overcome. It is possible,

however, to grow certain kinds of vegetables under very adverse conditions, and the results obtained by many city gardeners are truly remarkable.

The many thousands of city gardens have played an important part in providing a substantial increase in the food supply of the country. It is essential that the work so well started should continue and that the many thousands of acres of unoccupied land in and around our cities be utilized for food production. The experimental stage of city gardening has been passed, and, in the language of one of the State workers, “the city garden movement will not have achieved its full purpose until all suitable lands are utilized and every family table is fully supplied.”



Fig. 1.—Small back-yard gardens in a residence s

The city back-yard or vacant-lot garden provides a supply of vegetables at home without transportation or handling costs. Vegetables from the home garden are fresher and more palatable than those brought from a distance. Many persons who work in offices, stores, and factories have time mornings and evenings that may well be devoted to the cultivation of a garden, thus utilizing spare time and idle land for food production. The home vegetable garden should be a family interest and all members of the family who are able to do so should take part in its cultivation. There is no better form of outdoor exercise than moderate working in the home garden, and few lines of recreational work will give greater returns for the time employed. (Fig. 1.)

Type and Location of the City Garden

There are three general types of city vegetable gardens: Back-yard gardens, vacant-lot gardens, and community gardens. In locating the home garden the back yard or the ground surrounding the dwelling should be given first consideration, because of the convenience both in working the garden and in gathering the products as wanted for use. If the grounds around the dwelling are too small or too densely shaded or if the soil is of such a character that vegetables can not be grown successfully upon it, the use of a vacant lot in the neighborhood is recommended. (Fig. 2.) Community gardens located in the outskirts of the city, where a tract of land can be secured, are adapted for the use of families living in apartment houses; also for shopworkers and those employed by large manufacturing concerns. There is a distinct advantage in having the garden located near the home, as much of the work of tending it may be done during spare moments, and the garden

can be protected from theft or from injury by stray animals.

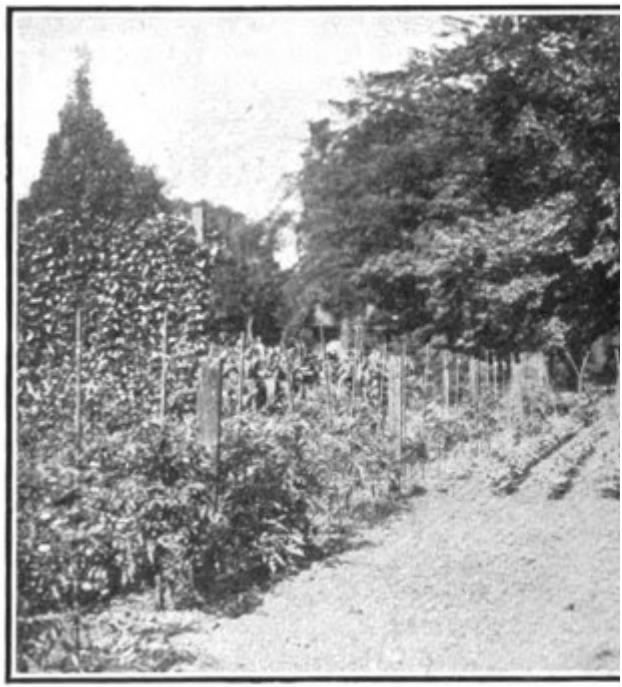


Fig. 2.—A vacant-lot garden on one of the principal res

Do not locate the garden on land upon which the sun does not shine for at least five hours each bright day. Do not locate the garden on soil where the rock is but a few inches below the surface and where there is insufficient moisture. Do not attempt to grow a garden where a fill has been made with cinders, broken bricks, or rock, or where the original soil has been buried with materials upon which weeds will not grow. If weeds grow rank and vigorous it is a sure sign that the soil is good. Do not plant a garden under or near large trees that will steal all the moisture and plant food from the crops. The maples

and the oaks are the kinds of trees that are most injurious to crops planted near them. Do not plant a garden on low land where the crops are reasonably sure to be lost from overflow. Failure to observe one or more of the above precautions has resulted in disappointment on the part of many gardeners.

Where there is any choice in the selection of a garden location the following points should be considered. The land should be level or gently sloping toward the south or southeast. The drainage should be good, but the land should not be so steep as to wash during rains. The location should be higher than adjoining land, in order to safeguard against frost, as frost does most damage on the lower levels. The ideal soil is a dark sandy loam with a rather retentive subsoil. The soil should be deep and break up loose and mellow when plowed or spaded. Plenty of organic matter or rotted manure should be present in the soil, in order to give it the power to retain large quantities of moisture and to carry the crops through periods of drought.



Fig. 3.—Long straight rows of vegetables which add attractiveness cultivation. Note how this garden has produced these results.

The ideal garden spot is seldom found, but it is often possible to choose a location that embodies a number of the more important conditions and then

supply others. The difficulties of the first season are greater than those of subsequent years, and a garden plat if properly handled will improve with each season's cultivation.

On account of the wide variety of local conditions that must be met, no definite plan can be given for a garden. A plan should be drawn on paper and the location of each crop decided upon. As a general rule, the rows should run north and south, but it is more important to have the rows run the long way of the garden for convenience in cultivating. Figure 3 shows a well-planned garden.

It is essential that the garden be so arranged that the tall-growing crops will not shade the smaller ones.

Preparation of the Soil

With the location of the garden settled, the first step is the preparation of the soil. First, remove anything that would interfere with the plowing or spading of the soil. If the location is the home back yard it is assumed that the ground is free from débris and ready to be broken up. If the garden is to be located on a vacant lot it is probable that there will be stones, broken bricks, tin cans, and other trash to be gotten rid of. If the quantity of trash is not too great it should be hauled to some dump, but if there is so much of it as to make its removal expensive it may be piled on one side or one end of the lot. In some cases stone fences have been built along the outside of lots from the stones that were scattered over the ground. This cleaning-up process requires considerable work and should be done whenever the weather will permit prior to preparation for planting.

The next step in the garden-making process will be to plow or spade the ground. If the land is in sod it

should be turned in the fall so that the sods will rot. Heavy clay soils should be turned up loosely and allowed to lie exposed to the freezing and thawing of the winter months. In all cases manure should be turned under if it can be secured. If the surface soil is so hard that it can not be spaded or plowed to advantage a pick or mattock should be used and the ground broken to a depth of 8 or 10 inches. Plenty of manure is about the only thing that will bring a soil of this character into condition. The supply of manure in cities is now quite limited, and the city gardener should make arrangements early in the season to get what he needs. It is assumed that the average back-yard garden is about 30 by 60 feet in size. About 1 ton or one 2-horse load of stable manure can be spaded into the soil of a plat of this size each year. On soil which has not been worked before and which is especially heavy and wanting in organic matter a larger quantity of manure can be used. Street sweepings are not desirable, as they frequently contain considerable oil. Sawdust and planing-mill shavings should not be used on garden land. Leaves may be mixed with heavy soils, but it is best to have them fairly well rotted before they are applied to the land. Early breaking and exposure to frost is the best method of getting land that has not been under cultivation for a number of years in shape for planting. Sandy soils do not benefit by freezing and thawing as do the heavy clay soils, and in all cases precautions must be taken so that the soil will not wash away during heavy rains. It is a very good plan to plow or spade the land in the autumn, sow rye upon it, and then turn the rye under early in the spring.

In regions where the soil is very sandy it is often necessary to keep the surface covered with coarse

manure or with some material to prevent it from blowing away. If this precaution is not taken the entire surface soil will be blown off to the depth of the plowing. In the spring the coarser part of the covering should be raked off or turned under before pulverizing and fitting the surface for planting.

Nothing is gained by working the land before it is sufficiently dry in the spring. In sections where the ground freezes hard during winter no harm will be done by plowing it in the fall or during the early winter when quite wet, as the freezing will correct any injury, but land that is worked when too wet in the spring will be injured for the entire season. The usual test is to press a small quantity of the soil in the palm of the hand. If it is too wet for working it will adhere in a solid mass and retain the imprint of the hand, but if dry enough to work it will crumble apart of itself.

When the test shows its fitness for working, land which was plowed or spaded in the fall should be thoroughly harrowed, raked, hoed, or forked over to a depth of 4 or 5 inches, in order to fit it for planting. The more carefully this part of the work is done the easier it will be to care for the crops during the growing season. Land which was not worked in the fall should be plowed or spaded as soon as it dries out sufficiently in the spring, and the top should be thoroughly fitted, as suggested above.

Use of Ashes on Garden Soils

Gardeners frequently ask whether it is advisable to use coal and wood ashes on garden soils. The use of coal ashes on heavy clay soils will tend to lighten them, but the ashes should be screened before they are applied, in order to remove any clinkers or cinders. They should then be spread evenly upon the

land and thoroughly mixed with it. Coal ashes have little value as a fertilizer, their use being mainly to loosen the soil and make it more workable.

Wood ashes that are produced by the burning of hard woods, such as oak and hickory, frequently contain as much as 7 per cent of potash and also a little lime and for this reason are a valuable fertilizer. Wood ashes produced by the burning of pine and other soft woods and hardwood ashes that have been exposed to the weather and have had their potash leached from them have comparatively little value as a fertilizer. Not more than 50 pounds of reasonably dry unleached hardwood ashes should be applied to a plat of ground 30 by 60 feet in size, and these should be well mixed with the soil.

Liming Garden Soils

An application of about 12 pecks of hydrated or air-slaked lime to a plat of land 30 by 60 feet in size is advisable in most cases, but there are certain soils that do not need lime. Lime has the effect of loosening and pulverizing heavy clay soils. It also has the effect of sweetening poorly drained soils and those that have a tendency to be sour. It is poor policy, however, to endeavor to remedy conditions resulting from lack of drainage by the application of lime without first providing suitable drainage and removing the cause of the sourness of the soil. Lime should always be applied to the surface soil and not turned under. It should not be applied to land that is to be planted to Irish potatoes, on account of the tendency of the tubers to become infested with scab where lime is present. Perhaps the best method of applying lime to the remainder of the garden is to scatter it over the surface after plowing and before the land is harrowed and fitted for cultivation in the

spring. (Fig. 4.) One application each year is sufficient, and much larger quantities may be applied on heavy clay soils than on light or sandy soils. Lime should never under any circumstances be mixed with commercial fertilizer or with manure, as it liberates the nitrogen contained in them.

Use of Manure on Garden Land

The use of barnyard manure on garden land has already been mentioned, but too much stress can not be placed upon this important point. The most successful commercial gardeners not only follow the practice of plowing or spading under large quantities of manure, but they stack up manure to rot and apply the rotted manure as a top-dressing when fitting the land for planting. Beans, tomatoes, and Irish potatoes may be injured by the use of too much manure, but it is practically impossible to have the land too rich for most garden crops.

Poultry and pigeon manures are excellent fertilizers for the garden but must be used sparingly, as they are very strong and are liable to burn the crops. These manures should be kept under shelter until used and then should be well mixed with the soil, care being taken that no lumps of the manure come in direct contact with the seeds. Not more than 200 pounds of poultry or pigeon manure should be applied to a garden plat 30 by 60 feet in size.



Fig. 4.—Applying lime to a garden after plowi

Sheep manure is sold by florists and seedsmen and is an excellent fertilizer for garden crops. Like poultry manure, it is very strong and should be used sparingly. A little pulverized sheep manure sprinkled along the rows and worked into the soil will give the plants a vigorous growth.

Commercial Fertilizers

The use of commercial fertilizers is advisable, especially where plenty of stable or barnyard manure can not be procured. As a rule, fertilizers should be sown broadcast and thoroughly harrowed or raked into the upper 3 inches of soil. Where applied

underneath the rows the fertilizer should be well mixed with the soil before the seeds are planted. Great care must be taken in the use of commercial fertilizers in a small garden, as there is always a tendency to use too much and do more injury than good. From 40 to 60 pounds of a standard fertilizer, such as is used by truck gardeners, may be applied to a plot of ground 30 by 60 feet in size.

Commercial fertilizers may be used in very moderate quantities as a side dressing for most growing crops. Nitrate of soda is frequently used in this manner, especially with crops that are grown for their leaf and stem development rather than for fruit. Where used as a side dressing it is best to apply the fertilizer a short distance from the plants but where the small feeder roots will reach it. The fertilizer should be worked into the soil immediately.

It should be remembered that the best results are obtained by the use of commercial fertilizers where there is plenty of manure or organic matter in the soil. All sods and weeds and the remains of garden plants that are not infected with disease should be turned under or composted in one corner of the garden, in order to form material with which to enrich the soil.

Tools

Elaborate or expensive tools are not necessary for the cultivation of a small garden; in fact, a spade or spading fork, a hoe, a steel rake, and a line with two stakes to fasten it to are all that are required. A garden trowel and a watering can may be added to advantage but are not absolutely necessary. A wheelbarrow, wheel cultivator, and seed drill are desirable for the larger gardens and might be procured and used jointly by several gardeners in a

neighborhood. After the soil is broken and in shape for planting, the hoe and the steel rake are the important tools for a small garden.

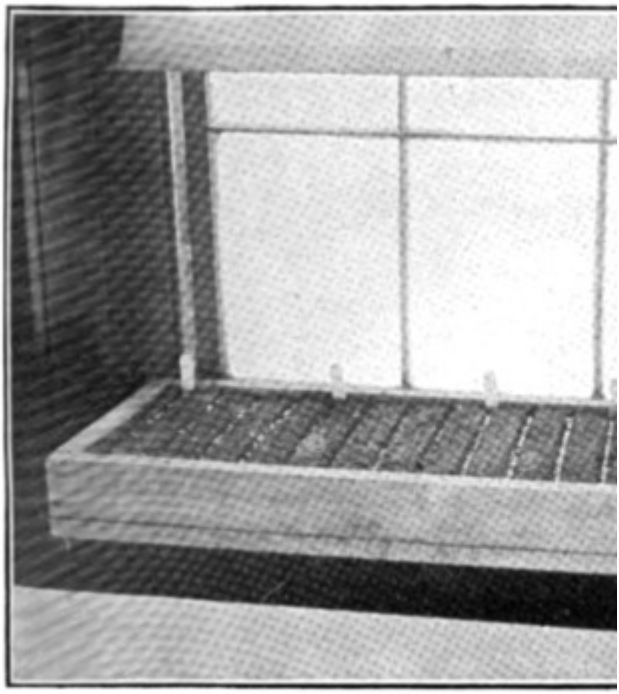


Fig. 5.—Window box for starting early p

SEEDS

A comparatively small quantity of seeds is required for planting the average city garden, but these should be procured in ample time and should be of the highest quality obtainable. The best are the cheapest in the long run. Garden seeds should not be wasted; only enough should be planted to insure a perfect stand. Any seeds that are left over should be stored in a ventilated tin or glass container, to protect them from mice until needed for later

planting. The particular variety of any crop to plant will depend upon local conditions. There are usually experienced persons in each community who can be relied upon for advice as to the best varieties to plant in that section. A number of the seed houses are now offering special garden-seed collections adapted to various conditions and sizes of gardens.

Starting Early Plants

Half the pleasure and profit of a garden is derived from having something to use just as early in the spring as possible. In many cities and towns last year the local greenhouse men grew thousands of plants which were sold to home gardeners at very reasonable prices. It often happens, however, that home gardeners do not have the opportunity to purchase well-grown plants, so they must start their own supply of early plants in the house or in a hotbed if they desire to have their crops mature early. Among the garden crops that may be started to advantage in this manner are tomatoes, early cabbage, peppers, eggplant, and lettuce. Even cucumbers, melons, beets, snap beans, Lima beans, and sweet corn may be started indoors by using flowerpots, paper bands, or berry boxes to hold the soil.



Fig. 6.—Starting early plants; prepari

Where just a few tomato and cabbage plants are desired, the seeds may be sown in a cigar box or in a shallow tin pan with a few holes punched in the bottom for drainage. A very good plan is to secure a soap box and saw off about 3 inches of the bottom portion to form a tray. If the top has been saved, it can be nailed on and the box again sawed, forming a second tray. This will leave about 3 inches of the middle of the box upon which a piece of wire netting may be tacked to form a sieve for screening the soil used in the trays. Any shallow box (fig. 5) that may be fitted into the window of a living room where

there is a reasonable amount of sunlight will answer for starting early plants.

After filling the trays with sifted soil, smooth off even with the top and slightly firm down the soil in the trays by means of a small piece of board. Use the edge of a ruler or strip of thin board (fig. 6) to form little grooves or furrows in the soil in which to plant the seeds. These little rows should be about 2 inches apart and one-fourth inch deep. Scatter the seeds of tomatoes, early cabbage, peppers, and eggplant, as shown in figure 7, very thinly in the rows and cover them by sifting a small quantity of soil over the entire surface. Smooth the top of the soil gently and water very lightly.

The box should then be placed where the temperature will remain at about 70° F. If conditions are kept right, the seedlings will appear in five to eight days after the seed is planted. From this time on the plants will need constant care, especially as regards watering. Owing to the fact that the light from a window comes from one side only, the seedlings will draw toward the glass, and the box should be turned each day, so as to keep the plants from growing crooked. Just as soon as the little plants are large enough to handle they should be transplanted to other boxes and given 2 or 3 inches of space in each direction.



Fig. 7.—Starting early plants; sowing seed

Where the required number of plants is too great for growing in window boxes, a hotbed or cold frame may be provided. The usual method of constructing a hotbed is to first dig a shallow pit 8 to 18 inches deep, according to locality, and pack it full of fermenting stable manure. The manure before being placed in the pit should be turned over once or twice in a pile, in order to insure even heating. It may then be packed into the hotbed pit and tramped uniformly. Standard hotbed sash are 3 feet in width and 6 feet in length, and the size of the bed should be made to suit the number of sash employed. A framework of boards 18 to 24 inches high at the

back and about 12 inches high in front is placed over the manure-filled pit to support the sash. (Fig. 8.)

About 3 or 4 inches of fine garden loam is spread evenly over the manure and the bed allowed to stand four or five days to warm up before any seed is sown. At first the temperature of the bed will run rather high, and it is best to delay planting the seeds in it until it begins to decline. This can best be determined by placing a cheap thermometer, with the bulb about 3 inches below the surface of the soil, and watching it until the temperature falls below 85° F. before planting the seeds.

If glazed sash are not available for covering the hotbed, heavy muslin may be used instead; the glass, however, makes the most desirable form of covering. Care must be taken to give the bed sufficient ventilation to prevent overheating; as it is liable to heat up rapidly when the sun shines full upon the glass. Watering should be done during the early part of the day and the bed given enough air so that the plants will dry off before night. The bed should be closed before evening, in order to conserve enough heat to carry it through the night in good condition. If the weather should turn severely cold, a covering of straw, blankets, or canvas may be thrown over the bed to protect it.

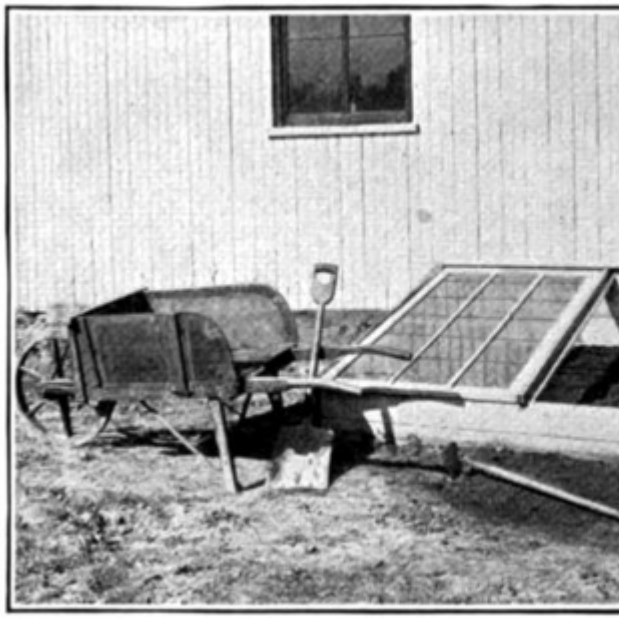


Fig. 8.—Preparation of a sash-covered frame

A cold frame is constructed in exactly the same manner as a hotbed, with the exception that no manure is placed beneath it to supply heat.

Before the plants are set in the garden, either from the hotbed or the cold-frame they should be gradually hardened to outside conditions by giving them more ventilation each day. Finally, remove the sash entirely on bright days and replace them for the night. The aim should be to produce strong, healthy plants that will make a quick start when placed in the garden.

Planting Zones

The accompanying planting tables, together with the frost-zone maps (figs. 9 and 10), are based upon records of the United States Weather Bureau

covering a period of 20 years and are intended to serve as a guide for determining the earliest dates that the various garden crops may be planted in the spring; also the latest dates that it will be safe to plant certain crops and have them mature before the first killing frost in the autumn. It should be borne in mind that there is a difference of several days in the frost occurrence within each zone; this is due to differences in altitude and latitude, and also to the proximity of bodies of water and large tracts of timber.

EARLIEST PLANTING DATES

Earliest safe dates for planting vegetables in the open in the zones shown in figure 9

Crop	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G
Bean, Lima	Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to 15	May 1 to 15	May 15 to June 1	May 15 to June 15	...
Bean, Snap	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to 30	Apr. 1 to May 1	May 1 to 15	May 15 to June 1	May 15 to June 15.
Beet	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to 15	May 15 to June 1.
Brussels sprouts	do.	do.	do.	do.	do.	do.	do.
Cabbage	Jan. 1 to Feb. 1	Jan. 15 to Feb. 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to May 15.

Carrot	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to 15	May 1 to June 1.
Cauliflower	do.	do.	do.	do.	do.	do.	do.
Celery	do.	do.	do.	do.	do.	do.	do.
Chard	do.	do.	do.	do.	do.	do.	do.
Collard	Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	...	...
Corn, sweet	Feb. 15 to Mar. 1	Mar. 1 to 15.	Mar. 15 to Apr. 1	Apr. 1 to May 1	Apr. 15 to May 15	May 1 to June 1	May 15 to June 15.
Cucumber	Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to 15	Apr. 15 to May 1	May 1 to June 1	May 15 to June 15	June 1 to 15.
Eggplant	do.	do.	do.	do.	do.	do.	...
Kale	Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to 15.
Kohl-rabi	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to May 1	May 1 to 15	May 15 to June 1.
Lettuce, { Head	do.	do.	do.	Mar. 15 to Apr. 15	do.	do.	do.

	Leaf	Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to May 15.
Melons		Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to 15	Apr. 15 to May 1	May 1 to June 1	June 1 to 15	...
Okra, or gumbo		Feb. 15 to Mar. 1	Mar. 1 to Mar. 15	Mar. 15 to 30	do.	May 1 to 15	May 15 to June 1	...
Onion sets		Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 1 to May 1	May 1 to 15.
Parsley		Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to May 1	May 1 to 15	May 15 to June 1.
Parsnip		do.	do.	do.	do.	do.	do.	do.
Peas	Smooth	Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to June 1.
	Wrinkled	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to May 1	May 1 to 15	May 15 to June 1.

Peppers		Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to 15	Apr. 15 to May 1	May 1 to June 1	June 1 to 15	...
Potatoes	Irish	Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to June 1.
	Sweet	Mar. 1 to 15.	Mar. 15 to Apr. 1	Apr. 1 to 15.	Apr. 15 to May 1	May 1 to June 1	June 1 to 15	...
Pumpkin		do.	do.	do.	do.	do.	do.	...
Radish		Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to 15.
Salsify		Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15.	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to 15	May 15 to June 1.
Spinach		do.	do.	do.	do.	do.	do.	do.
Squash		Mar. 1 to 15	Mar. 15 to Apr. 1	Apr. 1 to 15	Apr. 15 to May 1	May 1 to June 1	June 1 to 15	...
Tomato		do.	do.	do.	do.	do.	May 15 to June 15	June 1 to 15.

Turnip	Jan. 1 to Feb. 1	Feb. 1 to 15	Feb. 15 to Mar. 1	Mar. 1 to 15	Mar. 15 to Apr. 15	Apr. 15 to May 1	May 1 to 15.

Owing to the varied character of the Rocky Mountain and Pacific coast regions, it is not practicable to present the planting information in zone form, as there may be a very great difference in the dates of killing frosts in the same general locality on account of elevation. Gardeners on the Pacific coast should be guided by the experience of competent persons in their own neighborhood. The coast region of Oregon and Washington is so influenced by ocean currents that a separate map would have to be designed to meet its requirements. Sufficient data upon which to base a map for this region are not at hand.

In zones A, B, C, and parts of zone D of the eastern United States, cabbage, turnips, spinach, kale, collards, and certain varieties of onions may be grown in the open ground throughout the winter. In certain parts of zone E spinach and kale may be grown all winter. In zone F such crops as sweet potatoes, melons, eggplants, and peppers should be planted only under the most favorable conditions, as the season is sometimes too short for their full development under adverse conditions.

Garden plants are divided into about four more or less distinct groups.

Early cabbage plants, kale, onion sets, smooth peas, Irish potatoes, and radishes may be planted two weeks before the average date of the last killing frost.

Beets, Swiss chard, carrots, lettuce, wrinkled peas,

cauliflower, spinach, and sweet corn may be planted about the date of the last killing frost.

LATEST PLANTING DATES

Latest safe dates for planting vegetables for the fall garden in the zones[9] *shown in figure 9*

Crop	Zone C	Zone D	Zone E	Zone F	Zone G
Bean:					
Pole Lima	Sept. 15	Aug. 1	July 15	July 1	...
Snap	do.	Sept. 1	Aug. 15	Aug. 1	July 15
Beet	do.	do.	do.	do.	do.
Cabbage	Sept. 1	Aug. 15	July 15	July 1	June 15
Carrot	do.	do.	do.	do.	do.
Cauliflower	do.	do.	do.	do.	do.
Celery	Oct. 1	Sept. 1	Aug. 1	do.	May 15
Chard, Swiss	Sept. 15	do.	Aug. 15	Aug. 1	July 15
Corn, sweet	Aug. 15	Aug. 1	July 15	July 1	June 15
Cucumber	do.	do.	do.	do.	...
Eggplant	July 15	July 1	June 15	June 1	...
Kale	Nov. 1	Oct. 1	Sept. 15	Sept. 1	Aug. 15
Lettuce	do.	Oct. 15	Oct. 1	Sept. 15	Sept. 1
Melons:					
Muskmelon	June 15	June 1	May 15	May 1	...
Watermelon	July 1	July 1	June 15	...	...
Okra	July 15	do.	do.	June 1	...
Onion sets	do.	do.	do.	do.	May 15
Parsley	Nov. 1	Oct. 1	Sept. 1	Aug. 1	July 1
Parsnip	...	...	May 15	May 1	Apr. 15

Pea	Nov. 1	Oct. 1	Sept. 1	Aug. 1	July 15
Peppers	July 15	July 1	June 15	June 1	...
Potatoes:					
Irish	Aug. 15	Aug. 1	July 15	July 1	June 15
Sweet	do.	July 15	June 15	May 1	...
Radish	Oct. 15	Oct. 1	Sept. 15	Sept. 1	Aug. 15
Salsify	June 15	June 1	May 15	May 1	Apr. 15
Spinach	Oct. 5	Oct. 1	Sept. 1	Aug. 15	Aug. 1
Squash:					
Bush	Aug. 15	Aug.1	July 15	July 1	June 15
Vine	July 15	July 1	June 15	June 1	...
Tomato	Aug. 15	July 15	July 1	June 15	...
Turnip	Oct. 15	Oct. 1	Sept. 1	Aug. 1	July 15

[9] Zones A and B are sections in which many vegetables are planted late in the fall to form the winter garden or early spring garden.

Beans, parsnips, salsify, melons, cucumbers, tomato, and sweet-potato plants may be planted after the last killing frost.

The heat-loving plants, such as peppers, eggplants, Lima beans, and the squashes, should not be planted in the open until the ground has thoroughly warmed, which will be about four weeks after the last killing frost.

There are a number of crops, such as snap beans, lettuce, radishes, and beets, that should be planted at intervals in order to insure a continuous supply throughout the season. In the case of snap beans as many as five different plantings may be had in some sections. In the southern part of the United States special attention should be given to the planting of the semihardy crops, such as spinach, kale, and cabbage, during the autumn, in order to have a supply throughout the winter.

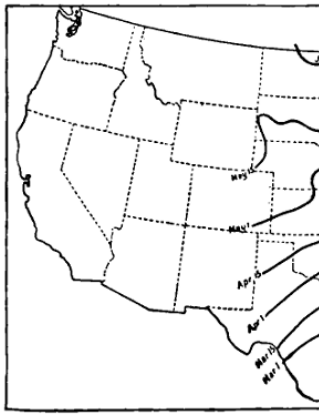


Fig. 9.—Outline map of the United States, showing zones based planting for the various vegetables is determined for every sec

By following the table showing the latest safe dates for planting (see also fig. 10), the various crops will mature during average years; however, there may be seasons when the first killing frost in the autumn occurs earlier than usual and some of the later plantings will be lost. The late planting of vegetables prolongs the season of usefulness and is worth a chance.

General Care of the Garden

A garden bears close acquaintance, and the successful gardener is the one who keeps in close contact with his crops throughout the entire growing season. A visit to the garden during the early morning while the dew hangs heavily upon every plant will reveal the happenings of the night. Perhaps some insect attack has started or some injury has occurred which requires immediate attention. A garden requires a little attention almost every day and responds in direct proportion to the care bestowed upon it. The size of the garden should be such that its care will not prove a burden. A small garden intensively cultivated is much better than a larger one which is allowed to grow to weeds.

Holding Moisture

The frequent stirring of the surface soil with a steel rake, especially during dry weather, will stimulate the growth of the crops and control weeds. The surface should also be stirred after a rain just as soon as the ground is dry enough to work. Most people have an idea that the stirring of the soil is primarily in order to kill weeds, but there is equal need of it where no weeds are present. The roots of plants

require air as well as moisture, and frequent stirring of the surface soil admits the air and at the same time conserves moisture. Shallow cultivation during dry weather forms what is known as a soil mulch, preventing the escape of moisture. Very often shallow cultivation during dry weather is more effective than irrigation.



Fig. 10.—Outline map of the United States, showing zones based o dates for planting vegetables in the autumn are determined by

Watering

Artificial watering, if properly applied, will prove a decided advantage during dry periods, but may

prove an injury if not properly handled. Frequent light sprinkling of the garden is injurious. The proper method is to soak the soil thoroughly about once each week, preferably during the evening, and then loosen the surface by cultivation the following morning or as soon as the soil is dry enough to work. No more water should be applied until absolutely necessary; then another soaking should be given. On a small scale the water may be applied by means of a sprinkling can. Where available, a garden hose is effective, and overhead sprinkler systems are frequently employed to advantage. Perhaps the best method for applying the water is to open slight furrows alongside the rows of plants and allow the water to flow gently along these furrows.

After the water has all soaked into the soil the wet earth in the furrows should be covered with dry soil, to prevent baking. Where seeds are to be sown during a period of drought a slight furrow may be opened and filled with water; then, after the water has soaked into the soil, the seeds may be sown and covered with dry earth. This method will insure a good stand of plants, as the moisture feeds upward in the soil, like the oil in a lamp wick.

Diseases and Insects

Garden crops are subject to attack by a number of insects and diseases. Preventive measures are best, but if an attack occurs and the city gardener is not familiar with the insect or disease and the proper treatment to protect his crops he is advised to consult the local garden leader or write immediately to the Extension Division of the State College of Agriculture. The United States Department of Agriculture has a bulletin (Farmers' Bulletin 856) which gives the necessary information on garden

insects and diseases and can be procured free upon request.

In a number of cities the garden committees have arranged for sprayers and spray materials, and these are furnished to gardeners at actual cost. In a few instances power sprayers have been used, the work being done by city-park employees, the outfit being driven through the alleyways and the gardens reached by means of long leads of hose. In many cases the city-garden committees have provided a number of small compressed-air sprayers that can be carried by means of a strap over the shoulder of the operator. These are lent to the gardeners, who are also supplied with the necessary spray materials at cost and given full instructions regarding their application.

Poisons may be applied in a powdered form to a number of the garden crops, including Irish potatoes, by means of a small burlap or cheesecloth bag, the poison being dusted upon the plants when they have dew upon them. This can be done in the morning before the plants have dried or late in the evening after the dew has begun to form.

Crops for the City Home Garden

As a rule not more than 10 or 12 different kinds of vegetables should be grown in the city home garden. These should be chosen from the standpoint of securing the greatest food value from a limited area. Certain of the very important food crops, such as Irish potatoes, peas, and sweet corn, require too much space for the small city garden, but should be included wherever the available space will permit.

Owing to the extreme variation of local conditions, no definite plan can be given for the city home garden, and each gardener will have to select the

crops to be grown according to his soil, space, and the requirements of his family. By careful planning and by keeping every foot of garden space fully occupied a great quantity of produce can be secured from a comparatively small plat of ground. A succession of plantings of certain vegetables will produce a continuous supply while others may be grown between the main crops, thus making the land do double duty. There is a tendency on the part of many persons to plant too heavily to lettuce and radishes. As a matter of fact a supply of these vegetables can be grown in the rows between the plants or hills of other crops. Most beginners attempt too many varieties and kinds of vegetables. They would do better to confine themselves to a few standard sorts, leaving the novelties to those who have plenty of land and time at their disposal.

It is assumed that the average space available for the city vegetable garden will not exceed 80 by 60 feet. Many gardens in back yards are smaller, while others located on vacant lots may include one-fourth acre or more. The size of the garden will determine largely the crops to be grown. The following cultural directions are based on average conditions and are subject to some modification to suit the locality.

Beans

The bean crop stands at the head of the list in importance for the city garden, especially from the standpoint of producing a large quantity of food quickly on a limited space. The food value of the bean, in all forms, is also very high, and it may be grown under a wide range of conditions.

String beans, or snap beans in bush form, are the most popular for planting in the small garden. The seed should not be planted until the ground is fairly

warm and the danger of frost safely passed. Stringless Green-Pod, Currie's Rustproof Wax, and Refugee Wax are the leading early varieties of bush beans. Where space is limited the bush varieties can be planted in rows 24 inches apart, with the individual plants 3 or 4 inches apart in the row, or in hills 12 inches apart with four plants in a hill. Three, or even four, plantings at intervals of three or four weeks should be made, in order to insure a continuous supply. In sections of the country where the first autumn frost does not occur until about the first of October a late or fall crop of snap beans can be grown to advantage, the seed being planted about the first week in August.

A half pint of seed of snap beans will plant about 100 feet of row with five seeds to a hill and the hills 12 inches apart. A hundred feet of row will be sufficient for one planting to supply the average family. If four plantings are made 1 quart of seed will be required.

Pole or climbing beans should be planted in every garden where space will permit. The variety known as Kentucky Wonder produces a plentiful supply that can be eaten pod and all while they are tender, as shelled beans when more mature, and as dry beans after they ripen. Pole or climbing Lima beans are adapted to a wide range of territory and can often be grown on a division fence, on a trellis covering the kitchen porch, or on an outbuilding. Figure 11 shows a street fence which is being made to support a splendid crop of Lima beans. Bush Lima beans are more limited in their soil and climatic requirements, but are considered by many persons to be of finer quality than the pole varieties.

Lima beans require a richer soil than string or snap beans, and the seed should not be planted until the

ground is quite warm, fully a week later than snap beans. All beans should be planted comparatively shallow, especially on clay or heavy soils. On light or sandy soils beans may be covered from $1^1/_4$ to 2 inches. Beans will not start well if planted in wet soil or if covered too deeply.

In case the soil should become packed by heavy rains before the plants appear it is a good plan to break the crust over the row by means of a steel rake, great care being taken that the rake teeth do not go deep enough to injure the sprouting beans. Beans should be cultivated and hoed at least once a week, but they should not be worked when their leaves are wet with dew or rain, as this has a tendency to cause them to rust. In case more beans are grown than are required for summer use, the young tender pods may be canned for winter. Any beans that become too old for immediate use should be allowed to ripen and be saved for planting the next season or for cooking as dry beans. Colored dry beans are as good as white, both in flavor and nutritive value, in spite of a rather general popular belief to the contrary, and none of them should be wasted.

Root Crops

The root crops, including beets, carrots, parsnips, salsify, turnips, and radishes, form a group of very important food crops for the small garden. The soil requirements and general culture are very much the same for all the root crops, and for that reason they are considered collectively. The soil for root crops should be quite rich, and it should also be spaded or plowed deep and made fine and mellow the full depth that is broken. These root crops will all withstand slight frosts and may be planted very early

in the spring. Root crops are especially desirable for the small garden on account of the fact that the rows may be as close together as 12 or 14 inches and the plants 3 or 4 inches apart in the row, making it possible to grow a large quantity of food on a small tract.

Beets

An ounce of beet seed will be sufficient for the ordinary city garden. Beets may be planted almost as soon as the ground can be worked in the spring. Make the soil fine and mellow; then lay off the row about 1 inch deep, using the hoe handle to make the little furrow. What are commonly called beet seeds are really seed balls, each containing two or three seeds, and for that reason too many should not be put in. Eight or ten to the foot of row are sufficient. Cover the seeds about 1 inch and rake the surface smooth over the row. If the seeds are good and the weather favorable the plants should appear in about 10 days after planting. They should be thinned to about 3 inches in the row, but if not too thick to start with they may be allowed to reach a height of about 3 or 4 inches before thinning, and the thinnings may be used for beet greens. Any skips or spaces can be filled in by transplanting plants that are removed from other parts of the row. A row 50 feet long will furnish enough early beets to supply the ordinary family. A second planting may be made about four week after the first. A late planting should be made about six or eight weeks before the first autumn frosts. Any beets that are left in the garden at the end of the season should be stored for winter use.



Fig. 11.—Lima beans growing on the outs

Crosby's Egyptian and Blood Turnip are considered among the best varieties for the home garden.

Carrots

One-fourth ounce of carrot seed will be more than enough to plant 50 feet of row early in the spring and to make another similar planting later for fall use and storage. Plant the seeds rather thickly, 20 or 30 to the foot, and cover them with about half an inch of light soil, but not more than one-fourth of an inch in heavy soil. Thin to 2 or $2^1/_2$ inches in the row as soon as they are large enough to handle. If desired, the plants may be left a little closer, then

thinned a second time when the first of the young carrots are about half an inch in diameter. The young carrots that are thinned out may be used on the table as creamed baby carrots and are very fine. Late-planted carrots may remain in the ground until after the first frosts of autumn and then dug, topped, and stored for winter use.

Oxheart and Danvers Half-Long are leading varieties.

Parsnips

A 10-cent packet, or about one-eighth of an ounce, of parsnip seed will be sufficient to plant for the ordinary family. Be sure that the seed is fresh, as it loses its vitality if kept over until the second year. Plant the same as carrots, and thin to 3 or 4 inches in the row. Parsnips require a deeply prepared and a very rich soil for their best development.

Parsnips may remain in the ground where grown during the winter or until wanted. It may be best, however, to dig part of the roots late in the fall before the ground freezes and store them for winter use.

In the North parsnips are planted quite early and given the entire season to develop and are used mainly during the winter and spring. In the South they may be planted quite early and used as a spring vegetable; then another planting is made for a fall crop. The later planting is usually made in August or September, when the late summer rains occur.

Hollow Crown and Guernsey are among the best varieties.

Salsify, or Vegetable Oyster

Salsify requires practically the same cultural treatment as parsnips. It is not grown extensively in

the home gardens of the Southern States, but is primarily a northern crop. Salsify may remain in the ground during the winter, or a part may be dug late in the fall and stored in a bed or box of moist sand for winter use.

The Sandwich Island is the leading variety.

Turnips

Throughout the Northern States turnips are planted as a late-season crop, the seed being sown from July 10 to 25 and the crop harvested after the first heavy frosts. In the Southern States turnips are planted in the spring, just as soon as the ground can be worked, and the crop is used before the hot weather of summer comes on. A late crop is frequently planted in September, the roots being cooked in the usual manner, while the young tender tops are boiled as greens.

For the small garden, turnips had best be planted in drills, with the rows about 12 inches apart, and the plants should be thinned to 2 or $2^1/_2$ inches in the row. The seed should be scattered very thinly in the drill and covered very lightly. The plants removed in thinning may be used as greens. Turnips will withstand some frost, but their keeping qualities are injured if allowed to freeze before pulling. If they become frozen in the storage pit they should not be disturbed until the weather warms and the frost gradually draws out of them. For best results turnips should not actually freeze at any time.

The Purple-Top Strap-Leaved is a leading variety.

Radishes

Radishes are mentioned last in the list of root crops because they have the least real food value of any. Everybody wants a few early radishes in the

garden, because they come to maturity quickly and furnish something green and succulent for the table. From 10 to 20 feet of row will produce all the radishes required by a family. The seeds should be sown in a little furrow or drill, about 12 or 15 seeds to the foot, and covered 1 inch. Radishes may also be sown thinly in the drill with beets, carrots, or parsnips, as they come quickly and break the surface for the other seedlings. The radishes should be pulled before they are large enough to injure the regular crop.

The Scarlet Globe White-Tipped, French Breakfast, Icicle, Philadelphia White Box, and Early Yellow Turnip are among the leading varieties.

Where it is desirable to have radishes for a considerable period of time, two, or even three, plantings at intervals of two weeks should be made, or the same result may be obtained by the proper selection of varieties. There are also two or three varieties of winter radishes that may be grown for winter use.

Tomatoes

Tomatoes are among the most universally used products of our home gardens, and there should be a few plants, no matter how small the garden. In order to have tomatoes early, the seed must be sown in the house or hotbed or the plants purchased from some plant grower who has the facilities for starting them early. Bonnie Best, Early Jewel, Acme, Globe, and Detroit are among the leading early sorts, while Improved Stone and Trophy are standard late varieties. Two small packets of seeds, one of an early and one of a late variety, will produce enough plants for several family gardens, and it may be possible for one person to start the plants for an entire

neighborhood. If a window box is used for starting early plants of various kinds, a portion of the space in this box should be used for the tomato plants. Where a window box is not in use a cigar box filled with loose soil will serve as a seed bed, but the plants will have to be transplanted and given about 3 inches of space both ways as soon as they form one or two true leaves in addition to their two small seed leaves. Tomato seed comes up in about five or six days, and the seedlings will ordinarily be ready for transplanting in two weeks after the seed is sown. About six weeks will be required for growing the plants from the time of sowing the seed until they are ready for setting in the garden.

A tray of fine, rich soil about 8 inches deep placed in a south window of a living room makes a good transplanting bed. The plants can be grown in quart berry boxes, in 3-inch flowerpots, in tin cans with a few holes punched in their bottoms, or in paper bands. The essentials are to keep the plants growing rapidly from the start and to retain all the dirt attached to their roots when setting them in the garden.

The best method of growing tomatoes in the city home garden is by pruning the plants to a single stem, or at most to two stems, and tying them to stakes or a trellis, as shown in figure 12. By this method the plants can be set as close as 2 feet apart in each direction. When tied to stakes the plants are easy to cultivate. The fruit is clean because it is kept off the ground, and the tomatoes ripen earlier than when the plants are not pruned or tied to stakes. Any stakes that are about $1^1/_2$ inches in diameter and 4 to 5 feet long will answer. Frequently the plants are trained to horizontal wires stretched on small posts or to a trellis made of laths.

The tomato plants are pruned by pinching out the side shoots (fig. 12) as they appear in the axis of the leaf, that is, where it joins the main stem. The fruit clusters appear on the opposite side of the stem where there is no leaf. The plants are tied to the stakes or other support by means of soft twine or with small strips of old cotton goods. (Fig. 13.) Seedsmen have on sale a jute string which is especially made for tying tomatoes. Loop the string around the stake so that it will not slip downward on the stake and then tie loosely below a leaf node in such a manner that the stem will be supported without the string binding it and injuring its growth. Four to seven fruit clusters will be formed on each plant, and if the plants are well cultivated and cared for they will continue to bear fruit throughout the season in the northern parts of the country. In the South, where the heat of midsummer kills tomato plants, a late crop may be planted for fall use.



Fig. 12.—Training tomatoes to stakes: A, Cutting out the side shoo
supporting stake.

Sweet Peppers

Sweet or Mango peppers are increasing in favor with home gardeners everywhere. Six or eight good plants will supply enough for an ordinary family. In

the North, where the growing season is short, the plants must be started indoors and should be transplanted twice, so as to be quite large by the time the weather is warm enough to set them in the garden. Pepper plants will not withstand any frost, and they should not be set out until all danger is past. In the South the seed should be sown in the house or in a hotbed and may be transplanted directly from the seed bed to the garden, although better plants will be obtained if they are transplanted first from the seed bed to other boxes or to the hotbed and later to the garden. The plants should be handled in the same manner as tomatoes, but pepper plants are even more delicate.

The Ruby King and Chinese Giant are standard varieties of the large sweet peppers. Pimento peppers are becoming very popular throughout the Southern States; however, they will not mature where the frost-free growing season is less than $4^1/_2$ months and are not profitable unless they have at least 5 months of warm weather for their development. The pimento is adapted to the South, where the summers are long, with plenty of hot weather. The green pimento peppers have a thick flesh and a pleasant flavor and may be used like any sweet pepper. When red ripe the pimentos are canned for winter salads and for mixing with cheese to make pimento cheese.



Fig. 13.—Tomatoes trained to stakes in

Eggplant

The seeds of eggplant should be sown indoors at the same time that early tomatoes and peppers are planted. The small plants should be transplanted to pots or paper bands and kept in the house until the weather is quite warm. The plants require a rich, deep soil, with plenty of fertilizer. They should be set about $2^1/_2$ feet apart each way. Six to ten plants will be sufficient to supply the average family.

Okra, or Gumbo

Okra is sown in the open after danger of frost is

over and the soil becomes quite warm, but in the North a few plants for the home garden may be started indoors. like tomatoes or peppers. Sow the seed a few inches apart in the row and thin the plants to 18 inches to 2 feet apart. Okra is very prolific, and 8 or 10 feet of row will supply the needs of an average family. Give frequent shallow cultivation until the plants are nearly grown.

The pods are the part of the plant used for food and should be gathered while still crisp and tender. If the pods are removed so as to allow none to ripen, the plants will continue to bear until killed by frost.

The White Velvet, Dwarf Green Prolific, Perkins Mammoth, Long-Podded, and Lady Finger varieties are recommended.

Onions

The usual method of growing onions in the home garden is to plant a quart or two of sets just as early in the spring as the ground can be worked. Throughout the South the sets may be planted in the autumn and the surface of the ground mulched with fine straw or light manure over the winter. Onions may also be grown from seed, sown in the early autumn in the South and early spring in the North, but as a rule it is more satisfactory to secure a few sets for planting.



Fig. 14.—Planting onion sets; every bulb is placed with the roo straight rows.

Onions require a light, mellow, rich soil. If planted in rows the sets (fig. 14) should be placed by hand, root end downward, about 4 inches apart in the row and covered to a depth of 1 inch. If planted in a bed they should be spaced 4 to 6 inches apart in each direction. As a rule, onion sets are not sold under variety names, but are classed as white, brown, or red.

The Yellow Globe, Yellow Danvers, Red Wethersfield, and Silverskin are among the leading

varieties that are planted from seed. The Crystal Wax and Red Bermuda varieties of the Bermuda type are often grown in the Southern States.

Where wanted for green onions, the sets may be planted as a filler in the rows with early tomatoes, but where mature onions are desired it is best to plant them alone. Fully grown onions should not be pulled until the tops have broken over and partially ripened. The bulbs should then be pulled and spread in a cool, dry place (fig. 15) where they will get plenty of air. The mature onions should be kept where it is quite cool and dry. Slight freezing will not hurt the stored onions if they are not disturbed while frozen.



Fig. 15.—Onions spread out to dry in t

Cabbage Group

The cabbage group of garden plants includes both the early and the late types of cabbage, cauliflower, kale, collards, and Brussels sprouts. The general cultivation of each member of this group is practically the same. They are natives of low-lying seacoast regions and require deep, moist, and rather rich soil for their best development. The various members of the cabbage group, however, may be grown in almost any locality; in fact, cabbage is one of the most universally grown of our garden crops. The important consideration is to have plenty of plant food in the soil so that they will make a quick, tender growth.

Early Cabbage

Only a few heads of early cabbage should be grown in a small city garden. The plants should be started indoors, but may be set in the garden quite early if hardened off a little before setting them. In certain sections of the South, especially near the seacoast, the early varieties of cabbage may be started in October, planted out in November, and matured in April or May of the following spring. The Jersey Wakefield and Charleston Wakefield are the leading early varieties. They may be set in rows 24 to 30 inches apart and 15 inches apart in the row.

Late Cabbage

Late cabbage can be planted between the rows of early potatoes or after snap beans, so that double service may be obtained from the soil. Late cabbage may be planted July 1 in some sections of the North and will form solid heads before the weather

becomes cold enough to injure the crop. The Late Flat Dutch, Danish Baldhead, and Copenhagen are among the best late varieties. They should be planted in rows 36 inches apart and 18 inches apart in the row. Cabbage may be stored in a cool, dry, well-ventilated cellar or buried in an outdoor pit in the garden.

Cauliflower

Cauliflower is much more difficult to grow than cabbage and is only adapted to certain soil and climatic conditions which are to be found near the seacoast and limited inland areas. The important consideration in growing a spring crop of cauliflower is to have it so early that the heads will be formed before the extremely hot weather begins. The methods of starting the plants and general culture are the same as for early cabbage. When the heads begin to form, the leaves should be brought together above the heads and fastened by means of a string, so as to shut out the sunlight and retain the snowy whiteness of the heads. A fall crop of cauliflower can be grown in the same manner as late cabbage. Cauliflower can not be stored to advantage, but must be used within a few days after it is gathered.

Kale

Kale can be grown either as a spring or fall crop, and in sections where the temperature does not go below zero during the winter it can be planted in the fall and will be ready for use during March and April. The market gardeners around Norfolk, Va., grow great fields of winter kale, planting the seed in September and cutting the crop at any time during the winter when the ground is free from snow and ice. About 50 or 60 feet of row in the home garden

may be planted during the late summer for fall and early winter use. Kale is not stored, but is left growing until wanted for use.

Collards

No southern garden would be quite complete without a small plat of collards for late fall and early winter use. Collards are a hardy form of cabbage which forms a loose head or cluster of very tender leaves that are used in much the same manner as cabbage. Throughout the South collards are planted during the latter part of the summer and the plants are left standing where grown, like late cabbage, and are quite hardy; in fact, it is claimed that the flavor is greatly improved by a slight freezing of the heads. Collards are not recommended for planting in the Northern States. A small packet of seed is all that is necessary to start the plants required in a family garden.

Brussels Sprouts

Brussels sprouts are a kind of cabbage that forms a large number of buttons or small heads along its stem where the leaves are attached. The culture of Brussels sprouts is the same as that of cabbage except that the leaves are removed from the lower part of the stem to give the buttons more room to develop.

Kohl-Rabi

Kohl-rabi is a near relative of cabbage. It forms an enlargement of the stem just above the surface of the ground. This portion is used in the same way as turnips.

Salad Plants

As a general rule, the American people do not eat enough green vegetables, commonly referred to as salads. Crops of this class are especially adapted to the small garden, as they occupy very little space and will withstand more or less shading. The salad plants require a deep, rich soil with plenty of moisture. They also thrive under comparatively cool conditions.

Swiss Chard

Swiss chard resembles the common garden beet in appearance, but it does not form an edible root, like the beet, and is grown for its large leaf stems, which are boiled for greens. Americans do not as a rule eat enough greens, and there is need to encourage the planting in the home garden of Swiss chard and other crops that may be used for this purpose. Beet tops while young and tender make good greens, but the leaf stems of Swiss chard have a very excellent flavor and remain tender a long time. As the outer leaf stems are removed the plants keep on forming new leaves in the center, so that a continuous supply is provided.

Swiss chard is planted and cultivated the same as garden beets. One-half ounce of seed will be sufficient for the ordinary family of five persons. The variety known as Lucullus is considered best. Plant in the early spring the same as beets, and thin the plants to about 6 inches in the row.

Spinach

Spinach is another crop that is highly desirable for use as greens. Spinach thrives in cool weather and should be grown both as a spring and as a fall crop. In the extreme northern part of the country only one crop may be grown. In sections where the winters

are mild the seed can be planted in the fall and the plants can remain in the ground all winter. For a spring crop, plant in the open ground as soon as the soil can be worked. The rows may be as close as 7 inches, and 12 to 15 seeds should be sown to a foot of row, the plants being thinned so that they will have $1^1/_2$ to 2 inches of space for their development.

Spinach requires a very rich soil in order to make it grow quickly. A bed 5 feet wide and 30 feet in length and having about eight rows running the length of the bed will furnish enough spinach for the ordinary family. The entire spinach plant is removed by cutting just above the surface of the ground. From 2 to 3 ounces of seed will be sufficient for a bed 5 by 30 feet in size. Spinach contains large quantities of iron and is especially desirable as a part of the diet in the early spring.

Celery

There is nothing particularly difficult about growing celery after the plants are started. The celery seed bed requires very careful watering until the plants are up and large enough to transplant. As a rule, it will be best for city gardeners to purchase plants that are ready for setting in the garden. Celery requires a rich soil and plenty of moisture.

Anyone desiring to grow it should write to the United States Department of Agriculture for a copy of the Farmers' Bulletin on celery (No. 282), which gives full directions for growing the crop.

The White Plume, Golden Self-Blanching, and Boston Market are among the best varieties for the home garden.

Lettuce

No early garden would be complete without at

least a bed of lettuce; however, only a small space is necessary to grow plenty for the average family. In the old-fashioned garden a small bed was spaded in one corner and the seed sown broadcast and raked into the soil just as soon as the ground was dry enough to work in the spring. As the plants grew and began to crowd each other, they were thinned and those that were pulled out were used on the table. Later, when the plants became larger, they were cut off just above the ground.

Lettuce requires very rich soil and plenty of moisture, and will not withstand continued hot weather. It can be grown in partial shade and is one of the few crops that can be planted in back-yard gardens that are shaded a portion of the time. A 5-cent packet of seed will produce all the plants required for the small garden. A good method is to sow the seed in a box in the house and transplant the small plants to a bed or to rows in the garden. Lettuce is not injured by a light frost, especially if the plants have been grown in the open. The seed or plants may be planted between other crops that require a longer period for their development than the lettuce. Two plantings should be made in the spring and one in the late summer, in order to have a supply for a considerable period.

Grand Rapids is the leading variety of loose-leaf lettuce, while the Big Boston, Iceberg, and California Cream Butter are good heading sorts.

Vegetables That Require Considerable Space in the Garden

There are a number of garden vegetables that require too much space for growing in the small home garden. Wherever plenty of land is available these vegetables should be grown. Among those

included in this group are Irish potatoes, sweet potatoes, peas, sweet corn, squashes, cantaloupes, and watermelons.

Irish Potatoes

Irish potatoes are among the first crops that can be planted in a home garden. They have no place in a small garden, but where a space as great as 30 by 60 feet is available they should be included. A peck of seed potatoes, properly cut, will plant 300 feet of row and should yield 4 to 5 bushels. The usual method is to cut the seed, two eyes to each piece, dividing the fleshy part of the potato as equally as possible. The seed should not be cut until the ground is all ready to receive it. Great care should be taken to get seed that is free from scab or other diseases.

Irish potatoes can be planted in the North just as soon as the frost is all out of the ground and the soil dry enough to work. In the South the planting date will be governed by the season and the time that the young plants will be safe from spring freezes. It generally takes three to five weeks after planting in the Southern States for the potatoes to come up. In the North they will appear in a shorter period if weather conditions are favorable.

Peas

Peas, often called English peas, require considerable space and should not be planted in a small garden. In order to be of real value at least 15 feet of row should be planted for each person in the family. Peas are the first crop that can be planted in the spring. In the North, this planting can be made just as soon as the ground can be worked, and two, or even three, plantings should be made in order to have a continuous supply. In the South, peas are

planted about the same time as early Irish potatoes or a little earlier.

Peas require a rather rich soil with a little fertilizer added, as they make a quick growth. One pint of seed will plant 75 to 85 feet of row, and this should yield plenty of peas for five persons at each of four or five pickings. First, spade and rake the ground until it is fine and mellow; then open a furrow 3 to 4 inches deep with the corner of a hoe. Scatter the seeds broadcast in the bottom of the furrow or space them at the rate of 12 to 15 peas to a foot and cover them 3 to 4 inches deep. In heavy soils the seeds should not be covered so deeply as in light or sandy soils. If the ground is cold the seeds may be 10 days or two weeks in coming up, and if there should be a heavy rain meantime the crust forming on the surface of the soil should be carefully broken over the rows with a steel rake.

Extra Early Alaska, Gradus, and Thomas Laxton are among the leading early sorts. The Champion of England and Telephone are considered good medium and late varieties.

The extra-early sorts may be planted with the rows as close as 24 inches apart where hand cultivation is practiced. The later and larger growing varieties require a space of about 3 feet between the rows. There should not be more than 10 days or two weeks' difference between the planting dates of early and of late varieties of peas, as the late ones mature more slowly than the early sorts.

Several of the early varieties of peas can be grown without supports, but they do better if given something to climb on. The late varieties for the most part make a strong growth and require supports. Brush, where it may be had, woven-wire netting, a wire fence, or strings on stakes make

satisfactory supports for peas. (Fig. 16.) The supports should be in place when the peas come up, in order that the plants may climb them from the first. Early spring peas occupy the land a comparatively short time and may be followed by late cabbage, beets, turnips, kale, spinach, or some other crop. A planting of peas made late in the summer will often give a fine fall crop that is ready for use just before frost in the autumn.



Fig. 16.—Tall-growing peas of the Telephone

Sweet Corn

Sweet corn requires plenty of space in order to produce enough ears to supply an average family and for that reason finds its proper place in large city and suburban gardens. The rows should be spaced at least 3 feet apart, and the individual plants should stand 15 to 18 inches apart in the rows. If the corn is

planted in hills containing three stalks each of the hills must be at least $2^1/_2$ feet apart in the row for the early dwarf-growing varieties and 3 feet apart for the later or larger growing sorts. Corn requires a rich soil and should not be planted until the ground has warmed considerably. A pint of seed will plant 400 to 500 feet of row in either drills or in hills. Cover the seed $1^1/_2$ to 2 inches deep and thin to three stalks in a hill or to single stalks 15 or 18 inches apart in drills. If a large number of offshoots or suckers appear at the base of the plants at the ground, these should be removed, as they draw the strength of the plant. None but those shoots that appear very near the ground should be removed, as some of the varieties have their ears quite low on the stalks and the young ear looks very much like a sucker until the silk appears.

The Golden Bantam is the leading early variety. The Country Gentleman, Stowell's Evergreen, Mammoth Evergreen, and Ohio Sugar are among the leading medium and late varieties. For a continuous supply, plant Golden Bantam as early as possible, then follow in a few days with a planting of Country Gentleman. Two weeks later plant Stowell's Evergreen, and follow with additional plantings of some good late variety every three weeks until midsummer.

Sweet Potatoes

For an early crop, sweet-potato plants are started in a hotbed or greenhouse, and they must not be set in the open until all danger of frost is past and the ground is well warmed up. They usually thrive best when planted on wide ridges some 4 to $4^1/_2$ feet apart and 12 to 15 inches apart in the row. Any good garden fertilizer will answer for this crop, and it is

best applied either in small trenches or to the surface of the ground before the ridges are thrown up. Frequent shallow cultivation should be given until the vines begin to run. The Porto Rico, Nancy Hall, and Southern Queen varieties are recommended, and the Big-Stem Jersey where a dry-fleshed potato is desired.

Vine Group

The vine group includes cucumbers, summer and winter squashes, cantaloupes, and watermelons. Owing to the space required by these crops they are not adapted to planting in a small garden. For the convenience of those who desire to grow them, brief cultural directions are given.

Practically all of the vine crops can be trained to a wire fence or trellis or on wire netting. By this method they can be planted along a fence or beside a building where there is good sunlight and the vines can be trained up out of the way of other crops. In case cantaloupes or squashes are grown on a trellis, it will be necessary to support the fruits by means of bagging or cloth slings.

All of the vine crops require plenty of fertility in the soil. In addition to a shovelful of manure and a handful of fertilizer in each hill, a small quantity of commercial fertilizer may be worked into the soil around each hill after the vines begin to spread over the ground. The fertilizer should not be placed closer than a foot from the base of the plants and should be scattered over a considerable area. The results to be obtained in a small garden from growing any of the vine crops except summer squashes and cucumbers are extremely doubtful, and beginners are advised to devote the space to crops producing more food on a small area.

Cucumbers

One or two hills will produce enough cucumbers for the average family. Each hill should be given about 50 square feet of space, or 7 feet in each direction. The hills should be made several days before planting, with a shovelful of manure mixed thoroughly with the soil of each hill. About a dozen seeds should be scattered in each hill and covered to a depth of about an inch. Later, the plants should be thinned to three to five in a hill.

Cucumbers are very tender and should not be planted until all danger of frost is past. The plants may be started indoors by planting the seeds in pots, paper bands, or quart berry boxes filled with soil; then set in the garden when the weather is warm. The young cucumber plants are frequently destroyed by a small beetle. The easiest way to protect the plants is by covering each hill with a small wooden box the bottom of which has been removed and a piece of fine mosquito or fly netting tacked on. After the plants become toughened, the beetles are not likely to trouble them.

White Spine is the most common variety.

Cantaloupes

Cantaloupes, sometimes referred to as muskmelons, are grown exactly the same way as cucumbers.

The Rocky Ford, Tiptop, Hoodoo, and Ohio Sugar are among the leading varieties.

Watermelons

Watermelons require too much space for planting in a small garden. The cultivation of watermelons is practically the same as that of squashes.

The Kleckley Sweets and Florida Favorite are

among the best small watermelons for home growing. The variety known as Tom Watson is the one most frequently sold on our markets.

Squashes

Two varieties of summer squashes are suited for growing in city gardens. These are the Summer Crookneck and Pattypan. The summer squashes are of bush habit of growth and do not require much space. Three to five hills of either of the kinds mentioned will supply the ordinary family. The hills should be 4 to 5 feet apart. Plant 8 or 10 seeds to a hill, covering them to a depth of an inch, and when the plants are well established thin them to three in a hill.

The Hubbard Squash and Boston Marrow form true vines and require more space than the summer bush varieties. The fruits of the summer varieties are used while they are young and tender, but those of the fall and winter varieties are allowed to get fully ripe before being gathered and stored. Four or five hills will be sufficient, and a space of 10 or 12 feet should be allowed between the hills.

The vine or running squash may be grown in a corner of the garden or on a trellis. In one instance an old peach tree formed a support for a large squash vine and the fruits were held up by slings consisting of strips of bagging.

PLAN No. 281. MAKING CLOTHING FIREPROOF

To make clothing fireproof, and thus save hundreds of precious lives, dissolve one pound of ammonium phosphate in one gallon of cold water, and in this soak for five minutes the fabric to be

fireproofed. Then dry, and it will not burn. It does not harm the material. It sells for about 25 cents a pound in the drug stores. Make it up and sell it at $1 per gallon. But when the cloth is washed it is no longer fireproof, until treated with this solution again.

PLAN No. 282. MAKING PULLETS PAY

Buy pullets in the fall, give them good feed and care, and they will lay eggs all winter, making you a profit of several dollars per pullet. Sell them as hens the next spring and they will bring good prices for setting purposes, or as a table bird.

PLAN No. 283. PUMPKINS IN POWDER FORM

Don't can pumpkins. Slice thin, dry in the sun, then in an oven, and grind up in powder form. Put in cartons for sale. It makes more pies per pound than canned pumpkin.

Have a good recipe tried out with your powdered pumpkin. Put the directions for use on your carton. Retail one-half pound cartons for 10 cents, or more, and it will make twice the number of pies that a 10-cent can of pumpkin will. Get local customers first, and later deal with a jobber or wholesaler.

PLAN No. 284. MONEY IN HORSE-RADISH

Horse radish has made money for live men. Simply grate the horse radish and sell it when nice and fresh to the grocer, hotelkeeper, or to individual users.

Horse radish is perennial and needs little or no care. A half-acre will produce a great amount of horse radish. To start it take whole ones, cut them in small pieces, and plant like potatoes.

PLAN No. 285. PROFITABLE PLAIN SEWING

Women who used to spend hours and days in doing fancy but useless needle-work, now believe in doing the plain kind of sewing and getting paid for it. Making aprons, handkerchiefs, underskirts, and many similar articles, is a much more valuable use of spare time, which most women have. Lace-trimmed or monogramed handkerchiefs bring good prices.

PLAN No. 286. PICKLING DANDELIONS

Gather dandelions by the ton, put them down in brine just as you would cucumber pickles. Retail them in the winter by the quart. This will make you extra money.

PLAN No. 287. PLANTING ENDIVE FOR PICKLING

Plant endive on a city lot. This article can be treated in brine and cannot be told from fresh dandelion greens. Get regular customers for the entire winter. Supply stores, restaurants, etc.

PLAN No. 288. EARLY CUCUMBERS

Very early cucumbers bring $1.00 per dozen. Start your cucumber plants early in strawberry boxes in

the house. When they have four leaves on them, transplant, early in April, and you will have your cucumbers in the market before your neighbors have planted theirs. You could sell cucumber plants to your neighbors and to the stores also.

PLAN No. 289. RAISING SWEET PEAS

Raise sweet peas. One ounce of seed will produce 10,000 blossoms, and florists pay around $3.00 per 1,000 for them. On an acre thirty ounces could be planted, or even on a city lot three ounces of seed can be raised and make you money.

PLAN No. 290. A NOTION STORE AT HOME

A poor woman living in a Chicago suburb made a good living by laying in a small but well selected stock of notions at her home, which was a long distance from a store of any kind. She got these at wholesale prices, and sold them at regular retail rates, so she made sufficient profit to support herself in comfort, as the ladies in the neighborhood bought practically all their little notions from her.

PLAN No. 291. MAKING COTTAGE CHEESE

Few foods are more palatable, more healthful or more economical than cottage cheese, when properly made.

A California farmer's wife makes hers from milk that is not too old, and often sours sweet milk by adding a little buttermilk to it. She cooks it in 5-

gallon “shotgun” cans. As soon as the milk sets into a firm clabber she puts the cans into a 30-gallon tank of boiling water, connected with the kitchen stove by pipes and the usual waterback in the firebox, stirring the milk a little, and cutting the curd with a long-bladed knife. When the curd readily separates from the whey, lift the can out and let it stand from ten to twenty minutes. The contents of the can are then poured into a large bag made of cheese-cloth, which is hung up to drain. The whey is fed to the pigs as it contains milk-sugar which is a fattening ration. In a few hours the cheese will be drained enough. It is then thoroughly mashed and mixed in a proper vessel, salted, and it is ready for the trip to town. It should be sold at once as it does not keep long.

If cream is plentiful and cheap, a little mixed with the cheese places it at the top notch of quality. One can decide for himself whether he can afford to sell cream in this way, by the price he obtains for the cheese.

Cottage cheese is now sold at retail to the consumer for 10 to 15 cents a pound. This means nearly 30 cents a quart, a pint weighing slightly over a pound. It ought to bring at least 10 cents a pound to the maker, which is no mean profit for skim-milk usually fed to hogs and calves.

PLAN No. 292. DEVELOPING AND PRINTING PHOTOGRAPHS

A city woman, fond of photography, made her spare time profitable by developing and printing photographs for others, and by taking orders for that class of work, and having it done by a local dealer, paying him 20 per cent of her earnings. As she

purchased all her material from this dealer, it helped increase his sales also.

PLAN No. 293. "CITRONETTE" CUCUMBERS

Raise cucumbers, and when ripe place on the market "citronette." This is better than "sugared citron" and much cheaper.

Recipe: Pick cucumbers when ripe; split in half; scrape out pulp. Put in salt brine for one or two days, then draw off brine and add one pound of sugar to each pound of cucumber rind; let stand over night for juice to draw, then place on back of stove and allow to simmer until translucent and most of the water has evaporated. Turn occasionally to keep from burning. When the water has evaporated, and it looks dry, allow it to cool. You then have "citronette."

This project has been tried and it made $6.00 a day for a year, using only one-half acre of ground.

PLAN No. 294. CANNING VEGETABLES, ETC.

Can vegetables, peas, beans, sweet corn, also fruit, and pickles. From a good farm paper select an advertiser offering "home-canning outfits," and get his circulars. Buy an outfit. Get customers by placing a tempting ad. in your local paper, and by getting out attractive placards to be used by grocers who handle your goods. You can raise your own vegetables and fruit, or buy them from a farmer wholesale very reasonably.

PLAN No. 295. SMALL-TOWN CATERING

A young lady who lives in a small city where there are many social functions, has found catering on these occasions quite profitable, and she thus relates her plan of operations:

"I have furnished refreshments and acted as hostess for a social club of young men—usually thirty plates at fifty cents each. I serve fruit punch during the card game, and either a fruit salad or a meat salad, with crackers, ice cream or sherbet, cake and nuts, or mints. My profit is between five and six dollars. I also cater for the Masons' ladies' nights on the same terms, and in this small country town there is no other business of that sort.

"The Masons have about one hundred plates. I introduce the ladies and group them congenially; and the young daughters are only too glad to wait on the tables in pretty aprons, so that I employ only one maid. I arrange the tables for progressive Five Hundred. The girls who do not play are glad to serve and punch the score cards. The men can play pool, and there is a table for cinch and dominoes."

PLAN No. 296. PERFUME FOR A SICK ROOM

The following makes a very pleasant antiseptic perfume for a sick-room, imparting the odor of the pine woods, and is very grateful and refreshing to an invalid:

Oil of bergamot, 6 drams; oil of orange, 1 dram; oil of rosemary, 1 dram; eucalyptol, 2 drams; bornyl acetate, $^1/_2$ dram; tincture benzoin, 4 drams; water, $2^1/_2$ parts; alcohol to make one gallon.

Mix and spray about the room whenever the air begins to indicate the necessity for freshening it.

PLAN No. 297. RAISING CAPONS

One poultry man in a Kansas town got so much more for his young roosters than was paid to any other person in the same place for apparently similar stock, that several of them came to him to find out why this was the case.

He replied that there was no secret about it, that he simply caponized the male birds at about four months of age; that this process not only made them grow much faster and larger, but gave their flesh a flavor no other bird possessed, and that when people had once tasted a young caponized cock they would buy no other, if they could possibly get these.

The process is very simple, and is performed with a set of tools that can be bought for $2, so that the extra profit on a few birds soon pays for this expense and the time and trouble required.

The other poultry growers in the community at once adopted the same plan, and the increased demand for their product in the market showed them where and why they had been losing money before, instead of making it.

PLAN No. 298. A LOSING GROCERY BUSINESS MADE A SUCCESS

Near a good-sized Texas town a man and his wife were trying to farm a piece of sun-baked land, and were making a failure of it, when the wife proposed that they start a small grocery. They had a few hundred dollars, and borrowed a little more, and with this they bought a small stock of groceries, but the growth of the business was so slow as to be disheartening.

On her way down to their store one afternoon the woman noticed that trade was brisk in those places that presented a cleanly appearance, and then she got busy. Together they scrubbed the floors, applied paint where it was needed, and began a general clean-up campaign that soon transformed the dingy little place into a most attractive store room. Pyramids of canned goods were erected in the show window, and everything tastefully arranged on counters and shelves to present the best possible appearance.

She had a number of jars of preserves, pickled fruits and vegetables they had put up while on the farm, and these she brought to the store, where they were quickly sold. She then put up more at their home, all of which were sold at a big profit. Then she baked cakes and brought them to the store, where they found a steady sale, which encouraged her to bake many more.

As a means of advertising their “clean grocery,” they labeled the collar of their dog and the net mesh that covered their delivery horse with catchy phrases, and soon had their place widely talked about.

Their business grew until they were obliged to move to a larger building, where they have the best trade in the town.

PLAN No. 299. BRINGING WOMEN TO A STORE

It was a woman’s idea that brought scores of women to a store, where her husband was a clerk, who had never been in the place before, and coming in once, usually became regular customers. Her idea was very simple, but it worked splendidly. It was

merely to have the management of the store put up a free bulletin board in a prominent place just inside the entrance, upon which women in need of maids, domestics, or help of any kind, could pin up a short notice of the place offered, the wages paid, special privileges and requirements. At the same time, women and girls in search of employment could also use the bulletin board to help them in securing the places they wanted, and it was not long until the store was visited with women anxious to consult the bulletin board, which well served its purpose as a free employment agency.

Very soon the store became talked about all over town, as the place to look for help or positions, and of the hundreds of women who visited the place for that purpose, many of them stayed to look over the stock, and buy.

The business was so greatly increased that the management of the store, impressed with the value of the idea, gave the husband of its originator a considerable increase in salary.

PLAN No. 300. A TRAVELING GROCERY

A southern woman's husband was 30 years old, and a grocery clerk at $50 a month. Both were hoping for something better, when a good idea came to the wife. It was to start something new—a grocery on wheels!

She had saved a few hundred dollars before her marriage, but had never told her husband, as she intended to surprise him with it when the proper time came—and that time had arrived.

With this money to start with, she drew a plan for a wagon arranged with shelves and compartments

for holding canned goods, preserves, breakfast foods, coffee, cheese, fresh-baked bread, cakes, pies, fresh fruits and vegetables—everything to be found in a well-ordered grocery. Sealed packages were a specialty, for sanitary reasons.

They had rented a neat little store in a suburb and put in a fine stock of groceries, which the wife took care of while the husband made the rounds of the entire neighborhood with his wheeled grocery. The women were more than pleased to come out to the wagon every morning and make their purchases for the day, without having to go to a market for what they wanted, so that his wagon was in constant demand in every part of the suburb. Later a motor truck took the place of the horse.

PLAN No. 301. SALES MANAGER BECOMES REALTY OWNER

The sales manager for a large Chicago concern was married, had three children, and was getting further and further behind every year, with debts that constantly increased. Then the wife thought out a plan that she hoped would bring a betterment in conditions, and decided to make it win.

She began by selling their grand piano for $800 and buying a second-hand up-right for $185. Then she sold her buffet, china closet, two extra bedroom suites, four good rugs, several sets of silverware, some china, cut-glass, pictures, etc., at private sale, and from these she received $720 more.

Out of her total receipts, she paid the family debts and had $640 left. She paid $300 for a lot in the outskirts of the city; $54 for enough second-hand lumber to build a shack 20x40 in size, she and her

husband putting up the building and putting in a cement floor, and lining the building with tar paper. They divided the shack into four rooms with straw matting for partitions, bought second-hand windows at $1 each, and made their own doors. Then they placed rugs on all the floors except the kitchen and moved in, thus saving $40 a month in rent.

They still had $200 in the bank, and out of this she paid $40 for putting down a well, then she gave piano lessons to country children, at 50 cents an hour, and earned $20 a month that way. She set up her grandmother's old loom and wove rag rugs until she had earned $700 that way, and at the end of three years they had $3,000 in the bank, had raised the house, put in a foundation, dug a cellar and built two porches.

In two years more they were another $2,000 ahead, so her husband resigned his position and they began buying vacant lots at $250 to $400 each, bought old houses "for a song," tore them down, and with the material built several tiny new bungalows. The husband did the carpenter work, she did the interior decorating work and the children helped a good deal. When a bungalow was finished, they readily sold it for from $1,700 to $2,200 and made a nice profit on each.

To-day they are living in a modern 9-room bungalow, and own twenty-seven vacant lots besides, all paid for, and have an income of $4,000 a year.

PLAN No. 302. HOT SOUPS FOR BUSINESS GIRLS

A practical and profitable idea came to a woman in an eastern city when she thought of the large number of business girls and girls in government

employ who so earnestly long for the taste of home-cooked foods, which they never get.

Instantly she had formed her plan to put up ready-to-serve, homemade soups, potpies, beans, clam and fish chowders, and other things, to be delivered in glass jars, just at dinner time, to those girls who would love to have a hot meal at home, if they had anyone to cook it for them, or had time to cook it themselves.

Making sure that nothing left her kitchen until its taste and attractiveness were tested and proven when it reached those tired women and girls, it was a veritable blessing in glass jars.

She baked beans without pork, but with an onion in the center instead, and covered with salad oil. She made Dutch potpie cooked like a stew, made fish and clam chowders and prepared them all in the most appetizing way, so that anyone would relish them.

Later she set up a table and an electric stove in the corner of a hall in a large office building occupied mostly by men, where she served lunches taken from her fireless cooker, and these the men took to their offices on trays provided by themselves. On these she realized a profit of 40 per cent, besides having enough food left to supply her own family.

PLAN No. 303. BREAD AND CAKE BAKING SOLD TO WOMAN EXCHANGE

A married woman in New York, who had formerly been a stenographer but could not return to that work on account of her household duties, which included the care of two children, yet who was anxious to help in enlarging the family income, decided to bake cakes and sell them through various

woman's exchanges.

Her sales were very good, but often there would be cakes left over, and, to avoid this, she changed her selling method so as to supply a certain number of families with bread and cakes. Her entire capital was but $5, and she started with seven customers, having discontinued her deliveries to the exchanges.

She wrote to a number of people who were able to pay her prices, and soon secured a good list of regular patrons. In six months she had forty-five steady customers, was baking all kinds of cakes besides raisin, whole wheat and brown breads, and rapidly increasing the number of her patrons, so that in six months more she had a total of seventy-eight. Some of these, when starting on their summer vacations, arranged to have her supply them regularly by parcel post while away, and when they returned in the fall they continued to buy her baked products.

She employed a boy at $2 a week to make deliveries two afternoons each week and all day Saturdays, and before very long her net profits had reached $150 a month.

PLAN No. 304. MAKING USE OF SURPLUS APPLES

In some sections of the country thousands of bushels of fine apples are allowed to go to waste every year, simply because there is no one to gather them and make practical use of them.

A man in eastern Ohio, where the supply of apples is largely in excess of the demand, made profitable use of this apple surplus by a new method of concentrating cider, through freezing and centrifugal motion. This method consists of first freezing the raw

cider until it is solid, by placing it in shallow trays and exposing it to a freezing outdoor temperature. Then it is crushed up fine and put into a receptacle like a barrel churn, and whirled very rapidly. This throws off the juice in the form of a syrup and leaves the water in the machine as ice.

One gallon of this concentrated cider, or syrup, is as strong as five gallons of ordinary apple cider, and when put in a cool place will keep from six months to a year without fermenting. It also reduces the bulk about four-fifths, so that it can be shipped at a low transportation cost, thus increasing the profits by a large percentage.

This man gathered up several hundred bushels of the apples that were going to waste, rented a cider press, and turned out the cider in immense quantities, late in the fall when the weather was freezing cold. The concentrated product he shipped to the city and sold it at big profit, the first netting him nearly $1,000.

PLAN No. 305. SELLING EGGS AT A HIGH PRICE

Even in those times when eggs were selling to the middle man for 20 cents per dozen, a man who lived in the suburbs of an eastern city, and kept hens that laid large, rich-looking, golden brown eggs, worth twice as much as the tiny white ones in the dealers' stalls, always sold every egg he could produce for 60 cents per dozen, or a nickel each.

The way he did it was to advertise in the city papers that he would send eggs by parcel post the very day they were laid, and guaranteed them to be strictly fresh and safe for sick people as well as robust persons.

That brought in the orders, and the way he kept them coming from the same people, year after year, was by making good—by actually shipping the eggs the day they were laid—and strictly fulfilling every promise he made. These facts, once duly impressed upon the minds of his city customers, made the eggs he sent them worth three times the price of ordinary market eggs of small size and uncertain age. Anyone, situated as he was, can do the same thing and make money out of it.

PLAN No. 306. FREE RECIPE BOOKS TO FARMERS

In order to interest city merchants in the possibilities open to them for country trade through the parcel post, and to interest the farmers in the goods carried by the city merchants, an advertising man in a western city thought out a plan that would do both.

First, he secured the name of every farmer within fifty miles of the city in which he lived. Then he got up a little 16-inch page booklet, with an attractive cover, and filled one-half of every page with interesting and useful information for farmers, such as recipes, methods of gardening farm, garden and orchard products, etc.

He then went to merchants in various lines, showed them the plan of the booklet, exhibited his list of farmers' names, assured them that he would send a copy of the booklet free to every farmer on that list, and got them to fill the other half of each page with an advertisement of those goods especially for farmers' use. The front of the cover he used as a title page, while the three other cover pages he sold for advertising purposes at good rates.

That little booklet netted him over $250, after he had submitted affidavits to the advertisers that copies of it had been sent out free to all the farmers, as he had agreed. He prepared another booklet, using the same matter, except the ads., and these he obtained from another set of advertisers. The matter already set up for the first booklet saved a great deal on the cost of composition, and at the end of the year his profits amounted to more than $2,000.

PLAN No. 307. TRUST PLAN WORKED LOCALLY

A mail-order man back east decided to work trust plan by which he could keep in close touch with those selling the goods, and have settlements where necessary.

From a catalog issued by a reliable house carrying a line of novelties adapted to the trust plan, he selected a few attractive ones which any child could sell at 10 cents each, and which cost him about $1.50 per gross, and these he advertised in the local papers, offering a premium to anyone selling a certain number of them.

He was thus enabled to place a large quantity of these novelties in the hands of children and others, who sold them and promptly remitted or called personally to make settlements and receive their premiums.

This system reduced his losses to a minimum and greatly increased his profits, so that he sent no more goods on the trust plan to outside towns, but confined his operations to his home city.

PLAN No. 308. ICE WOOL SHAWLS BY PARCEL

POST

Another good parcel-post idea was worked out with success by a mail-order man, as follows:

He bought a quantity of ice wool shawls from a Chicago supply house, at a price which allowed him to retail them at 98 cents each, and still make a good profit. He secured the names of all the farmers' wives within 150 miles, wrote a neat circular describing the beauty and stylishness of ice-wool shawls, and, wrapping one of these around each shawl, he sent them by parcel post, stating that if they wanted it for 98 cents, to remit him that amount, if not, to notify him on a postal card enclosed for that purpose.

But a very few of the shawls came back. Hundreds of money orders for 98 cents each did come, and he sold thousands of them in that way, realizing a good profit on each sale.

PLAN No. 309. CIGARS FOR FARMERS

A cigar man in Denver made up a special brand of cigars, placed two of them in a neat little case, and sent them by parcel post to several hundred farmers, with a note saying they were presented with the cigar maker's compliments. He also enclosed a coupon, good for a certain premium with each box of cigars ordered. The cigars were good, and many of the samples sent out brought orders for a full box, at the regular price.

PLAN No. 310. A NEW TRUST PLAN

Instead of that disagreeable method of selling goods—house to house canvassing—an agent in an

Illinois city made use of the parcel post, with good results.

Selecting the article he wished to sell, he prepared a strong circular fully describing it, and wrapped the article in this circular, ready to send out by parcel post.

From the city directory he obtained a list of householders in various parts of the city, and mailed the article to them, with the statement that it was sent for inspection, and that his agent would call in a few days and give a full explanation.

He sometimes mailed out as many as 1,000 a day of these articles, and later sent out agents to close the sales, on a commission basis; and, as the sales were much more numerous under this plan than by canvassing from house to house, the increased profits fully justified him in assuming the extra expense the new plan involved.

PLAN No. 311. A GOOD COUPON IDEA

A Chicago man who knew the truth of the saying, "a woman loves a bargain," made a practical application of that principle to his own profit.

From the catalog of a supply house he selected an article that could be bought for a few cents, in considerable quantities, and yet would be a good value when retailed at, say, 26 cents. In a local paper he placed an ad. descriptive of the article, with a coupon at the bottom, saying: "We have only a few of these on hand. If you wish one, send this coupon and 26 cents, and we will send it by parcel post." He sold large quantities of goods by this method.

PLAN No. 312. SELL GOODS ON INSTALLMENTS BY PARCEL POST

A Seattle man originated the plan of selling goods on the installment plan by parcel post, and made it succeed.

Running an ad. in the local papers, describing the article for sale, he attached a coupon upon receipt of which the goods would be sent by parcel post for inspection. If approved and desired, the first installment was to be remitted at once, the others at stated intervals, but in all cases the names of two references were required.

He sold quantities of goods, sustained no losses, and made a good profit each year through this plan.

PLAN No. 313. MEDICAL VEGETABLE GARDEN

A San Francisco man, who knew something of the medical and other properties of *Cannabis Americana*, commonly known as hemp, experimented with it and found that it would grow in this country as well as in India, and decided it was a good thing.

He procured enough seed to sow one acre of land, sewing it broadcast the same as oats or buckwheat. He kept the weeds down until it had obtained a good start, and, as it then grew fast as the weeds, it needed no further attention. In the fall he cut it, cured it like hay, and sent it to the market, where it brought 45 cents a pound. There were two tons of it, and that 4,000 pounds sold for $1,800, all from one acre.

PLAN No. 314. IMPROVING A MARKET

A market-man's wife, who wished to make her husband's place of business the most popular in that part of the city, did so by planning the meals for about forty of their regular customers. She charged nothing for her services, kept well within the weekly limit of each family, and relieved the housewives of all anxiety in the matter of deciding what the menu for each day should consist of. It not only made them permanent customers, but enabled the storeman to order only what he knew would be sold on any one day, so that his stock of meats and vegetables was always fresh, his prices no higher than those who gave less attention to their patrons' needs, and his place was soon what the wife set out to make it—the most popular and profitable market.

PLAN No. 315. BOOSTED HUBBY'S BAKERY

A woman in California, who was impressed with the waste of gas and other fuels by women who devoted long hours to cooking "little dabs", of oatmeal and other foods for their children, concluded to make that an unpopular and unprofitable pastime for these women, by having such things all cooked in her husband's bakery, where there would be no waste, while it saved hundreds of mothers many anxious hours and tedious toil that were wholly unnecessary.

Her husband agreed with her that it would be a good thing all round to cook all these things in the bakery and place them on sale at prices that would mean a great saving of material as well as fuel, and guarantee their quality at the same time.

They began by cooking oatmeal guaranteed to have been steamed four hours, and baked small

individual rice puddings in attractive little brown pottery molds, all of which sold so well that they added mutton broth with rice, plain beef broth, chicken broth with barley, and bean, pea purees for the children.

Desiring to expand their field of activities, they induced well located bakeries, delicatessen and other stores to handle their products on a commission basis, and, while their profits were not large, the business finally became so extensive that it paid exceedingly well.

Finally they gave up all this, and established a small model factory for children's foods, and now have two motor wagons distributing these foods, which bring them a profit of several hundred dollars a month.

PLAN No. 316. MAKING STOCKING PATTERNS

A lady in Reno, Nevada, who had long deplored the woeful waste involved in the throwing away of women's stockings as soon as a small hole appears in the foot, hit upon an excellent plan for effecting a great saving in this regard, and one that at the same time brought her a good income.

Her plan was to make patterns for stocking feet, as the material in one pair of women's hose will re-foot three or four pairs, and thus save the cost of a new pair when all that needs replacing is the small foot part of the stocking.

Ripping up a stocking of a good make, she succeeded in cutting out a perfect-fitting pattern from this, the only change necessary in using it being to adapt it to various sizes, and then she advertised to save the women of the country thousands of

dollars in hosiery expense, if each of them would send her 10 cents for a pattern that would enable her to replace the feet of stockings whenever a small hole appeared in the heel or toe. No matter what the material, whether it was wool, silk, lisle or a coarse cotton, women realized that it would pay to re-foot them instead of buying new ones, and thousands of them sent for the pattern.

Many of the women who bought the patterns admitted that they did so for the purpose of making a business of re-footing stockings for women who could not do it for themselves.

PLAN No. 317. A RHUBARB BED THAT PAID

A grocer's wife, with only a few square feet in the back yard of a city lot, cultivated a rhubarb bed that paid for itself hundreds of times over, and required but little care from the time it was started.

She obtained several pieces of old root stock from a variety she knew to be of the very best, and in the spring had the ground spaded up and pulverized until it was almost like powder, then she added some good fertilizer, and set out the roots in hills four feet apart each way, leaving the top or eye an inch or so below the level of the ground. These began to grow at once, and during the dry season were kept well watered, being frequently hoed to kill all the weeds.

A considerable number of edible stalks were pulled the first season, great care being taken to let none of them go to seed, by snapping off the seed stems as fast as they appeared.

The second season the growth began early and was remarkably rapid so that before any one else had rhubarb, she had a good display of it in her

husband's store where it sold readily at a very high price.

Ever since then this small rhubarb bed has kept her in pin money, and all the care it has required was to keep it free from weeds and to water it occasionally.

PLAN No. 318. PUREBRED POULTRY

An Eastern Washington farmer, who had raised scrub poultry for years, without ever being able to decide whether or not they were really worth their keep, finally decided to raise pure-breds, and now feels justified in making the change, as the returns from his high-grade fowls have been large.

He simply selected the breed he liked best, and gave them the care to which birds of high degree are entitled, and they have repaid him many times over for his efforts.

He now finds he can get more for a single pure-bred fowl than twenty of the common or barn-yard variety would bring, while their cost to raise is considerably less—bird for bird. Another thing: A single setting of eggs from a pedigreed hen brings him more than he could ever hope to receive for all the eggs an ordinary hen would lay in an entire season, and he is not only much better off financially, but feels that the satisfaction of having a breed that everybody else wants is worth a good deal to him.

PLAN No. 319. SORTING AND SELLING

A preacher's wife, living in Michigan, has had to

support the family for the last fifteen years, and this she has accomplished by cultivating a truck farm a few miles from the city in that state.

From this she derives an income adequate for all immediate needs. Her good judgment and experience in the selection, sorting and selling of farm and garden products have made her an expert. Her services command a high figure and she earns a good living each year through this skill.

PLAN No. 320. ARCHITECT—SEE PLAN No. 217

PLAN No. 321. DUSTLESS DUSTERS AND OIL MOPS

A woman in a New Mexico city, where dust is one of the most plentiful of products, earned a good living by making and selling dustless dusters and oil mops to the people of her town.

To make a dustless duster, mix—out of doors, of course—1 quart of gasoline, 1/2 pint of turpentine, 1/2 pound of whiting and 1/2 ounce oxalic acid. Mix in a 2-quart fruit jar. Shake the cloths well, then dip into the mixture, and hang out on the line to dry. The above amount is enough for making several dustless dust cloths. She sells them at 25 cents each.

To make an oil mop, she gets 20 cents worth of paraffin oil, warms it up by setting it in a pan of hot water, and dips the cloth in this and squeezes it quite dry, then hangs it up to dry thoroughly. In this mixture she also dips broom bags made of the legs of stockings sewed together. She puts the oil in a bottle to use again.

PLAN No. 322. WHAT A BUSY COUNTRY GIRL DID

A little farmer girl, who is not a bit afraid of work, earns enough to clothe her nicely every year, and here are some of the ways she does it:

Picks strawberries in June, at 2 cents a box; earns five dollars.

Picks huckleberries and blackberries in July and August; makes from eighteen to twenty dollars.

Gathers wild grapes in September, and sells them at $1 per bushel or 50 cents for a peach basket full.

Gathers hickory nuts in October, and sells them from Thanksgiving to Christmas at $2.25 to $2.50 a bushel. Also gathers chestnuts; sells them for 15 cents a quart.

Plants 5 cents worth of popcorn seed in the spring; gets five bushels; sells it at Christmas time for $2.50 a bushel; or $12.50.

In summer she gathers wild balsam blossoms and fresh pine needles; makes them into small head pillows; sells these in drug and dry goods stores at 25 cents each, net.

Gathers bayberries in August, and combines their natural wax with paraffin, melting them into pretty, green-tinted candles. Ties these in bunches of three with baby ribbon, and sells two bunches for 25 cents.

Planted sage bushes in a corner of the garden. Gets $1 to $5 from these every summer.

She is now going to raise medical herbs, such as boneset, catnip, wormwood, mullen, etc., and will sell these to a wholesale druggist at big prices.

PLAN No. 323. A WIFE WHO BOUGHT A STORE

A street-car conductor on a Massachusetts street-

car line, some twenty years, would probably be a conductor still if it hadn't been for his wife, who took the initiative in launching an enterprise that finally robbed him of his $16-a-week job and gave him one as joint owner, with his better-half, of six prosperous stores, any one of which would make a good living for an ordinary family, besides a fine home in the country. The long hours and close attention of his position as conductor was wearing on him, and the wife decided to take a hand in managing affairs.

A small creamery near their home was for sale for $800. The wife had $500 she had saved, and she borrowed $300 more on her furniture and the store fixtures. She at once changed the name of the creamery to that of "Clover Farm Dairy Products," cleaned the place all up, had the landlord paint it white, put in new linoleums, and had the doors and windows washed, so that everything about the place was "spick and span."

She had previously arranged with the dairy above named to handle their products, which were popular, and opened up for business. The first week her profits were only $10, but in seven months the mortgage was paid off, and the place was clear. She then put a counter in the storeroom, and served sandwiches and light lunches all of which paid well. At the end of the first year she had $2,500 laid away as profits.

By that time she proposed to buy another store, and each of them own one, as her husband was ready to resign his position, and this venture proved as profitable as the first one, they kept on until they now own six stores and a nice farm.

PLAN No. 324. CLEANED AND REPAIRED

CISTERNS

A man who made his living by doing odd jobs found the cleaning and repairing of cisterns about the most profitable work he could find to do.

Using a hand-pump to remove the water, he would go down into the cistern and scrub the walls clean with a broom, then dip up and remove the dirty water and debris from the bottom. Then he would throw in several buckets of clean water to wash down any particles of dirt remaining, dip this all out, and the cistern was clean.

But repairing was necessary in most cases, and if there was a leak, he would enlarge the hole with a hammer, force in some beef suet and then fill the hole with a mortar made of cement and water. For cracks in the wall, he gave it a coat of cement and water, throwing dust-dry cement over it until the cement set hard enough to hold. If the leak was so great that the above method would not stop it, he cut a hole in the bottom, set in a pail that could be emptied when full, and treated the leak as above, afterwards filling the hole in the bottom with stiff clay, cementing it with the mortar.

These jobs paid him well, and his time was fully occupied.

PLAN No. 325. GREASE-ERADICATING TABLETS

A very convenient grease-spot remover, made in tablet or stick form, was put up and sold in large quantities by a traveling man, who realized how easy it would be to use it while on the road. This is the formula he used:

Soft soap, 2 pounds; powdered Fullers earth, 2 pounds; turpentine, 6 fluid ounces. Mix the soap with

the earth, gradually working in the turpentine, and give a dash of cheap scent, such as nitro benzol or even lemon oil. Then fashion into sticks or cakes. The spot or stain is first moistened with hot water, is rubbed with the cake and allowed to soak for a few minutes, or to get nearly dry, then it is well rubbed with a little warm water and a brush, or a piece of clean woolen, and afterwards rinsed in clean water and finally rubbed dry and smoothed off with a dry cloth or a brush.

Introducing this among other traveling men, merchants and others, he soon found such a demand for it that he gave up his position on the road, began making it on a large scale.

PLAN No. 326. A SOCIAL REGISTER

The society reporter of a leading daily newspaper in a middle western city, who enjoyed an extensive acquaintance among the prominent people of the place, devoted her vacation to accumulating the material for a "social register" in addition to the knowledge she already possessed regarding the foremost families of the city.

She was on intimate terms with most of the society leaders, and therefore had but little difficulty in inducing them to pay her $2 each for including the family name in the register, which was open only to those who were representatives of good citizenship, and properly entitled to such prominence.

The $2 paid by the head of each family covered the entire charge for having the names of all members of the family in the book, and included the family name, given names, address, telephone number, "at-home" days, names of daughters having

made their debut, as well as those "coming out" the present season, the names of social societies or clubs to which any members of the family belong, with official position, if any held therein, the families, summer address, etc. In a word, it was a complete record of the city's best people.

She appointed one or two solicitors capable of approaching exclusive people, for the purpose of enrolling them, and solicited only enough advertisements of the highest class to fill six or seven pages, charging very high rates for the same; and, although no capital was required to start the enterprise, by the time the solicitors and the printers were paid, she found she had cleared nearly $600 from the publication of the book. Every two years thereafter she published a new edition.

PLAN No. 327. CHARACTER READING FROM PHOTOGRAPHS

There are comparatively few persons who are really qualified to make a success of this work, but once in a while some person is found who can give a very close analysis of the individual character.

A young lady in Indianapolis, who possessed this gift, made a great success of this work, and not only gave satisfaction to those who sent photos for her reading, but derived a good living from it.

She advertised in the "personal" columns of several widely circulated newspapers that she would describe the character of any one whose photograph was sent to her, detailing the habits, vices, virtues and other characteristics and traits of the individual, the strong and weak points in his or her make-up, whom the person should marry, the line of business

to which he or she was best adapted—in short a clear and complete delineation of that person's character, yet not through fortune-telling or anything of that kind.

She announced that, while the regular charge for such a reading was $1, she would make the price 50 cents for a limited time, and guarantee satisfaction.

Hundreds of photos, with the requested enclosures, were received as a result of her first ad. and she was soon in receipt of a steady income of $150 to $200 a month. The secret of it was that she could do just what she said she could, and by honestly performing what she promised, she gained the confidence and the patronage of those who answered her ads.

PLAN No. 328. SELLING ICE CREAM, BANANAS, ETC., IN THE COUNTRY

A city man, who had formerly lived in the country realized how welcome would be the sight of a covered express wagon, containing a sign, "Ice Cream, Pop Corn and Bananas," coming up the road toward a farm house on a long lonesome Sunday afternoon. Why, everybody would be customers, and that gave him an idea.

He owned just the kind of rig that would serve this purpose, and all he needed was a neatly printed canvas sign tacked on each side of the frame that supported the cover. A sign painter soon turned these out at a small cost, and he next visited the headquarters of a large dairy company noted for the excellence of its products. Here he made arrangements to be supplied with from ten to twenty gallons of their best ice cream, of different flavors, each Sunday, at wholesale rates.

A corn-popper, operated by a kerosene lamp that kept the pop-corn warm as well as fresh, was his next purchase, then a few bushels of popcorn, while a wholesale fruit house was glad to supply several hundred nice ripe bananas at the regular prices to dealers.

The next Sunday was a beautiful day—just warm enough to make one wish for ice cream—and he started out in his rig for a long drive into the country. His coming created a sensation and the further he drove the more he sold of his goods, until, just before sundown, the very last of the ice cream, popcorn and bananas were sold. That night after supper he figured up the results, and found his net profits amounted to just $18.75 for that one day's work. But that was only the beginning of a profitable business.

Home-made Candy Making That Paid

A man in Seattle, who had never made an ounce of candy in his life, bought a book on candy making at a stationer's, then worked in a candy factory for almost nothing for two months, and came out a skilled confectioner. The following are some of the candies that proved to be the best sellers and biggest money-makers, and he gives the formulas below, with the statement that the making of any one of them will provide a good living for any person who will work and stick to it. Each is therefore submitted as a separate plan for making a living.

PLAN No. 329. MOLASSES CANDY

White sugar, 2 pounds; sugarhouse syrup, 1 pint; best molasses, 1 pint. Boil until a little of it hardens

when dropped into cold water, then work in the usual manner.

This enjoyed a tremendous popularity, and yielded an immense profit.

PLAN No. 330. PEPPERMINT CREAMS

White sugar, 1 pound; essence of peppermint, 1 teaspoonful; add sufficient water to work into a stiff paste, roll into thick sheets, and cut out with a round stamp of the required size.

Profit enough in this to support an entire family.

PLAN No. 331. CHOCOLATE CARAMELS

Boil a quart of best molasses until it darkens, then put in water. Before removing from the fire, add 4 ounces of fine chocolate. Pour a thin layer into tin trays slightly greased, and when it hardens a little cut into small squares.

His customers never seemed to get enough of these.

PLAN No. 332. A FINE NUT CANDY

Nut candies are always in demand, and those he made as follows were particularly delicious:

Put the meats of walnuts, hickory nuts, peanuts, or any other kind desired, to the depth of half an inch, on the bottom of tins previously greased. Boil together 2 pounds of brown sugar, 1 pint of water, and 1 gill of molasses, until a portion of it hardens when cool. Pour the hot syrup on the meats, and allow it to remain until hard, then break it into small chunks.

This was one of his biggest money-makers.

PLAN No. 333. FIG PASTE

Chop a pound of figs fine, and boil in a pint of water until reduced to a soft pulp. Strain through a fine sieve, add 8 pounds of sugar, and evaporate over boiling water until the paste becomes quite stiff. Form the paste into thick sheets, and divide into small pieces with a thin-bladed knife. Roll the pieces in powdered sugar, and pack in wooden boxes.

A delicious and healthful confection that proved its popularity all the year round.

PLAN No. 334. SUPERB CHEWING GUM

No matter how great the supply of chewing gum becomes, the demand for it always exceeds the supply. There is none better than the following, which was one of his biggest sellers:

Chicle, 7 pounds; paraffin wax, 2 pounds, Tolu balsam, 4 ounces; Peru balsam, 2 ounces. Dissolve the gum in as much water as it will take up, melt the paraffine and mix all together. Now take finely granulated sugar, 20 pounds; glucose, 8 pounds; water 6 pints. Put the sugar and glucose into the water, dissolve and boil them to a “crack” degree (confectioners’ term), pour the syrup over an oiled slab and turn into it sufficient of the gum mixture to make it tough and plastic, adding any of the following flavors, if desired: Cinnamon, chocolate, sandalwood, wintergreen, myrrh, galangal, ginger and cardamon. When completely mixed, remove to a cold slab previously dusted with powdered sugar, roll out into sheets and cut into sticks.

PLAN No. 335. SPRUCE CHEWING GUM

Spruce gum, 20 parts; chicle, 20 parts; powdered

sugar, 20 parts. Melt the gum separately, mix while hot, and immediately add the sugar, a small portion at a time, kneading it thoroughly on a hot slab. When thoroughly mixed, roll and cut into sticks.

One of the most popular and profitable chewing gums made.

PLAN No. 336. CLERKS FOR U. S. GOVERNMENT.

SEE PLAN No. 217

PLAN No. 337. DISTRIBUTING CIRCULARS

Even in a large city, where bill-board and distributing agencies are already operating, there is still room for an energetic man to make a good living by working independently.

A man in a western city did this:

By giving honest service at reasonable prices, he worked up a nice, paying business, all his own, inside of a year's time.

He not only obtained work by personal solicitation among the home merchants, but mailed neat circular letters to large advertisers in other towns, and advertised occasionally in the local papers, guaranteeing the prompt delivery of printed matter anywhere at any time; and, as those who employed him once found the service satisfactory, he was able to enroll many of the large advertisers among his regular customers.

PLAN No. 338. GENERAL HOUSE-REPAIRING

When an Omaha man had lost all his property, and

began to think he was “down and out,” he suddenly remembered that he was a regular “jack of all trades”; that he could do almost anything around a house, and that there was a good living for him in making use of his talents.

With a few dollars he had left after the collapse of his business, he rented a small shop in a central location, and had some circulars printed stating that he would do all sorts of repair work needed around residences, such as fall to the lot of a bell-hanger, locksmith, carpenter, plumber, gas-fitter, painter, paper-hanger, glazier, carpet cleaner and layer, etc., on short notice and at reasonable rates.

He received many calls to do work in these various lines, and did it so skillfully, quickly and reasonably that many housewives engaged him permanently, at a stated sum per month, to look after such repairs as became necessary to make around their homes.

His earnings the first year were nearly $1,500 and his income increased.

PLAN No. 339. BUYING OLD BARRELS

An old man in a western city makes a profit of $25 or more a week by buying used barrels from grocers and others and selling them to manufacturers for about twice what he pays for them.

There are several firms in his city that buy all the barrels they can get, and those that have been used answer the purpose just as well as new ones. He first makes contracts with these firms to deliver so many barrels per week at a certain price. Then he drives around in a little wagon to all the groceries and other places where there are empty barrels, and buys them cheaply, as most people are glad to get them

out of the way. With these he fills his contracts and makes a good living from it.

PLAN No. 340. SELLING POPPED WILD RICE

Selling popped corn is an old story, but selling popped wild rice is decidedly new. A man in San Francisco has done this for some time, and made good money out of it. Wild rice is a complete food in itself, is used largely by Northwestern Indians, and costs about 20 cents a pound, in 100-pound lots, while it retails readily at 60 to 75 cents a pound, as it is put in smaller packages than popcorn. When popped, it swells and breaks open, and is very brittle and delicious. He also sells the whole rice at a very good profit.

PLAN No. 341. RENEWING TYPEWRITER RIBBONS

A Chicago man paid $6.50 for a machine for making, renewing and re-inking typewriter ribbons, and built up a good, paying business in a very few months. With this machine new ribbons can be made for about one-fourth the present prices, and it renews worn ones at a cost of one cent each. It is very simple and easily operated.

He had 1,000 cards printed, saying: “Don’t throw away your worn typewriter ribbons. I will pay you 2 cents each for them.” These cards he distributed in business offices, and soon had so many calls that he was obliged to hire a man to collect the old ribbons for him.

Most of the ribbons were as good as new, needing

only to be re-inked, and when he had done this he sold them at 25 cents each, as the demand exceeded the supply.

He also advertised to re-ink ribbons for 25 cents each, and got enough of these to keep him busy his extra time. He soon discovered that he had a business of his own that paid him better than any salaried position he could hope to obtain.

PLAN No. 342. RAN A PADDLE-WHEEL

Two boys at a popular eastern resort made a living by operating a paddle-wheel—one of the simplest yet most profitable enterprises one could find.

The wheel was a small wooden affair, something like the wheel of an old-style baby carriage, and in the front side of the rim were driven twelve wire nails, an equal distance apart, which stuck out about an inch and a half, and the spaces between the nails were numbered from one to twelve, with about 1-inch figures (clipped from a calendar, pasted on cardboard and tacked on the wheel). The hub of the wheel was set on a round peg fastened in a wooden pole about two inches thick and about seven feet high; the bottom of the pole being propped in a foot-stand like those that are used to hold up Christmas trees, and the rim of the wheel was brought up to within about two inches of the top of the pole. To the top of the pole was fastened an extension finger that came out about two inches beyond the front of the wheel, and to this finger was fastened a strip of thick leather about three and a half inches long. This strip of leather was set so as to drop into the space between two of the nails, so that when the wheel was spun around the leather was struck by each nail

every time the wheel went round.

Twelve paddles were used in connection with the wheel. These paddles were merely flat pieces of wood in the shape of a broom with a small handle, or, to be more exact, shaped like the back of a hair brush and of about the same size. The paddles were numbered from one to twelve, to correspond with the numbers on the wheel.

Chewing gum was sold at 5 cents a package, and a half pound of chocolates was given away each time the wheel was twirled, each purchaser of the gum being given a paddle to hold, with a number, and when twelve sales were made, the wheel was spun around. Whoever held the paddle with the number corresponding to that of the space between the nails designated by the leather finger, when the wheel stopped, got the chocolates.

Sales were many and the profits large—the cost of the gum and candy being 27 cents, while the receipts from every turn of the wheel were 60 cents, a profit of 33 cents. And that wheel turned several hundred times a day.

PLAN No. 343. MONEY IN POTATO CHIPS

An Illinois woman who wanted to help out in meeting the insurance premium on her husband's life policy, realized a good profit from making and selling potato chips, which in nine weeks netted her $80, besides selling $100 worth of home-baked doughnuts at a good profit.

Make the chips slice very thin, with a slicer. Have ready a pot or two of real boiling hot grease. After the slices have soaked about two hours in real cold water, fill a wire basket full of sliced potato and let

drain a short time and put them into the hot grease. You can purchase a wire basket for this purpose for a very small sum.

One peck of potatoes with sufficient grease usually makes about six gallons of chips. She sells a measure, one-half gallon scant, for 25 cents. This was easily handled in her home and it was possible to make a good living and not neglect the family.

PLAN No. 344. BLIND MAN MAKES MONEY

A blind soldier, at a soldiers' home in Illinois, earns money by making fancy articles and ornaments of different colored beads. The number of notches on each box designated the color of the beads therein, and he very seldom makes a mistake. These ornaments are very pretty, and visitors, as well as people in the town, buy many of them at good prices. That poor old blind soldier is not complaining of hard times, no matter how many younger people with good eyesight complain.

PLAN No. 345. ASSAYER-ASSISTANT. SEE PLAN No. 217

PLAN No. 346. SUPPLYING HOUSE NUMBERS

Making and placing house numbers is the kind of work a Washington man follows with profit.

His method is to first determine on the height of the figure—3 inches high being about right. Then cut a set of plain block figure stencils, from 0 to 9, and mark the outline of the figure on a plate of zinc of

suitable size. Then trace the figure with white enamel and, when dry, scrape off any enamel that overlaps the outline of the figures. The background is then painted with bicycle enamel. When dry, punch a small hole in each of the four corners and put up with round-headed nails.

The prices charged for the numbers put up, is usually 25 cents for a 3-figure number, 20 cents for a 2-figure number and 15 cents for a 1-figure number.

The making of the stencils is about the only difficulty connected with the work, for after they are made the printing of the figures is purely mechanical.

PLAN No. 347. POST CARD SERIES

A New York lady who had accompanied her husband on his vacation in the mountains became, by accident, the originator of a pleasing and profitable idea. She had promised several friends to write them often concerning the many experiences of the trip, but found her time so taken up that all she could find time to write was a few post cards. Even then, she was interrupted while writing the first one by her husband calling her to hurry up, as they were to go to a certain lake at a certain hour, so she added to what she had already written the words, “To be continued,” and mailed the card. The next day she wrote another, with the same ending, and before long had made of them a regular series, which delighted her friends, while they anxiously waited for the next installment.

When she returned and they showed her the cards, all fastened together in book form, making a complete story of the series, she decided upon a plan:

Selecting a good, short love story from a popular magazine, she first obtained the consent of the publishers to use it as she wished; then she divided it into ten chapters, and had each chapter illustrated with an appropriate cut, printed on a post card, and fastening them all together, took them to the stores making a specialty of post cards, and offered them for sale. She received many orders for the series, and they sold well, so that she made an excellent profit on them, while engaging in a delightfully agreeable work.

PLAN No. 348. GETTING MAGAZINE SUBSCRIPTIONS BY MAIL

An eastern lady of considerable literary talent and business ability, who could not canvass figured out the following plan:

Securing the agency for several of the most popular magazines, she made a list of her friends, and at odd hours she wrote them, mentioning the fact that she was agent for certain magazines, and calling particular attention to some special feature in which she knew each lady to be interested. She concluded by assuring them that she should regard it as a personal favor if they would subscribe; and, to make sure of a reply, she enclosed a stamped, self-addressed envelope in each letter. The number of those who sent their subscriptions in answer to these personal letters was surprisingly large, and in acknowledging the receipt of remittances she would ask if they would not favor her with the names of some of their friends. This they did in most cases, and by writing these friends' friends, and referring to the former, by permission, as having already

subscribed, she built up a list of regular patrons that paid her very well.

PLAN No. 349. MAKING RUBBER STAMPS

That there is good money in the making of rubber stamps, is proven by the experience of a 20-year-old youngster who started in business for himself in a western town of 8,000 inhabitants.

He bought a complete outfit, consisting of a vulcanizer, screw-press, assorted type, etc., for $25, and as he had learned to set type in the office of the local weekly paper, the business was easily learned. Here is the way he started:

Set up the desired name and address in common type, oil the type and place a paper guard about half an inch high around the form; now mix plaster of paris to the proper consistency, pour on the type and allow it to set. Have your vulcanized rubber all ready prepared in long strips the proper width, and about $^1/_8$ of an inch thick, and cut off the size of the intended stamp. Remove the plaster cast from the type, and place both the cast and the rubber in a screw-press; apply sufficient heat to thoroughly soften the rubber, then turn down the screw hard and let it remain until the rubber receives the exact impression of the cast and becomes cold, when it is removed, neatly trimmed with a sharp knife, and cemented to the handle ready for use.

The inks to be used with rubber stamps, he made as follows:

Aniline blue, water sol., 1 B. 3 parts; distilled water, 10 parts; pyroligneous acid, 10 parts; alcohol, 10 parts; glycerine, 70 parts. The blue should be well rubbed with the water, and the glycerine gradually

added; when the blue is dissolved, the other ingredients are added. This makes a fine blue ink. Other colors may be produced by substituting for the blue any one of the following: Methyl violet, 3 B. 3 parts. Nigrosin W (for blue black), 4 parts. Vesuvius B (for brown), 5 parts. To make a superior red ink, dissolve 1/4 oz. of carmine in 2 ozs. of strong water of ammonia, and add 1 dram of glycerine and 3/4 oz. of dextrin.

He not only supplied rubber stamps to his home town but a little ad. in the local paper brought orders from other towns, and he soon had all the business he could handle.

PLAN No. 350. PICTURE FRAMING

In a small Illinois town, where there was no competition from the big city concerns that claim to do this work for practically nothing, an elderly gentleman who had formerly been employed by a big picture-framing house in Chicago built up a nice little business by framing pictures and doing his work reasonably.

He rented space in the rear of a news depot, and bought a well selected assortment of mouldings from his old firm at wholesale prices. He purchased a mitre box, saw, hammer, glue-pot and some small brads, in the use of which he was very skillful, and arranged with a dealer to have glass cut any desired size at a reasonable rate.

Having done a little quiet soliciting among the people of the town and surrounding country, aided by a modest but tasty display of mouldings and finished frames in the show window of the place, he secured a large number of orders. His work was

skillfully done and his charges were reasonable, which brought him a steady business.

It made him an excellent living, and he had no fears of losing his position, a fate which often falls to a man as soon as his hair begins to turn grey. He had a business of his own.

PLAN No. 351. SELLING POPCORN

While some people, who do not know any better, may smile at the man engaged in so small a business as selling popcorn and peanuts, the persons who do the selling know there is money in it if properly conducted.

A man in an eastern city spent his last few dollars in buying a two-wheeled cart, fitted with a glass case on top, bought a gasoline lamp, a popper and a few pounds of popcorn and started out to make a living.

His profits the first day were $2.25, but that was the smallest day's business he ever did, for his sales increased rapidly and in two years he was the owner of a large bakery, running several delivery wagons to supply his trade.

His success was partly due to his methods of preparing his popcorn for sale which was as follows:

Popcorn Balls. To 4 quarts of the popcorn, take $^1/_2$ cup of molasses and $^1/_4$ cup of sugar. Do not add water. Boil the syrup until it will harden in water (not brittle); then add $^1/_4$ teaspoon of soda to improve the color. Pour over the corn, mix well, and make into balls. Wet your hands in cold water when molding the balls, so the corn will not stick to them. To make the popcorn bricks, use the same process, but have molds made the size required, but without a bottom. Set the molds on a smooth surface and fill

with the prepared corn; then have a block the size of the inside of the mold, and about 1 inch thick; place on top of the corn in mold and hammer down until the top surface of the block is level with the edge of the mold, then lift up the mold, leaving the corn and block on the table. Remove the block from the corn, and your popcorn brick is ready to wrap in wax paper.

Sugared Corn in Bulk. Take 1 cup of best white sugar, three tablespoonfuls of water, and one teaspoonful of butter. Pour all into an iron kettle, and boil until ready to candy; then throw into the mass 3 quarts of freshly popped corn. Stir continually until the sugar is evenly distributed over the corn; then remove from the fire, and stir until it cools a little. You then have each kernel separate, and all nicely coated with sugar. It should be watched closely while on the fire to prevent scorching.

PLAN No. 352. DRESSING FOR CARRIAGE OR AUTOMOBILE TOPS

An automobile salesman in an eastern city experimented with various kinds of dressings for leather tops on carriages or automobiles, until he finally struck the right combination, and found such a demand for it that he resigned his position in order to manufacture it. Here are the ingredients used and their various proportions:

Orange shellac, 30 ounces; Venice turpentine, 1 ounce; castor oil, 1 ounce; gum sandrac, 1 ounce; nigrosin, 1 ounce; wood alcohol, 9 pints and 6 ounces. Mix all together and shake until dissolved. Directions for use: Carefully remove all dirt and dust from the leather with a damp cloth, after which

apply the dressing with a soft camel hair brush. This preserves the leather, renders it waterproof, prevents all cracking, and imparts a beautiful glossy finish, making old, faded leather look like new.

He put this up in pint tin cans with screw tops, and retailed it at $1.00 per can.

He also took orders for dressing carriages and automobiles, one can being enough to use on the top, side curtains and rain apron. This could all be done in half an hour, and he charged $2 to $3 for each job. Livery stables and auto garages bought a dozen or more cans at a time, as it is the best dressing on the market. It can also be used for rubber and cloth tops, and will last for years. Water and mud do not affect its luster.

PLAN No. 353. OPENED A NEWS DEPOT

On a capital of $25, a 19-year-old boy in a western town of 1,000 people opened a news depot in a small way, yet made it pay him a profit of $900 the first year, and it now pays several times that amount. An eastern news bureau supplies him, through its agency in the nearest city, with all the paper-bound books, magazines, weekly and monthly periodicals for which there is a demand, and takes back the copies unsold. He also added a small line of cigars and tobacco, secured the agency for a steam laundry in the city and has built up a very thriving little business of his own.

PLAN No. 354. ATTORNEY FOR INTERSTATE COMMERCE. SEE PLAN No. 217

PLAN No. 355. HE SOLD BUTTERMILK

A young farmer lad who wanted to live in the city, found a way in which that could be done, without any danger of his going hungry, or of being obliged to look for a job.

Knowing the value of buttermilk as a food and a drink, he decided to go into the business of selling it. There was a large creamery near the city in which he had chosen to cast his fortune and he visited the manager to learn the lowest price at which he could be supplied with fresh buttermilk every day in quantities of not less than 100 gallons, and was surprised at the low price quoted. He then visited a large number of restaurants, hotels, saloons, etc., and offered to deliver to them the quantity required by each every day, for 12 cents per gallon, which was three times what it cost him.

Having a few hundred dollars, he purchased a rig especially adapted to this purpose, and began his deliveries at once. He had attractive showcards printed, “Fresh Buttermilk Sold Here,” and put up one of these in a conspicuous place wherever he was making deliveries. He also had the hotel keepers mention buttermilk on their menus, which they were glad to do, as it cost only about half the price of sweet milk.

He had a publicity man prepare for him a number of articles dealing with the healthfulness of buttermilk, and thus created an increased demand for it by publishing one of these in the city papers once a week.

PLAN No. 356. NEWSPAPER OBTAINED BUSINESS

BY LONG DISTANCE PHONE

The owner of one of the leading papers in Cheyenne, Wyoming, during the oil boom found that the Denver papers were obtaining all the advertising while his paper, which was in the oil district, was not receiving any business.

He knew it would be difficult, if not impossible, to send a salesman to Denver and obtain this business. The matter was discussed pro and con in his office as to how this business could be obtained. He told his advertising man about a plan of getting business by day-letter—upon which this man proposed they secure this business by long distance telephone. This the owner thought impossible but decided to try it. All Denver papers running ads. were gone over carefully and his $35-a-week advertising man began work. The business of that paper increased $4,500 a month for over three months and the $35-a-week man became worth $150 a week. The plan provided a new and very direct method of reaching the man who had the giving of the business. The salesman in this way had the right of way. He got a quick decision. In talking to the prospective advertiser he stated his name and the newspaper he was representing, then complimented the advertiser on the excellent copy he was running in the Denver paper and suggested that this ad. should be run in the Cheyenne paper, stating his reason why it would be an advantage. He was tenacious and intelligent and got the business before he hung up the phone receiver. This plan brought more than $10,000 worth of business to the paper in four months. Many claim that it is impossible, but it has been successfully handled. It cost something like $300 a month for phone charge, but that expense was made up by adding to the cost of the advertising space. He did

not lose 5 per cent in his collections.

PLAN No. 357. CLUB PLAN FOR HOUSEHOLD GOODS

A man who had been in several suit clubs, where each member pays in $1 a week for a certain number of weeks, and a suit is drawn every week, thus getting it for whatever he had paid in, be it $1, $10, or $40, wondered why the same plan wouldn't work just as well with sewing machines, stoves, ranges, carpets, rugs, etc., as with suits. After thinking it over he concluded it would. Then he started to work out a plan.

Having about $500 of his own, he rented a small store on a side street, fitted it up with a desk, and a few chairs, and then going to a wholesale furnishing house, he bought one of each of the articles above mentioned, the retail price of which was $50. He paid $100 down, and the balance he agreed to pay in installments of $50 per month. His discount on the articles was 25%. These he had taken to his store room and displayed to the best possible advantage.

Then he proceeded to secure 100 members of the club, each to pay $1 per week for 52 weeks, one member to drop out each week. These payments met the installments on the goods as they became due, and left a comfortable balance besides, which was duly deposited in a bank. Each month one member was awarded his or her choice of the articles bought, and another was bought to replace it on the floor of the club room.

Many states now have statutes against drawing of any kind so the statutes of your state should be first considered.

PLAN No. 358. STREET CAR TIME CARD ON CLOCK

A wide-awake advertising man in the Middle West worked out a plan that was good, inasmuch as it gave accurate information every hour of the day or night as to the exact leaving time of all the street cars. He obtained a dozen good sized clocks, set up in different parts of the city, and the Clock Co. kept them in perfect time for 50 cents per week each.

A large board, neatly painted, and lettered, was made the background of the clock, and on this was shown the exact time at which all street cars left that corner, while generous spaces were left on the board for advertising purposes. As everybody looked at that clock several times per day, it was regarded as good advertising and the merchants in each locality purchased the available space.

PLAN No. 359. MAKING HAIR CHAINS

A lady in Illinois, has for years earned considerable money by making chains from human hair, and selling them to both men and women. Chains for men are from 9 to 10 inches long, and sell for $1 to $5 each. Those for women are about 22 inches in length and the charge for making these ranges from $3 to $10 each.

She has been at this work so long that she has developed great speed in making the chains, and she has no difficulty in finding a market for her products. She has a comfortable and steady income from her work.

PLAN No. 360. NEWSPAPER MAN OBTAINED BUSINESS WHEN SICK

He was the owner of a daily paper in a town, which had secured a stock convention. This convention was to take place in a week and here he was sick in bed and unable to secure business from his advertisers.

Thinking the situation over one day the idea came to him, why not prepare their advertisements from the copy they had previously used and then send a day letter and make a bid for their business.

This idea he acted on at once. He fortunately found a copy of a paper carrying advertisements for the desired companies—where the convention met the year before.

His day letter ran something like this: "Stock convention to open here on ---- (date). A large attendance certain. Your copy amounting to $^1/_2$ page run in ---------- paper is before me and suggest this be run in my Sunday, Monday and Tuesday editions of ----. Cost for 3 times $^1/_2$ page $------. Wire answer at my expense."

Out of 15 day letters sent he received answers from 12 to run ads. as suggested.

He immediately put out the day letters to the remaining prospective advertisers with the result he obtained better than $1,200 worth of business. Some did not answer so he forwarded another wire for immediate reply at his expense.

This is an illustration that a proper plan is effective under adverse conditions.

PLAN No. 361. EYE SPECIALIST

Perhaps one of the neatest and best conducted

businesses I ever visited was run by an eye specialist in a city of the Northwest. I have known personally many specialists but few could compare with this man. No matter how full the office was one received prompt attention when he entered.

As soon as I entered his office I was met by a good, wholesome looking girl, card in hand, asking my name, address, phone and business; stated the doctor was very busy but that she would make a preliminary inquiry, on which I said my eye was affected and gave her a brief statement as to what I thought was the cause of it and a few of its symptoms. She asked me to be seated, saying she would prepare me for the doctor's examination which I had called to get, and that it would take about an hour and thirty minutes for the atropin to take effect, at which time the doctor would promptly make the examination, and thereupon she put the atropin in my eye. This girl was a real saleswoman—no one escaped her.

After I was located the doctor appeared in person with the card, shook my hand and made me welcome, and showed real sympathy for my condition. After my hour and a half had passed I was ushered into a neat little dark-room, and finally taken to a third room where the doctor made a very careful examination. He told me briefly the trouble, asked me a few questions and listened attentively to my statement and later informed me what my trouble was. He accompanied me to the desk, handed the card with my name on it to the girl, again showing real concern for my unfortunate condition, dictated to the girl a good statement of my trouble and had her make a record of it, not omitting to give her all the medical phraseology. He requested the name of my doctor and dictated a letter to him.

When I left that doctor's office I was impressed with the thoroughness of his service, and the prompt and business-like method in which he carried it out gave me confidence in him.

If other specialists would handle their business on as efficient and business-like a basis as he did they would have very few bills that would be lost.

The above plan, I can safely say, would double the business of the average eye specialist; no one who entered the office would leave it without receiving service and would be satisfied with it. Through the card plan the doctor knows who you are, the business in which you are engaged, and your general trouble, before meeting you.

PLAN No. 362. OUTSIDE HOUSE-CLEANING

Everybody, of course, is more or less familiar with the ordinary kind of house-cleaning, but it remained for an enterprising young fellow in Nevada, to introduce an entirely new style of the industry. His work was the cleaning, not of the inside but of the outside of houses. There is plenty of it left for other men to do, in thousands of towns in this country.



Plan No. 362. Diligence is the Moth

In his town many of the houses are frame, and he had noticed many of the more pretentious ones showed coatings of soot and dirt that marred their beauty. Arming himself with a bucket of hot soapy water containing some laundry soap and washing powder, a ladder, a soft scrubbing brush and a sponge, he went to one of the houses, owned by a man he knew, and asked permission to try an experiment on a small section of the siding at the rear of the house. It was granted and he proceeded to

scrub it well with the soapy solution, until the dirt was well removed and then he washed it with a sponge dipped in clear, cold water.

Calling the owner of the house, that gentleman was so amazed at the improved appearance of the cleaned spot that he asked our friend if he hadn't given it a new coat of paint. Being answered in the negative, the house owner asked what he would charge to go over the entire exterior and treat it in the same manner. He named a sum that would amount to about $10 a day and was at once engaged to perform the work. The result was so surprising that a dozen other property owners in the same neighborhood gave him orders. His earnings from this method of house cleaning averaged $50 a week. If the paint is in good condition, washing is as good as re-painting, and much cheaper.

PLAN No. 363. ADVERTISING ON FLY PAPER

Most advertising men think they have brought out all possible forms of publicity, but one of them in San Francisco thought of an entirely new idea, and worked it to perfection. His plan was to make and distribute fly paper free, containing advertisements which were also printed upon it free of charge. You can't see how he could make anything out of that? Well, he saw a way.

He cut thin manilla paper into sheets 10x16 inches, upon which he had printed six ads., each 4x4 inches, and covered these over with a sticky preparation made by melting two pounds of white rosin in a pot and stirring in a gallon of boiled linseed oil until it is of the proper sticky consistency. This he applied with a wide, stiff brush, leaving a

margin of one inch all around the edge for handling. The ads. showed plainly through this.

In order to secure the necessary ads. he agreed to print them on 100,000 sheets of the fly paper free, and to distribute the fly paper to all the residences in the city, also free, but to charge each advertiser the regular price of distributing circulars, $3 per 1,000, so that for each 1,000 sheets distributed, the six advertisers paid him $18, and for every 100,000 sheets he collected $1,800 for distribution. The printing was but a small item, and the cost of hiring boys to do the distributing was not very heavy, so he received over $1,400 net profit for a few weeks' work. He presented an affidavit that the sheets had all been distributed before presenting his bill to the advertisers, so he had no difficulty in collecting the money due under the contracts.

PLAN No. 364. THE APPLES AND THE PARCEL POST

A woman who lived in a section where there were but few good orchards, one of which was on the farm she and her husband owned, several miles from a city, made money from carefully selected apples, three dozen in a box, which she sent to the city by parcel post, and sold for 50 cents a box.

The apples, of a choice variety, were so plentiful in this particular orchard, that many of them would have gone to waste but for her foresight in advertising them to be delivered at that rate by parcel post, and orders came so fast it kept her busy filling them. The apples were good, and reached her city patrons in such excellent condition that repeat orders were a common occurrence and during the

late summer and fall she realized a profit of several hundred dollars through utilizing a product that in many cases would have been just so much waste. Her motto was: “Give a good article, and get a good price for it.”

PLAN No. 365. FROM CHINA PAINTING TO SAUSAGE MAKING

Making sausage—even the very best of sausage—may not seem quite so romantic and “genteel” as china painting, but a very sensible and talented woman, who had tried both, concluded to stick to the sausage making, mainly for the greater revenues it produced.

To begin with, she had always been noted for the extra fine quality of her home-made sausage, so she was not obliged to learn the business. She informed her friends and neighbors that she was prepared to fill all orders, and the orders came quickly and permanently. Then she placed a small ad. in the local paper, which brought still more orders, and in a short time she had all she could possibly do to fill them. The children helped her in grinding and in delivering the sausage to her customers, and as she used only the best meats, and utilized every particle of the material, there was no waste, but a large and ever-increasing profit.

PLAN No. 366. WHAT A TEACHER DID “ON THE SIDE”

A teacher in Iowa improved her vacation by stenciling various designs, such as coats of arms,

family crests, etc., on sofa pillows and various other articles of household and personal adornment. This occupation, while very fascinating, was so novel as to attract wide attention and create an unusual demand for that class of work, and the teacher who introduced it into society circles in her home town was soon in receipt of many orders. She later gave up her school work, to take up stenciling, as it paid her much better than teaching.

PLAN No. 367. MADE MONEY IN SALTED PEANUTS

Preparing salted peanuts is an art, yet one that is easily learned, and yields large profits. A young man in a western city of 12,000 to 15,000 inhabitants learned how to do it, and made it a profitable business on a small capital.

The new method he employed was as follows:

Take a suitable amount of the shelled peanuts and boil in oil until well done, after which remove them from the oil and spread thinly over a tin-covered table; then sprinkle the desired quantity of fine salt over them immediately. Let them dry and put up in neat packages.

Peanut oil, beef suet, or unsalted butter may be used. A substance known as “Konut,” which may be had of the leading grocers, is in many respects more satisfactory than any of the oils mentioned.

Use an iron kettle, and place the nuts in a basket made of iron wire netting, so they may be easily lifted from the oil when cooked. Never, under any circumstances, use brass, copper, or zinc for either the kettle or the basket. The nuts should be stirred frequently, while cooking, with a wooden paddle.

The best shelled peanuts cost 4 to 5 cents a pound in small quantities, and this process of salting costs about one cent a pound, so that 5 or 6 cents a pound is the total cost. They easily bring 10 to 12 cents a pound or more so that the young man made at least 100 per cent profit. As peanut money is "turned over" very quickly, and doubled each time, he soon realized he had a very profitable undertaking—a good money-maker.

PLAN No. 368. SELLING POWDER WITH A PREMIUM

To offer a premium as a means of inducing people to buy even an inferior article sometimes succeeds, but here is the case of a Denver man who not only offered an article of superior merit, but also gave a useful premium with each sale, and it won him a patronage that was permanent and profitable.

The article he had for sale was a lustre powder for cleaning any kind of metal, paint or woodwork, and, although it consisted only of pure common whiting, with a little oil of lavender to perfume it, it produced excellent results as a cleaner, when used with a piece of clean flannel dipped in warm water, squeezed nearly dry, and then dipped into the powder, and briskly rubbed.

To induce sales, he put on a card three enameled knobs of various sizes, for coffee pots, teapots, teakettles, pot covers, stewpans, drawer or door pulls, which he bought for 60 cents per gross, and offered the three for a premium with each 10-cent package of the powder sold.

The sales under this system were excellent, and when he figured that the powder, printing, boxes,

knobs, and all complete, cost him less than $2^1/_2$ cents, and he sold them for 10 cents thus getting back $4 for $1, he was well satisfied, as he knew it would not only produce him a livelihood but a saving as well.

PLAN No. 369. LAWYER WHO ATTENDS TO BUSINESS

The average lawyer admittedly is a poor business man, because of his neglect to study the ordinary methods of business.

When he takes your case he often proceeds to handle many details you know nothing about which takes up his time and often much skill on his part. All these steps, as a matter of fact, should be known to you so that you may give him credit for his time and energy he has put in on your behalf. His failure to call such matter to your attention means if he charges you for the time he actually spent you think you have been overcharged and he loses you as a client. For example, after the lawyer appears for you a motion is made by the lawyer on the other side; this means he must appear at least once before the court and argue the matter which might take one-half to a whole day. Then a demurrer is filed which will take as much more time, and finally the case is set down for trial. As a rule you will see him only a few times before the trial and naturally think that he has put in but little work.

The lawyer I have in mind handled his work on a business basis. As soon as a case was placed in his hands he would immediately inform his client of every step, and the nature of it, taken in the case. If a motion was filed, he immediately on receipt of it

dictated a letter to his client telling him of the motion and the nature of it. When he attended court to have the motion set down he informed his client of it. When the court heard the motion he wrote his client when it would come up and that it was not necessary for him to be present. If he was successful he immediately informed his client of that. In this way he kept his clients constantly informed of every detail. His stenographer was busy and he could charge a much larger fee for his service and his client felt everything possible had been done for his case. In the event that it was necessary to show the court the amount of service rendered by him, he could produce the correspondence which showed the amount of work and the time expended by him.

Ninety per cent of the lawyers could double their incomes by giving attention to the details of their business as herein suggested.

PLAN No. 370. WASHINGTON MAN GOES THROUGH EASTERN UNIVERSITY

He knew he must have the same opportunity to make good as other men and he also knew if he was to be a lawyer he must study law. He worked for one year but did not obtain one cent for his labor and during the summer of that year he decided to enter an eastern university. He felt somehow that he must go, and he decided that, money or no money, he would. For $15 he had a tailor friend of his fix up two old suits and a light top-coat of his brother's, and with these clothes which would last him for a year he felt that he had accomplished something. A friend of his who was going to enter the university at that time wanted him to go also and offered to lend

him $100. He had $70 saved, so he accepted his friend's offer and made the attempt.

After arriving at the university, with entrance fee and books paid for, he had very little money but by doing some extra work he managed to get through the first year.

But how about the second year—what could he do now? Another friend pointed out how the summer before he had sold a book and had cleared about $300 in this way. There was hope, for if his friend could do it, why couldn't he? His friend borrowed $25 and divided with him, and down into the country, armed with a prospectus they started in. That summer he cleared more than $400. He went to the World's Fair, and found himself back in his class at college financed for another year. After that he had no worry about defraying expenses at the University. If he was short about Christmas vacation time he went out and made a vigorous sales campaign and came back with the money.

This man was nothing out of the ordinary; as a matter of fact he was only a medium salesman, but he must have his education and he did not hesitate to sacrifice a little of his energy.

Any man who thinks he can and will back up this desire by real work can do as well, if not better.

PLAN No. 371. THE WAY A BOY FROM INDIANA WENT THROUGH THE UNIVERSITY OF MICHIGAN

He was full of energy and not afraid to use it. He had no money, but he felt it was necessary for him to take an engineering course. How could this be done without money?

He was half convinced that there was a way, and one day there were two men from the University of Michigan selling books in his home town. He became acquainted with them and found that they had no money and were spending their vacation in his town raising money to complete their courses. It was too late for him to go to work with them that season, so he asked their advice. He was told there was no record of a young man starving to death at Ann Arbor while working his way through but that there were many thousands from all parts of the United States who had worked their way through. They told him to go up to Ann Arbor about two weeks before the college opened and get a job waiting on table. This would take care of his board, and it was not considered a disgrace to wait on table at the university. At the same time they advised him to call at some houses and get a room where he could arrange to do odd jobs for the landlady in payment. This advice he followed, obtained the jobs, entered the Engineering Department, and got into the band, as he played a horn, which gave him admittance to all games and affairs of the university. He finished his first year O. K., and the next summer he sold books and saved more than $300 for his next year's schooling. Each summer he sold—sold—sold, and put out other agents, who sold for him until he had completed his college course with credit to himself and no debts and a cash reserve.



Plan No. 371. A Word to the Wis

Any young man can to-day do as well as he did a few years ago. Don't let anyone tell you the high cost of living makes it impossible.

PLAN No. 372. A STUDENT'S WAY THROUGH COLLEGE

He was a quiet going young fellow and always had a smile but had very little to say—as a matter of fact he had no gift as a talker. I remember he had a very

pretty girl at school and she had one wish and that was, for Charlie to talk more. But when it came to class work, Charlie always hit the "bull's eye." He knew bluff and enthusiasm did not count there but the right answer went a long way.

Charlie was without funds and could not sell, so his case seemed hopeless, but he found work which just suited him and there were few who could do it so well as he.

Professors at college and universities are always writing books, so Charlie, who could brief cases and write on law subjects almost as well as the professors, worked for a couple of these professors and made his home with them. His board was unsurpassed at the college and his home accommodations far excelled those of the best student's, and he had their intimate companionship, which meant a great deal to him at college as well as to his subsequent career.

Students with qualifications such as his will find their college expenses an easy matter.

PLAN No. 373. HE WENT THROUGH THE LAW COLLEGE AT WASHINGTON, D. C.

His father was always active in politics and raised his son on the plan to depend on himself. When his son finished high school, the question was, how to finance his college course. He wanted to be a lawyer and he desired as broad a training as possible. His father's answer to his inquiry about the college expense was, "I know my son has ability sufficient to finance himself through college."

The father was right but, nevertheless, he helped the boy to an appointment in one of the departments

at Washington, D. C., where he served during his entire course.

The young man had plenty of funds during his entire course and had a wonderful opportunity to study our national government and its workings at first hand, which opportunity comes to but few men in a life time.

There are many postmasters or men in our government service who would be pleased to help you get a position in some government department at Washington when they know that by such assistance they are helping a young man to realize a high ambition.

PLAN No. 374. FARMER IN A MINING DISTRICT

He was a good natured bachelor of good habits who felt he might as well live in the country with plenty as to work hard to live in the city and submit to the inconvenience of having ordinary food and poor neighbors.

So in 1907 he went to Grand Forks, B. C., and there took up a homestead on the Washington side, which cost but a few dollars.

This was a simple thing to do, as many men do the same in the northwest, but he immediately cultivated thirty-two acres, built a log house and out buildings. Then he made an investment of $675 in fourteen cows, one bull, twenty calves, twelve heifers and eight steers.

He had plenty of spare time so he worked in the mines near his homestead and in this way earned more than $1,800 a year.

Here is what he accomplished in four years—1907 to 1911:

The sale of his stock amounted to more than $5,000. He earned in the mines more than $1,800 a year. His farm sold for $3,000, which did not cost him over $200. He raised enough to feed himself, which means the money he earned was clear profit.

Figure out for yourself what he made, and anyway you figure it he made a big success.

PLAN No. 375. AN INK THAT STANDS ALL TESTS

An eastern state recently adopted the following formula for its official black ink, after learning through the severest tests that it stands exposure to the sun for three months; exposure to all sorts of out door weather for six months; exposure to water, and soaking in water and alcohol.

A man who knew what the formula was, desiring to make a business of selling an ink so reliable, made it up in large quantities, and found it to be just as good as claimed.

This is the formula:

Tannic acid, $^1/_2$ ounce; crystal gallic acid, 77 grains; sulphate of iron, 5 drams; gum arabic, 100 grains; dilute muriatic acid, $^1/_2$ ounce; carbolic acid, 10 grains; clear rain water enough to make $1^1/_4$ pints. Mix the muriatic acid and water, and dissolve all the other ingredients in the mixture.

He sold large quantities of this ink to professional and business men, city, county and state officials, etc., and inside of a year was in receipt of a steady income.

PLAN No. 376. BAKER—INDIAN SERVICE U. S.

SEE PLAN No. 217

PLAN No. 377. A CEMENT STICK THAT STICKS

A Virginia man found that by investing 85 cents in the materials required for making cement sticks he could get back $25, when sold at retail. This is the way he makes it.

Common glue, and from 1/4 to 1/2 as much cheap sugar; melt them together in a glue pot, then pour in pans 1/4 an inch deep. As it cools cut in strips 1 inch wide and 4 inches long, pointing one end in the shape of a chisel. Have a label printed to cover about one-half the stick, giving the name and uses of the stick, with directions as follows: "To use as a mucilage, wet slightly and apply. To use as cement, dip in boiling water, coat the parts heavily and press firmly together."

Making up a good supply of these sticks, he placed them on sale with dealers, delivering as sales were made. He then employed agents to canvass from house to house, and sold a great many in that way. Later he made it a mail-order proposition, and through a series of ads. in local papers published within a radius of 500 miles, he built up a good sale.

PLAN No. 378. ICELESS REFRIGERATOR

Especially during the hot summer months does the refrigerator become an imperative necessity, yet there are thousands of homes to which the prices of the ordinary kinds are beyond their means, and thousands more, especially in the country, where ice is unobtainable.

A man living in a western city, who had learned the secret as well as the value of the water bag, while traveling across the desert, applied his knowledge of evaporation to the construction of an

iceless refrigerator in his own home, with such good results that he began manufacturing them and found a ready sale for all he could make. And the making was a very simple and inexpensive matter.

Procuring some mill ends, or short pieces of boards, 1 inch thick and 3 inches wide, he made a frame 3 feet high, 18 inches deep and 15 inches wide, letting the long, upright pieces extend about 3 inches below the lower part, to form legs for it to stand upon.

Next he covered the frame with a strip of wire screen, and upon the wire he placed a piece of outing flannel to fit well over it, tacking it at the corners to hold it in place, but letting the cloth extend several inches above the top of the frame, and cutting it at the upper corners so that it would fold over on the top and lie in a pan or jar which was to be placed there and kept constantly supplied with water.

Inside the frame he nailed cleats to hold shelves made of strips or lath, strong enough to bear the weight of milk bottles, butter dishes, meats, etc. The door he made of a frame covered with the wire screen, using light hinges and a catch to hold it in place, and letting part of the outing flannel form the covering for the door.

The refrigerator was then complete, except the placing of a large pan or jar on top of it filled with water. The top parts of the outing-flannel cover which had been laid in the pan, quickly absorbed the water which was carried down all sides, and it was the evaporation which then took place that kept the contents of the refrigerator as cool and fresh as though they were in one of the high-priced ice refrigerators.

The entire cost of the material for making one of these refrigerators at the beginning did not exceed

75 cents, but later, when he bought in regular quantities, the cost was very materially lessened, and they sold as fast as he could make them for $3 each. He could easily make seven or eight a day, and at a profit of $2.25 each he did very well.

A few ads. in the papers circulating through the country, as well as the smaller towns, were all he needed to create a demand, for when farmers found they could buy a refrigerator at that price, which would do the work without a pound of ice, they sent in their orders by the scores. Besides, hundreds of city people bought them as well, because they saved ice bills, and kept foods in good condition.

PLAN No. 379. RAISING BELGIAN HARES

Few people realize the profits to be derived from raising Belgian hares, when the small amount of capital and labor involved is considered.

But a 16 year-old boy in the northwestern part of the state of Washington had a very good idea as to what could be made in this small industry, and he went to work in a systematic way that his seniors might well imitate.

Starting with one male and three does, he was surprised to learn that under ordinary circumstances a doe will produce six litters in a year, with an average of six young in each litter, and that usually one-half of them are does, or eighteen does a year from one animal. It was still more surprising when he found that the three does of the first litter had three litters the first year, while two litters may be expected from the second litter. At this rate, there were sixty-three does at the end of the first year, as well as sixty-three bucks all from one hare; and

multiplying this by the three does he started with, it gave him a total of 878 hares from the four he began with.

His 189 bucks averaged eight pounds of meat each, or 1,512 pounds, which he sold at 10 cents per pound, or $151.20, and he still had the 189 young does, the three old ones and the original buck.

He had selected the Golden Bay strain in purchasing his original stock, as that is generally recognized as the best of all strains, and his judgment proved correct, for, no matter how many of these hares he raised, he had calls for more than he could supply.

PLAN No. 380. LIQUID GLASS—THREE IN ONE

Of course you've heard of liquid glass as an egg preservative; but did you ever know it has no equal as a paste for making labels stick to tin cans, or that it is the principal ingredient in the best glue on the market for mending china, crockery, glassware, etc.?

A bright young fellow, who had a small drug store in a western town, knew all these things, and also knew where liquid glass could be bought, in quantities, as low as 20 cents per gallon. He bought five barrels of it, just as a starter, for he had large plans.

The liquid glass solution for preserving eggs is made by mixing one gallon of it with nine gallons of cold water, placing the eggs in a barrel, bucket or stone jar, and completely covering them with the solution. Place a cover over the receptacle containing the eggs, and set it in a cool place. At the end of six months or a year the eggs are as fresh as when newly-laid, and at the rate of $1 a gallon for the

liquid glass the cost is about one-half cent per dozen eggs.

As eggs were plentiful in that locality, the young druggist bought 1,000 dozens, strictly fresh, direct from the neighboring ranchers, at 15 cents a dozen, and put them away in the liquid glass solution, so as to be able to supply the demand during the winter months, when they would go up to 60 cents a dozen. These he packed in barrels and set them in the basement of his store. Then in December he advertised in the city papers offering strictly fresh eggs, prepaid by parcel post, at the price named.

He received so many orders that he was obliged to employ a reliable boy to pack and ship the eggs to his city customers. Then he figured up the results. The 1,000 dozen eggs cost him $150; the liquid glass for preserving them cost him $1 for the five gallons; the wages of the boy who did the packing were $25; the parcel post charges were $10, a total of $186. He received $600 for the eggs, making his profits $414. That was a good start, and the next year he did four or five times that amount of business, increasing his profits proportionately. But by this time the farmers and poultry raisers of the community had learned of his success and began preserving large quantities of eggs themselves. In order to preserve them, however, they had to have liquid glass and gladly paid him a $1 a gallon for that which cost him but 20 cents a gallon.

There were several canneries in the city, to which the druggist shipped his eggs, and all of them were experiencing great difficulty in getting their labels to stick to the tin cans. The druggist promptly came to the rescue by offering them a paste fully guaranteed to stick, and readily sold considerable quantities of the liquid glass to them for $3 a gallon, being careful

not to tell them what it was.

A little later he procured 2,000 2-ounce bottles, adorned with fancy labels proclaiming the merits of a superior glue, guaranteed to mend broken articles, and this he sold at 25 cents a bottle, or several thousand per cent profit on this remarkable three-in-one commodity.

PLAN No. 381. SHARPENING RAZOR BLADES

It isn't every machine made for sharpening safety razor blades, or every person operating even a good machine, that can do this work as it should be done. In fact, most of the blade sharpening now being done is very poor, and only a few really know how to do it.

A Seattle woman, who had merely a little room between two buildings on a prominent street, not only knew exactly how to perform this delicate task, but also had procured one of the very best makes of machines for that purpose.

The regular charge for sharpening single-edge blades is usually 25 cents, and 35 cents for those with double edges, but she made arrangements with a number of cigar stores in different parts of the city to keep one of her showcards in the window, and take orders as they came in, on a commission of 7 cents per dozen on all blades so received. Through small ads. in the classified columns of the daily papers, asking people to mail their blades to her, she found, inside of three months, that she must remove to larger quarters and employ an assistant, in addition to the boy who made daily collections of dull blades, and deliveries of sharpened ones, at the various cigar stores.

This business, small as it may seem, brought in a net profit of $50 to $60 a week. It is often the case that the good profit is in the small articles.

PLAN No. 382. FUMIGATING HEN-HOUSE STRIPS

A chicken fancier in a small western town, who had used fumigating nest eggs to good purpose, was aware that the roost was fully as favorable to the propagation of chicken-lice as is the nest, and concluded that a fumigating strip along the top of each roost would destroy or rout the vermin from there also.

The composition of which these fumigating strips are made is much more lasting and effective than either liquid or powder preparations, and therefore less expensive. The formula is as follows:

Naphthalin or tar camphor, 1 pound; standard oil of tar, $^1/_2$ pint; fine pine sawdust, 3 pounds; plaster of paris, 14 pounds. Mix the first three well together, then put in the plaster. Take about 2 pounds of the mixture at a time, add enough water to make it a stiff paste, and, working rapidly before it sets, roll or mold it into egg-size balls or pour into a mold several feet long to make the strips. Drive nails into the bottom of the mold about one foot apart, so as to leave nail holes in the strip and prevent it from breaking when nailed on. When well hardened nail the strips to the tops of the roosts and they can also be used in lining the nest boxes, the sides of the chicken house, etc.

Through a little advertising in country weeklies and farm and poultry journals he received many orders for both fumigating eggs and strips, the eggs selling for 10 cents each singly, or $1 per dozen, and

the strips at 10 cents per foot, or ten feet for 80 cents. They did the work of ridding the hen-houses of vermin. He found it paid him to make it a regular business during the spring months, for it was nearly all profit, and he averaged $100 a month net from this very simple but very effective plan.

PLAN No. 383. SELLING LIMES BY MAIL

Fully as delicious and healthful as lemons, if not more so, limes are not nearly so well known or in such general use as they should be. Dispensers of fancy drinks, however, know their value, and will pay good prices for them.

A Seattle man who knew considerably about the prices charged by wholesale and commission houses for limes, and the dilatory manner in which they filled small orders, wrote to a New York importer of limes asking their lowest quotation on limes in barrel lots, and was surprised to learn that they could be bought for 80 cents per hundred, prepaid, whereas the wholesale houses charged $1.25 per 100, and the buyer paid transportation charges.

He bought fifteen barrels of the limes at that price, and then wrote to several soft-drink dispensers whose names he had obtained, offering them fresh limes at $1.25 per hundred, prepaid, and agreed to fill the order the day it was received. A large number of orders came as a result of this letter, as the saving of transportation costs was quite an item, and he filled the orders so promptly and satisfactorily that he soon had 200 regular customers. His net profits amounted to 25 cents per hundred, after buying his limes, packing, and prepaying parcel-post charges to his patrons.

Although he still retains his position with a railroad company, and draws a good salary, this little side plan of selling limes by parcel post is netting him a good weekly income.

PLAN No. 384. TRAINING SCHOOL FOR OFFICE BOYS

Not that office boys are scarce, by any means. It is only the good ones who are scarce, and it was for the purpose of making all office boys good ones, that a former professor in a prominent Chicago business college took up the idea of an office boys' training school.

A year or two ago he interviewed a number of leading business men in Chicago on the subject, and found them enthusiastic in their support of the plan, as they had suffered many inconveniences through the tendency of office boys in general to quit just about the time they were broken in to their special duties. The Y. M. C. A. also appreciated the seriousness of the situation, and hailed the proposition as the only remedy.

He asked the business men to outline the requirements of the position, the special qualifications necessary, the routine of their work, and the means through which the interest of the boy could best be obtained.

Through newspaper advertising, the distribution of circulars and the employment of canvassers to call upon and interest the parents of the boys, he soon had a sufficient number of enrollments to open the school, where each was trained in the special line of work to which he was best adapted. Boys were selected for real estate offices, law offices, brokers'

offices, and all other lines where their services were required, and shorthand, typewriting and book-keeping courses were given to those who desired them in order to win promotion to better positions.

The average tuition required in each case was from $10 to $25, with more for special cases, and this was paid partly by the boys themselves and partly by the business men who were either sending their own office boys to the school, or making selections from the graduates.

Where a boy was already employed in an office, his employer would allow him to spend two or three hours each day in taking the training given at the school, and the progress most of the boys made under this course more than made up in efficiency for the loss of time and whatever expense it involved.

While one man looked after the classes, another was busy on the outside, interesting both business men and boys in the enterprise, and approximately 500 boys were thus taken care of by the school each month.

The school netted a good profit, besides giving a great number of boys a good start on the road to success.

PLAN No. 385. GAVE TALKING MACHINES AWAY

It isn't every one who believes he could make a very large sum on an investment of $100, but here is the story of a man in Los Angeles who thought he knew of a way in which it could be done.

From a New York firm, he purchased twenty small but good talking-machines, including disc records, for $2.50 each. He prepared a very fine silver polish,

put up in one-ounce envelopes, to be sold at 10 cents each. He next had printed a number of attractive showcards for windows, and several thousand merchandise coupons, good for 5 cents each in trade. He was then ready for business.

He called upon one of the most enterprising merchants in each school district in the city, and made the following offer:

To place one of the talking-machines in his window, with a showcard beside it announcing that the machine would be given free to the boy or girl selling the largest number of packages of the silver polish, 500 of the 10-cent packages to be left with the merchant for that purpose, together with 25 cents' worth of the coupons, and the contest to close when the last of the 500 packages were sold. To every boy or girl selling two of the packages, one of the 5-cent coupons would be given, and the merchant agreed to redeem these by taking them in trade at their face value.

The merchant was to collect the $50 from the boys and girls who sold the 500 packages of polish, award the talking-machine to the one selling the highest number, pay the promoter of the plan $25, and keep the balance which would be $17.50 net, after redeeming the 250 coupons, $7.50, upon which he also realized a profit equal to the difference between the wholesale cost and the retail price, and had received the benefit of a lot of free advertising, which brought him many new customers as a result.

PLAN No. 386. CIRCULATING MUSIC LIBRARY

We will call him John Smith—partly because that was not his name, but mainly because it is short and

easy to remember. John's father had been a piano tuner, and also sold phonographs, records and small musical accessories, but he didn't advertise, and his business fell off so that at his death there was nothing left except his little music store and the humble home—both of which, however, were paid for.

The son tried to revive the business through the mail-order route, but failed, and was trying to sell out, when an idea came to him through the remark of a casual acquaintance. The idea was: A circulating music library!

As practically every family in his town and the surrounding country owned a phonograph, and most of them were growing tired of the records they had used so long, they were all anxious to get hold of new ones, but most of them felt they could not stand the extra expense.

To these people John's plan to organize a circulating music library, with a membership fee of $1 a month, and supply the members with new records for their phonographs, as well as new sheet music for those who had pianos, came as an agreeable surprise, and it was almost no time until 500 members were secured. The twelve records or six music rolls, which each member received every month, aroused a new interest in that music-loving community, and John was entrusted with many extra commissions, which added considerably to his income. He paid the postage when sending out the new records or rolls, while the members prepaid the return charges, and as most of the members had old records of which they were tired, he took these in and sent them to other members to whom they were new, thus keeping them in constant use.

The monthly receipts from 500 members were

$500. The expenses, including the purchase of new records and rolls, were usually about $250, so that his net profits from the plan were $250 a month.

PLAN No. 387. "KNOCK-DOWN" PICTURE FRAMES

In every home in the land are many valuable pictures that are lying around loose, with excellent prospects of being soiled, torn or lost, simply because the owners of them to do not feel able to pay the high prices asked for frames already made, or made to order.

A Kansas City man, who thoroughly understood this condition, decided upon a plan by which thousands of these pictures could be enclosed in handsome and appropriate frames at comparatively little cost.

Being handy with tools, and having but little available capital, he bought a modest stock of picture-frame mouldings of various styles, sizes and grades, a mitre-box, a saw, a small mortiser, some tacks, etc. He also provided himself with stationery and an illustrated circular concerning picture frames, showing the difference in prices between frames already made and those ready to put together, besides cuts showing the different styles and prices of "knock-down" frames, and the manner of putting them together, particularly emphasizing the saving in cost by using those he advertised.

Through a local agency he placed ads. in a large number of newspapers circulating mainly in the country, and from these he received several hundred inquiries. In answer to these he sent his illustrated circular—which must have been a good one for it

brought orders by the score—and these he filled with such satisfaction that he was soon busy enough to hire a boy to make the frames, while he put up the orders. The complete outfit, packed neatly in a box, contained the four sides of the frame, the corners grooved so as to be put together with glue, four small tacks for the corners, two screw eyelets and three or four feet of picture wire; in fact, everything except the glass, which could be obtained at any crossroads store.

And the business grew until its profits were several thousand dollars a year.

PLAN No. 388. SANITARY HANDKERCHIEFS

An observing young woman who had noticed how often many people find themselves without a clean, dry handkerchief, under certain critical conditions, and how greatly they would appreciate an opportunity to secure one, evolved a plan by which they could be conveniently and economically supplied. This is how she did it!

Visiting a wholesale house, she learned that she could purchase a soft laundered handkerchief of fairly good quality, in lots of 1,000 or more, for 3 cents each. She also arranged for several thousand sanitary, transparent envelopes, at 20 cents per hundred, to be taken in lots of 1,000, as needed, and got 200 showcards on which was printed, “Sanitary Handkerchiefs, 10 cents.”

Placing one of the handkerchiefs in each envelope, she left them on sale at drug stores, cigar stores, newsdealers, restaurants, department stores, and elsewhere, to be sold on a commission of 2 cents each, and kept a list of the places where they had

been placed on sale.

All that remained for her to do was to visit the various places where she had left the handkerchiefs, make collections on sales, and replenish depleted stocks.

She derived a net profit of a little over 4 cents on each handkerchief sold, and as the sales averaged considerably over 200 a day, they brought her a good income the year round.

PLAN No. 389. A PARCEL-POST EXCHANGE

A young farmer in Illinois, who knew only too well that the city dealer always sets the price upon the farmers' products, as well as upon his own goods, thought he saw an opportunity to help the producer get more for what he had to sell, pay less for what he had to buy, and make some money for himself besides.

He had about $1,000 in cash, and, removing to the city, he rented a small store and got in touch with a large mail-order house that agreed to sell him certain articles, especially for the use of farmers, at considerably less than catalog rates, provided he ordered a certain quantity.

He then prepared a circular letter, requesting those farmers who wanted higher prices for their butter, eggs, chickens, fruit and vegetables, to send them to him in exchange, by parcel post, for any of the articles on the list he enclosed therewith, assuring them of from 10 to 20 per cent higher prices than they could obtain from the regular commission houses, while the prices he quoted on the merchandise he would exchange for these were considerably lower than those of the mail-order

houses from which he bought them, and yet left him a fair margin of profit. At the same time he addressed a circular letter to one thousand or more families in the city, offering to supply them with strictly fresh farm produce for much less than they had been paying in the city markets for articles of uncertain age and quality.

The farmers and the city people were only too glad of such an opportunity to save money on their purchases, and the young farmer with an idea soon had established a business that yielded a good living every year.

PLAN No. 390. GROUP-CIRCULARIZING

A wide-awake advertising man in a western city employed a plan for sending out circulars that not only reached every farmer in his county, and brought a large volume of trade to certain merchants in his own city and surrounding towns, but netted him a regular income of over $2,000 a year. And it cost him less than $250 to get the business started.

He traveled by automobile to each township in the county, and calling upon the various township clerks he secured the name of every farmer, with his correct post office address, paying the clerk a small amount for his assistance in preparing the list.

With these lists all properly prepared, he called upon several enterprising merchants in his home city, showed them what he had, and offered to mail out their circulars for just half of what it would cost them for postage alone, even if they had the names, and thus save them the time and trouble of mailing the circulars themselves. To mail out 500 circulars would cost each merchant $5, besides the envelopes,

75 cents, and to have them mailed to a reliable list for $2.50 was a “snap” but few would turn down, and it was no trouble at all to find ten merchants who were only too glad to supply him with the circulars, already printed and ready for mailing.

Placing these ten circulars in one envelope, he sent them to 500 farmers on his list, at a cost of one cent for the ten envelopes, and received $25 for doing so. This cost him $5, and he was $20 ahead on each batch sent out, so that the merchants were pleased and he was profited. As he managed to send out an average of two sets a week, he made $40 a week clear, and saved his patrons considerable in postage.

PLAN No. 391. MADE COMMON PICTURES LOOK LIKE OIL PAINTINGS

Here is the way a man, who knew very little about drawing or painting, made any ordinary picture look like an expensive oil painting, and made a living by doing this work. He did it according to the following instructions:

“Take common window-glass the size of your picture and clean it well; take 6 ounces balsam of fir and 3 ounces turpentine; put them in a bottle and shake well together until thoroughly mixed. Now give one side of the glass a heavy coat of the mixture, then place the picture on with face side down; press the picture firmly and evenly on the glass, then give the back of the picture a heavy coat of the balsam mixture and rub with the fingers until it adheres firmly to the glass and the face of the picture is free from spots. After you have done this, put the picture where it will be free from dust until it dries; it is then ready for the paint.

"Brushes for painting the pictures should be artists' round sable brushes with long handles, Nos. 1 and 7. Paint the dark part of the eyes first, dark or blue, as you may fancy; then color the cheeks and lips; after the dark part of the eyes is dry, paint the white part. Color the dress to suit your taste, but whatever part of the dress you want to be white you must paint first. Paint gold ornaments with yellow paint. Give the picture three coats of every color you use, letting each coat dry separately, leaving the flesh color until the last, letting the rest of the picture dry well before applying it, then give it three separate coats.

"For making lighter shade or color, add the light paint to the color drop by drop until you have the color you want. Paint on the back of the pictures. Use small pictures to practice on until you get the knack of it."

PLAN No. 392. SOLD ANOTHER MAN'S SOAP

An agent who had been very successful as a house-to-house canvasser, but was temporarily without a line of goods to handle, decided to try a new plan with soap, and found it so profitable that he adopted it permanently.

Visiting a large factory in his city, where special brands of soap were made to order, he arranged to have made for him a first-class toilet soap of the usual size, each cake to be neatly wrapped in a fancy printed wrapper bearing the name of the soap and a company name he had adopted for his own use. Three of these cakes he had packed in a neat pasteboard box, upon which his own label also appeared.

The price to him of this soap, thus wrapped and

packed, was $7.20 per gross, or 5 cents per cake, and this price also included one gross of "sample" cakes of one ounce each, but unwrapped, for free distribution.

Placing the 144 sample cakes in a handbag, with circulars detailing the merits of the soap, he started to canvass the residence districts. At each house he left a sample cake of the soap and one of the circulars, with a request for the housekeeper to use it, and he would call the next day with a supply of the full-sized cakes in boxes. When he called the next day and showed the lady the beautifully wrapped cakes, which he assured her sold regularly for 15 cents each, but upon which he had placed an introductory price of 25 cents for a box containing three cakes, he made a sale at almost every house he visited. He usually sold seventy-two boxes in a day's canvass, and his profit of 10 cents a box netted him $7.20 for one day's work. He often did better than this, so that his first year's business showed a clear profit of $3,500, as he also sold through agents and to dealers.

PLAN No. 393. MAKING RAISED-LETTER SIGNS

A young man in Detroit, with an invalid mother and two small sisters to support, found it difficult to earn sufficient to meet necessary expenses, until a friend of the family told him of the opportunity afforded for good returns through the making of raised-letter signs by means of an air-pencil outfit. He even loaned the young man $2.50 with which to purchase one of the outfits, and assured him he needed no experience, as a little practice would enable him to become proficient in the work.

These raised letter signs are easy to make, can be produced in any color, in gold, silver, bronze and metallics, are more attractive than embossed work, and can be made and sold at a profit for considerably less than painted signs, as they cost only 1 to 3 cents and sell readily at 10 to 25 cents each, made on cardboard of any color. With a little practice anyone can easily make 50 to 200 of these signs in a day.

The young man took the advice of his friend, bought an air-pencil outfit, and practiced until he had acquired considerable skill in the making of signs. Then he went among the merchants of the city and soon had orders for all the work he could do, at prices that brought him a good income. He closely followed these instructions which come with the outfit:

Mix in a cup or saucer the dry powder and liquid medium which comes with each outfit, to the consistency of thick paste. Use a knife or flat tool in mixing, to crush any lumps that may be in the powder. Unscrew the tube from the bulb—holding the bulb in a vertical position—placing over the opening the funnel, compress the bulb, and while compressed fill the funnel to any desired extent with the paste, then allow the bulb gradually to expand to its natural shape until the paste is drawn in. Remove the funnel and replace the tube and the air-pencil is ready for use. To insure good work, the pencil should not be allowed to touch the article to be decorated.

After using the instrument the tube should be unscrewed and thoroughly cleaned. The bulb should be cleaned by placing it in a basin of water and allowing it to soak until the compound is dissolved. The tube can be cleaned with a small wire.

PLAN No. 394. MONEY IN CEREAL COFFEE

Through making a cereal coffee from pure ingredients, which proved an excellent substitute for ordinary coffee, and was free from the injurious alkaloid of the coffee of commerce, a young married woman in St. Louis built up a modest yet ample business for herself, and earned the praise of thousands of customers besides. The cereal coffee she made was prepared as follows:

Rye, 12 pounds; horse beans, 1 pound. Roast in a big oven pan over a quick fire, greasing the pan with a little butter. When roasted as you would ordinary coffee, grind in a coffee mill together with $^1/_4$ pound cassia buds. Mix 1 pound ground chicory with the ground cereals, and it is ready for use in the same manner as ordinary coffee.

She introduced this at first by asking her friends and acquaintances to try it, and they were so well pleased with both its taste and its effects that they recommended it to others, so that orders began to come in rapidly. Many dealers began to receive inquiries for it, and to supply these she went among the retail stores of the city and took orders for it in large quantities. The product soon had a large sale and she established a small factory where she could turn it out as rapidly as occasion required.

PLAN No. 395. GIRL EARNED A COLLEGE EDUCATION

How a young lady entered Oberlin College with $60, and came out at the end of three years with a good education and $50 besides.

She earned her board, tuition and incidental expenses by canvassing, working in a dining-room,

clerking in a store, assisting at class receptions, doing housework, tutoring, and working in the college library.

PLAN No. 396. WOMAN OBTAINS MUSICAL EDUCATION ON $45

A young lady who wished to become a music teacher went through College nicely on $45 cash—and a lot of hard work to make up the deficit.

Registering at a well known conservatory of music in an eastern city, she secured work in the dining hall connected with the home department. This paid for her room and board, piano rent, medical attention and $15 tuition in any study she might select. She added to this by accompanying voice pupils while practicing, and by playing accompaniments at receptions, assisted in physical culture exercises in the gymnasium, also gave lessons to boys and girls. Then she addressed envelopes, sewed bindings on skirts, shampooed hair, wrote college letters to newspapers, played light classics at a mountain resort, won a scholarship by taking subscriptions for a woman's publication. Through the above services rendered by her she defrayed all college expenses.



Plan No. 396. Her First Mus

PLAN No. 397. A WOMAN GETS AN EDUCATION AND $500

Very few girls can expect to go to a university with $50 in their pockets and come out not only with the education they were seeking and $500 in cash besides. But there was one girl who did this.

Being a good stenographer and typist, she soon had plenty of work. She took up mimeographing, which paid well, and later was engaged to help one

of the professors prepare the matter for a book he was writing. This gave her a desk of her own in the economics department, where she helped to complete the book, read the proofs, and kept well up with her studies at the same time.

When she graduated, all her expenses were paid and she had an even $500 left over.

PLAN No. 398. RAISING GOLD FISH

Two women, living together, built in their yard a shallow pond of rocks, cemented together so as to hold water, surrounding this with a second row of rocks, not cemented, and filled the space between with earth, in which were set mosses and delicate plants, thus giving the pond a broad rim of dainty growing things.

Then they bought six goldfish—the pretty, dumpy sort, with long flowing tails—and placed them in the pond which was about two feet deep in the center. This was in the spring, and in the following August they noticed dozens of tiny young fish in the water. The next spring they sold one hundred of these for 25 cents each, keeping the rest for breeding purposes.

In the five years since starting the fishpond they have realized a neat sum from their aquarium. The fish require almost no care whatever, as the little fellows live on insects in the water, while the larger ones are given regular fish food, which can be bought cheaply at any bird or drug store.

At spawning time, anywhere from May to August, the water in the pond is not changed for fear of losing the young fish, but is replenished and aerated by spraying the surface frequently with the hose

until the pond is full. Growing plants or a few tree branches placed in the pond afford a place upon which the fish may deposit their spawn, and the water should be kept as near the same level as possible, so the eggs will not be exposed and dry out, thus preventing them from hatching.

PLAN No. 399. WOMAN GRADUATED WITH $400 DEBTS PAID

A girl who entered an eastern university on $400, borrowed money, made $120 the first year as an accompanist in an orchestra; $160 by giving piano lessons; $45 by reading aloud in French to two old ladies; $400 by tutoring; earning $735 in all during her sophomore year. She easily paid back the $400 she had borrowed, paid all her expenses, including tuition, and was just even with the world when she graduated at the end of the third year.

PLAN No. 400. TAUGHT DANCING IN SPARE TIME

A young man in a New York town, who had become an expert dancer, while attending college was asked to take the place of the local dancing master in his town during a temporary illness.

Not feeling quite equal to the task, he went to the city, attended a first-class dancing school, learned all the intricate details, the system, etc., and came back to his home town ready to accept the position tendered.

When he showed his pupils the superiority of his methods over those of the local teacher, they

organized a large class and placed themselves under his charge. The pupils made remarkable progress, and the hall he had rented for the purpose was occupied by classes nearly every evening during the week, while he gave a number of private lessons at 75 cents each. His earnings from the few spare hours he was able to give to dancing lessons netted him about $20 a week, in addition to a good salary he was earning during business hours.

PLAN No. 401. MONEY IN TOY BALLOONS

A man who had for years been a clown in a circus, but desired to change to something more dignified and more profitable, chose toy balloons as his source of revenue, and the results proved he had made a wise choice.

Being fully aware of the passion children have for toy balloons, he decided to follow along with the same old circus, for a while, and laid in a stock of non-inflated toy balloons, which cost him $20 per thousand, or 2 cents apiece. With the air out of them, they took up but little room, and when he arrived at a place where the circus was to stop for a day, it required only half an hour to inflate a few hundred, enough for one day's business.

Starting out early in the morning, before the parade, he traversed the streets that were already beginning to be lined on each side with people waiting for the great event, and made scores of sales in that way. After the parade was over, he made still more, and at the conclusion of the afternoon and evening performances he reaped a harvest of dimes from those coming out to see the show.

Later he attached himself to a carnival company,

that stayed two or three days, or a week, in one town, and literally filled the places with his toy balloons, clearing 8 cents on every one sold. A sale of 800 balloons meant a net profit of $24 a day, which was almost as much as he had formerly earned in a week while acting as a clown.

In the fall of the year he visited county fairs all over the country, and cleared up enough money to keep him in comfort all winter.

PLAN No. 402. MOTION PICTURES IN SMALL TOWN CHURCHES

A former motion-picture operator, who had moved to a small Iowa town for the benefit of his wife's health, believed the churches of the place would be glad to have films of religious subjects shown in their church buildings on weekday evenings and, having secured the consent of the trustees of one of the leading denominations, he put up his outfit, which he had brought with him, and gave movie shows three evenings a week, paying a small sum for the use of the church on these occasions. The other churches, seeing the crowds that attended these entertainments, also asked that the films be shown in their buildings, and in a short time there was to be found a motion-picture show in one or the other of those churches every evening of the week except Sundays.

Scenes in Palestine, the Passion Play, and similar subjects, were the main part of the entertainment, and the movie man made a nice living from the business, while providing amusement and instruction for the people of the town, who were not often able to attend the movies in the city.

PLAN No. 403. A CHAFING DISH ANNEX

A young lady who had graduated from college was compelled to find a way to support herself and sister. She was a good cook, and finally decided to open up a chafing-dish annex in her own home.

In her front room she displayed angel food, raisin tarts, fudge, cake, warm sugared crullers, and puddings. She put out posters informing the public that warm biscuits, muffins, roast chicken, meat loaf and salads would be prepared to order.

She was successful in establishing a first-class, paying bakeshop around the original idea of a chafing dish.

PLAN No. 404. CRYSTALLIZED FRUITS AND NUTS

Nothing is more delicious or more profitable to put up for sale than crystallized fruits and nuts, and a young woman in California, who went into the business on an extensive scale, had that discovery fully confirmed. Her recipe for the crystallization of dainties was as follows:

Put in an iron kettle 1 teacupful of granulated sugar, 1 tablespoonful or less of butter, 3 tablespoonfuls of water. Boil until it syrups and becomes brittle.

The fruits and nuts treated with this were put into the shells of the same, or into boxes containing the name of the delicacy and her own name as originator. Making up a quantity she placed them on sale at the woman's exchange where they sold rapidly at a good profit. She also had many calls for them to be used on special occasions, such as St. Valentine's Day, Easter, Thanksgiving, Christmas, birthdays, weddings, etc., and for these purposes she

charged very high prices, for she knew they were well worth all she asked for them, and were all the more appreciated.

In a short time she received many orders and found it was necessary to employ a number of young ladies as skilful assistants. Her profits the first year were sufficient to pay for a neat little bungalow she had always admired, and which is now her home.

PLAN No. 405. SHELLING AND SELLING NUTS

A Texas man makes an excellent living by gathering pecans and nuts of all kinds that grow in immense quantities in his neighborhood, and shelling them with a machine invented for that purpose. A bushel of the nuts, when shelled, make fourteen or fifteen pounds of the meats or kernels, and he sells them to people in the city at prices that net him between $5 and $6 per bushel. And considering that he handles several hundred bushels of the nuts in a single season, one may judge as to the amount of his net profits.

PLAN No. 406. SPIT-FIRE BOTTLE

A young man who thought he could afford amusement for many people at a good profit to himself, went to a wholesale drug store and bought a pound of metallic sodium. This he removed from the can and soaked it in lamp oil until soft, then dried it on a glass surface, and with a piece of lead pipe rolled it out into sheets about $^1/_8$ of an inch thick. These he cut into sticks 3 inches long, and $3^1/_2$ inches wide, and put two sticks into a dram glass

vial, labeled “Spit-Fire.” Moistening causes it to burn.

Taking one of these vials into a barber shop, a hotel lobby, a cigar stand or a crowd of people at a park, or a picnic, he would take a small piece of it and lay it on top of a pipeful of tobacco, then spit on it and the tobacco would light. A small particle of it dropped into a glass of water or into acid will burn. He offered this at 15 cents per bottle and sold them by hundreds to people who liked novel means of amusement. He also mounted the vials on cards containing a dozen each, and sold them to dealers for 75 cents per card.

One pound of metallic sodium is enough for 1,000 bottles, and the cost for vials, labels and corks is about $3.75, while the metallic sodium is not expensive. For 1,000 bottles, at 15 cents each, he received $150, so you can see the amount of profit in this plan.

PLAN No. 407. HOME SCENES FOR CALENDARS

A Spokane young man, who owned a good 5x7 camera, and knew how to use it, got the lowest quotations from publishing houses, on medium-size calendars of artistic designs, and from the samples sent him selected a line well adapted to the purpose for which he intended to use them.

Next, he took pictures of all the prominent business houses in the city, showing the names of the merchants occupying the ground floors, as well as the signs on some of the upper windows, with names and business of the occupants. Then pasting one of these photos on one of the calendars, he called upon the merchant, as well as all the other tenants of the building, and took orders for any number they

required. These made an excellent advertising medium, and he received orders for many thousands of the calendars.

Later he went into the best residence districts and took pictures of all the homes, and, pasting a picture of each house on a calendar he called at the various places and sold them by the hundreds. Often he was called upon to take special pictures showing home scenes, such as children at play, on the lawns, family groups on the front veranda, interiors of homes, etc., and within a very few months his net income was over $50 a week.

PLAN No. 408. BRICKMAKER FOR U. S. SEE PLAN No. 217

PLAN No. 409. A MEDICAL GARDEN

Garden vegetable products having medical properties made a large income for a widow with several small children, and though it required considerable care, the returns were more than satisfactory, for the druggists bought all she could raise, at high prices.

Larkspur, for instance, the seed of which brings $1.50 to $2 per pound, was one of her successes. This she planted in rows about 18 inches apart, and, when 4 to 5 inches high, she thinned it to 5 inches apart in the rows, and harvested it like buckwheat.

She also grew parsley, as the seeds and roots find a good market as drugs, and the roots bring 90 cents per pound. An oil is obtained from the seed.

Ginsing is another profitable product of a medical garden, and brings approximately $5.40 per pound.

She obtained reliable information regarding these plants, without cost, by writing to the bureau of plant industry, at Washington, D. C.

PLAN No. 410. AUTO-BUILDER FOR U. S. SEE PLAN No. 217

PLAN No. 411. SILVER FOX SKINS

When it is known that a silver fox skin is worth $2,500 in London, it will be seen that some capital is required to begin the raising of the animals.

A western man, who knew something of the business, organized a small company with which to purchase two or three female foxes and one male. The bureau of animal industry, at Washington, D. C., sent full information, free, on request, concerning this particular industry, and following the instructions received from that source the company made a remarkable success. One mother silver fox frequently rears eighteen young animals in three years, so the profit can be figured from this. Of course, the first cost was considerable, but this was amply justified by the returns.

PLAN No. 412. PERCENTAGE COLLECTIONS

A couple of young fellows in Salt Lake City started a collection agency by first opening a small office and calling upon all the merchants for their old, outlawed or hopeless accounts, on a commission basis ranging from 25 to 50 per cent of the amounts collected. By arranging with a good local reporting

company, so as to learn the standing and financial condition of debtors, and associating an active attorney with them, they were able to write a form of letter that brought good returns. The reporting company saved them much time. These old accounts brought them in touch with good claims from time to time until in a few months the business was of sufficient size to give them a good living.

PLAN No. 413. COLLECTING ON A SALARY

A young man in Ogden, Utah, who had a particularly winning way in approaching people, employed this talent to excellent advantage by doing the collecting for a number of firms at so much per month from each. His tact and agreeable manner won in countless cases where bluffing or threats would have been unavailing. He had made the discovery that “politeness pays” to the extent of $200 a month, or more.

PLAN No. 414. RAISING PANSIES FOR THE MARKET

That pansies can be raised with profit, and made a regular business during a certain part of the year, was proven by a young woman in a middle-west city, who possessed a great love for flowers, and had more time than money.

She started her seed bed in the latter part of July, and in September she set the plants in rows five inches apart. These plants she protected with coarse straw until almost the first of April, when she uncovered the bed. Then she replanted in 2-quart

wooden baskets, eight to each basket. The retail price of these baskets was 15 cents each, or $1.25 per dozen baskets wholesale. She sold to both wholesale and retail dealers in plants and flowers, and realized a neat sum from their sale.

PLAN No. 415. MEMBERSHIP COLLECTION AGENCY

A number of merchants in a western city were induced by a young man of that city to organize themselves into a mercantile collection agency, the membership fee to be $30 a year and to entitle them to have all their accounts collected free, even though litigation should become necessary to enforce the collections.

When collections were made for those not members, the charges were 20 per cent on all amounts under $40; 15 per cent on all accounts from $40 to $100; and 10 per cent on accounts over $100.

The young man engaged a live-wire attorney to look after the legal end of the business, and drew a good salary as manager of the agency, besides sharing in the profits of the business after all expenses were paid.

It proved a good thing for the merchants as well as the originator of the plan, and made collections much easier than under the ordinary methods, besides being more economical for the members.

PLAN No. 416. RAISED RHUBARB IN HER CELLAR

A Chicago woman raised rhubarb in boxes of rich dirt in her cellar during the winter months. It

required but little attention, aside from irrigating it frequently with luke-warm water. In January, when everybody was longing for fresh green garden sauce, she sold it for 25 cents per pound, and made many dollars in that way. And rhubarb, besides being exceedingly healthful, is practically all profit.

PLAN No. 417. CABBAGE AND TOMATO PLANTS

Raising cabbage and tomato plants in boxes indoors during the late winter and very early spring, and later transplanting to beds out of doors, covering them from frost, and using good, rich soil, enabled a Kansas City woman to sell thousands of these plants for 10 cents per dozen, at a time when others were just beginning to sow the seed. Her receipts from this source alone amounted to $150 or $200 every spring.

PLAN No. 418. SWEET POTATO PLANTS

The raising and selling of sweet potato plants alone, in boxes of highly fertilized dirt, enabled an Ohio woman to send her daughter to business college from the proceeds, even though she received but 25 cents per hundred. But the thousands of plants she raised brought a very handsome sum in the aggregate.

PLAN No. 419. MADE APPLE BUTTER

A Missouri woman, in whose orchard hundreds of bushels of fine apples were going to waste, made

several hundred dollars each fall by converting them into apple butter, of which the storekeepers never could get enough to supply the demand, for she had apple butter reduced to the finest kind of a domestic science, and her product brought the highest prices. This is how she made it: Cider, 30 gallons; apples, 10 bucketfuls; sugar, 20 pounds; ground cinnamon, 10 cents' worth. Add sugar about an hour before taking off the stove.

PLAN No. 420. ATTORNEY TOOK EQUITIES FOR $400 FEE AND MADE $7,875

A young lawyer in a northwestern city had a client who owed him a fee of $400 for legal services. The client had no cash, but held equities in certain properties which he turned over as full payment for the fee. These included a 5-room house with a $600 encumbrance; an 8-room house, with $2,250 encumbrance; a clear lot in British Columbia and three clear lots in a small Montana town, which he was glad to throw in for good measure, as the equities in the other properties were of no value to him, since he could not pay off the indebtedness.

With all this property on his hands, the lawyer got busy. Over the long-distance phone he called up a bank in the British Columbian town where the clear lot was located, offered it at $250, and the offer was at once accepted. That left the two city houses and the three Montana lots out of which to realize the remaining $150 of his fee.

The 5-room house was in fairly good condition, so he moved into it with his family, and improved its general appearance by making a few needed repairs himself, and adopting the theory that a man's

property is dignified by his occupancy, and its selling possibilities increased. He then looked for a buyer or a trade.

A southern family, living across the street, greatly admired the little cottage, and offered in exchange for it a 160-acre farm, not far from the city, valued at $3,000, but encumbered for $330, provided he would pay cash $300 in addition. The lawyer made the trade on this basis, though in making this deal, as in all others, he adhered to his established rule never to assume an encumbrance upon a piece of property, but to take it subject to the mortgage, the purpose being not to be made personally responsible for the mortgage obligations.

Immediately upon securing title to the farm, he obtained a loan of $1,250, out of which he paid off the encumbrance of $630, and still had $620 in cash from the proceeds of the loan. Therefore, as a result of this deal, he had paid out $680, and had $620 in cash, and an equity in the farm which he sold for $2,700.

Then he moved into the 8-room house, which was in need of cleaning and painting, and at a total expense of $100 he made it look like a new house. And it was close to the business section besides.

Not long after moving into this place, he was offered another farm of 80 acres, valued at $6,000, which was later sold for $5,000, but encumbered for $1,500, for the 8-room residence, and he accepted that offer also, taking the farm subject to the $1,500 mortgage.

The paying off of the mortgage on this house, added to the $100 spent for painting, etc., required an outlay of $575, and by giving a mortgage for $2,000 on the farm, he cleared off the first mortgage, and had $500 in cash left to pay the $575.

When he figured up the totals he found that for a $400 attorney's fee he received more than $3,500 inside of eight months.

This attorney adopted the plan of accepting equities considered of no value in other people's hands, in lieu of small cash fees and found a use for the property which enabled him to deal.

PLAN No. 421. ADS. IN COUNTRY WEEKLIES

An advertising man in a western city made $1,000 within a few months by purchasing a certain amount of space in the "patent insides" of a number of weekly papers supplied by a newspaper union, at 3 cents per inch, and selling it to city merchants and other advertisers at 5 cents per line. By signing up contracts for three or six months or a year, and filling the space with the ads. so contracted for, he derived a regular income from this source that enabled him to live well. This plan required sales ability plus hard work to make it a success.

PLAN No. 422. SPECIAL DIRECTORIES IN "PATENT INSIDES"

A Middle-Western man, with some newspaper experience, arranged with a newspaper union supplying "patent insides" to handle a certain amount of space in a stated number of weekly papers using their ready-print sheets, at a rate of 3 cents per inch.

Then he had illustrated two-column heads made for several lines of business, such as: "Where to Eat When in Town," followed by a list of restaurants,

cafes, etc., each occupying two inches of space; "Where to Stop When in Town," for hotels, rooming-houses, etc.; "Where to Buy When in Town," for merchants in all lines.

He had but little trouble in filling these spaces with ads. that paid good prices, and made a handsome profit on the plan.

PLAN No. 423. BOOSTING HOME INDUSTRIES

A special writer in a northwestern daily introduced a novel feature for the paper, upon which he was working on a commission basis, by conducting a manufacturers' page, to appear on a certain day each week.

He had a zinc etching made, showing a large manufacturing plant, with heavy, black smoke pouring from several tall chimneys, and with every indication of great activity about the place. Under this cut, in heavy, black type, were the words: "Buy Home Manufactured Goods." Below this appeared write-ups and small display ads. of the various manufacturing enterprises in the city, and in the center a strong argument favoring the patronizing of home industries, in order to encourage the growth of those already established, induce others to come, and thus keep the money of the home people at home, where everyone would have a chance to get some of it back through the increased prosperity that would ensue as a result of this commendable course.

Each manufacturer was asked, and generally consented, to run a certain number of lines or inches of space in this department, and it was not long before the manufacturers' page was one of the most prominent features of the paper. Not only that, but

the commissions of the young man who started and conducted this department amounted to more than the salary of the highest-paid man on the paper.

PLAN No. 424. COPYING ADDRESSES

In the offices of the leading public stenographers in almost every city are thousands of names and addresses to be copied for the use of advertisers or other patrons and a Seattle young lady who was an expert typist, besides owning a first-class typewriter, secured all the work in this line she could do, by keeping in close touch with the public stenographers, directory publishers, and others.

This work paid her well, and there was always plenty of it for her to do.

PLAN No. 425. ADS. ON BARBERS' MIRRORS

A regular patron of a barber shop, while having his hair cut one day, conceived an idea. He proposed to the boss barber to install a row of mirrors, $2^1/_2$ feet wide, along the wall of the shop, about four feet above the floor. These mirrors he would put in free, with the understanding that he was to reserve the lower left-hand corner of each for advertising purposes.

As the mirrors then in the shop were rather dingy and old-fashioned, the barber was glad to make this arrangement, and the new mirrors were duly installed. Then the man who had thought of the idea went out and got enough advertising in one day to fill the reserved spaces, at prices that seemed extravagant, yet they were well worth the money.

Ads. that were of special interest to men who frequent barber shops were taken for the most part, and these advertisers must have been pleased with the results, because they renewed their contracts each year. The first month's receipts more than paid the cost of the mirrors, and after that it was most all clear profit.

PLAN No. 426. MADE STOVE POLISH

Making a self-shining stove polish of finely powdered graphite, at a cost of 2 cents for a 2-ounce box, and selling it for 5 cents a box, was the way a hustling youngster at Bellingham, Washington, "got his start."

This polish he called "Lusterine," and put on each box a label saying it was "Best and cheapest. No mussy mixing. Makes old stoves look like new in two minutes. Produces an instantaneous polish that will not burn off. Apply with a damp woolen rag, then go over the stove with a dry cloth."

He sold immense quantities of this polish to the hardware stores all along the coast, at $8^1/_2$ cents per box, thus clearing $1^1/_2$ cents on each, and also sold a great deal of it himself for 5 cents per box, or a profit of 3 cents. It gave him a good living.

PLAN No. 427. PEANUT VENDING MACHINE

A Baker City, Oregon, young man made a nice living and a surplus by buying several peanut-vending machines and placing them on prominent corners of his town, as near the moving-picture shows as possible. The machines were of the penny-

in-the-slot order, and yielded a small handful of peanuts when a cent was inserted and a button pressed.

Of course, others in his town also sold peanuts, but he had a novel way of treating his, and soon secured the peanut trade. He bought his peanuts in considerable quantities from wholesale grocers in a large city, and prepared them by placing a small amount of butter in a large dish, then put the peanuts in. The butter would boil up and cover the peanuts, and roast them to perfection. This butter could be used repeatedly. Then he would stir a teaspoonful of glucose in a bushel of peanuts, and throw on the necessary amount of salt, the glucose causing the salt to stick.

A neat card calling attention to the superiority of his special brand of peanuts did the business, and he was kept busy roasting the peanuts and filling the vending machines.

These machines paid him a net profit from $35 to $50 a week.

PLAN No. 428. MAKING HOLIDAY AND BIRTHDAY PRESENTS

An old lady in an Illinois town, who had always been very skilful in the use of the needle, was able to earn a very comfortable living by making sofa pillows, pin cushions, jewel trays, lamp shades, book-marks, waste and work baskets, catch-bags, etc., and selling them to people who wanted to make Christmas or birthday presents of them, yet could not do the work.

After the holiday season was over, she would insert a small ad. in the local paper, saying she was

prepared to make appropriate presents for birthdays and other occasions, and her excellent work soon became so well known that she had all she could do. Her prices were rather high, but were justified by the character of the work she did, and people cheerfully paid them, as they realized the worth of her work.

PLAN No. 429. KEEPING A FLOWER BED

For several months in the year, an energetic woman in a northern city paid the family grocery bills from the proceeds of a small flower bed in the back yard of her home.

She took especial care of this flower bed, as she realized that most of her neighbors were negligent in such matters, and would be glad of an opportunity to buy flowers from her later in the season. And she guessed right, for they were soon coming from all directions to buy her flowers. She had all varieties, which showed the effects of careful culture, and she charged good prices for them. For weddings, funerals, etc., she made up special designs, and sold them for several dollars each.

Among the rare flowers she raised were orchids, which brought very high prices in the winter, and she felt well paid for the labor and care she had bestowed upon her small flower bed.

PLAN No. 430. REPRESENTING COUNTRY WEEKLIES

An advertising man in the Pacific Northwest recently called upon the publishers of forty weekly newspapers, within a radius of 200 miles of the city

in which he lived, and entered into contracts with each of them whereby he was to solicit advertising for them in the city and elsewhere, on a basis of 25 per cent, after receiving $100 worth of advertising space in each paper as a bonus. This $4,000 worth of space he sold at regular advertising rates, and in addition was paid 25 per cent on the business he secured and forwarded to the papers.

In this way the local weeklies furnished him the capital to make his start and they gave him a good profit on future business.

PLAN No. 431. BAND LEADER M. S. SEE PLAN No. 217

PLAN No. 432. GATHERING OLD MAGAZINES FOR SALE

Living in a city where a great many magazines were taken, an old gentleman, who had no regular means of making a living, made a business of his own by gathering up old magazines from a large number of homes, and selling them at good prices to dealers. By calling regularly at the homes, he was given many of these magazines, mostly in good condition, and carried them to his home in a little cart. When he had accumulated enough for a good load, he got a friend of his with an express wagon to haul them to the dealers for a small charge, and received enough income in this way to supply him a living.

PLAN No. 433. A HOT-BED FOR PLANTS

A country woman who had constructed a hot-bed out of some second-hand material she had gathered from time to time, made quite a neat profit by raising plants and selling them to her neighbors, as well as sending them to a market in the city, when it was too early in the season to obtain these in the regular way.

Tomato, pepper, cauliflower, cabbage, egg plant, celery, and all sorts of flowers, were given a good start in the hot-bed, and brought good prices for all she could raise.

PLAN No. 434. MARKETING EGGS, BUTTER AND MILK

Of all the numerous opportunities afforded the country woman for making money, none present so many possibilities as do the supplying of many real luxuries to people who need and want fresh eggs, butter and milk.

A farmer's wife, who lived near a large city in Illinois, saw in these unsatisfied wants her opportunity for mutual benefits, and having a large number of chickens and milk cows on the farm, she set about utilizing these products in a way that meant a great deal for scores of city people, and for herself as well.

Through the insertion of just a little ad. in the classified columns of a city paper, she received replies from over one hundred city people who were interested in the prospect of buying these products, and she thereupon hired a good woman to help with her housework and marketing. Through the parcel post, she sent to the city every day the freshest of

eggs, butter, milk and cream, and was soon in receipt of an income that paid all her own personal expenses, the wages of her assistant and the tuition for one year of her daughter who wanted to enter college.

PLAN No. 435. A FARMER'S WIFE AND HER CHICKENS

The wife of a Nebraska farmer, who knew how to raise chickens with profit, made this industry pay by adhering to a few simple rules.

First, she weeded out all the "scrub" poultry on the place, and kept only the best specimens of the best breeds, as they eat no more than common stock, and bring much better returns.

Then she insisted on keeping her poultry yard absolutely clean, free from vermin and rats, and giving the fowls proper food in sufficient quantity to keep them in good condition.

She raised chickens, ducks, geese and turkeys, and, owing to her excellent methods of caring for them, had very little bad luck with them.

She made one or two trips to the city, secured enough permanent patrons to take all her surplus products off her hands the year round, at prices considerably in advance of regular market quotations, and sent her eggs, butter, young chickens and other fowls by parcel post, and cleared over $200 every season, with but little extra labor or expense. And $200 is quite a sum to a country woman, especially if she earns it herself and saves it all.

PLAN No. 436. JAMS AND JELLIES

A farmer's wife, who lived more than ten miles from the city, and realizing that it was not possible for her to market her strawberries, and other garden products by driving that distance, only to find the market over supplied for that day, resolved upon another plan for handling these berries profitably. She knew that by putting them up in the form of delicious jellies and jams, home-made she could get good prices for them long after the fresh berry season was over, so she obtained a large number of jars, glasses, etc., and made vast quantities of all kinds of jams and jellies.

Her judgment was confirmed the following winter, for when the city people learned of these home-made delicacies, through a little want ad. in the city papers, she sold the entire lot in less than two days, at prices she considered very high. The next year she doubled the quantity of jams and jellies put up, which doubled her profits as well.

PLAN No. 437. BEE HANDLER—U. S. SEE PLAN No. 217

PLAN No. 438. KEEPING PIANO KEYS WHITE

This is a woman's discovery, and a valuable one, too, for it not only kept the keys of the piano white, but made her a good profit. She introduced it by asking her friends to try it on their piano. She made it of the following ingredients, the proportions given being enough to make 96 4-ounce bottles of the preparation, and as a cleaner and whitener of piano

keys it has no equal. The entire cost of making it, bottle, label and all, is only about 5 cents per bottle, and it sells rapidly at 50 cents for a 4-ounce bottle. This is the formula:

Grain alcohol, 1 gallon; water, 2 gallons. Mix. She learned by experience that this preparation prevents discoloration of ivory piano keys, and restores faded, yellow keys to their natural whiteness and gloss. With each bottle, properly labeled, she gave the following directions: Dampen a piece of chamois with the preparation, apply to the keys, and after fifteen minutes rub over with a dry piece of chamois. Repeat the treatment weekly, always using the same pieces of chamois, and you will always have white, glossy, beautiful piano keys.

She first sold this through agents, then to music houses, and later made it a mail-order proposition by advertising, and sold so much of it that she finally devoted her entire time to making and selling it.

PLAN No. 439. MENDING BROKEN CHINA

A young lady in a western town of 25,000 people, where there were several studios for decorating china, was surprised to learn of the large number of beautiful and expensive pieces that were broken, through carelessness or accident, and decided to try her hand as a mender of this broken ware. Having the formula for making a mending glue to be found in this book, she called at one of the studios and asked for permission to take one or two of the cheaper broken pieces home with her, to see what she could do with them.

She at once prepared the glue very carefully and, with infinite patience and skill, devoted one hour to

the permanent putting together of a broken vase she had brought with her from the studio. When it was completed, she was greatly surprised to find that only by the closest scrutiny could she herself detect where the break had been, and letting it dry until the next day, she took it back to the studio.

The proprietor was amazed to see how perfectly the broken parts had been put together, and at once gave her a number of the more expensive vases, pitchers, etc., to mend, naming a price for the work that surprised her. She mended these with the same skill and success that attended her first efforts, and now she is making a living doing this work for studios, as well as for many wealthy families in the town.

PLAN No. 440. BIOCHEMICAL—U. S. SEE PLAN No. 217

PLAN No. 441. PURE COUNTRY TOMATO SAUCE

To make a small quantity of real country tomato sauce, to be used as a sample, a farmer's wife in a section of country noted for its highly flavored fruits and vegetables, used the following ingredients:

Four pounds of ripe tomatoes; 2 pounds of peeled onions; 5 ounces light brown sugar; 4 ounces of salt; $2^{1}/_{2}$ pints cider vinegar; 1 teaspoonful black ground pepper; and 3 teaspoonfuls red pepper.

She ground the tomatoes through a grinder, and then added the onions by running them through the grinder also. She then added the other articles, and boiled in a porcelain kettle for about two hours, stirring it quite often to prevent it from sticking to

the bottom. She then put it up in 6-ounce bottles, that would sell for 20 cents each, and submitted samples of her product to a wholesale grocery house. The president of the company was so impressed with its excellence that he offered to incorporate a company and erect a manufactory for the purpose of producing the sauce in quantities, under the direct personal supervision of this woman. She accepted the offer, was elected treasurer of the company, and is to-day drawing a salary of $4,000 a year, besides receiving dividends that amount to as much more.

PLAN No. 442. BIOLOGIST—U. S. SEE PLAN No. 217

PLAN No. 443. BLACKSMITH FOR U. S. SEE PLAN No. 217

PLAN No. 444. BOILERMAKER FOR U. S. SEE PLAN No. 217

PLAN No. 445. BOOKBINDER FOR U. S. SEE PLAN No. 217

PLAN No. 446. BOOKKEEPER FOR U. S. SEE PLAN No. 217

PLAN No. 447. A SIMPLE DANDELION DESTROYER

Having discovered a simple yet effective method of destroying dandelions without digging up the roots, injuring the grass or otherwise disfiguring the lawns, a middle-aged landscape gardener in an eastern city made a great deal of money by taking contracts to destroy these perennial pests in hundreds of lawns, being frequently offered $100 by a wealthy householder if he would successfully eradicate them from the premises.

All he used for this purpose was sulphate of copper, which he bought by the barrel at less than 5 cents per pound, but which he sold at 25 cents per pound to those who wished to apply it themselves, though in most cases property owners preferred to have him do the work himself, and while there was no great labor involved, it usually paid him at the rate of $2.50 an hour, the material used costing about 20 cents, as one pound of the sulphate will make about four gallons of the solution, which is applied with a sprayer, sprinkling the tops of the plants liberally. This effectually destroys the dandelion, while the blue grass or clover of the lawn is not injured in the slightest degree by its application.

PLAN No. 448. MADE FEATHER COMFORTERS

The wife of a Norwegian farmer, living in northern Minnesota, where the winters are very cold, had brought with her from the old country many excellent ideas of real comfort, and among these was the idea of feather comforters.

They had a large flock of geese and ducks, and

thus the raw material for making these wonderfully comfortable comforters was easily available and plentiful. But she did not make them bunchy and unwieldy, but light in weight, neat, pretty—and extremely comfortable. The following is her method of making them:

The feathers are held in small sacks, made like long, narrow pillowslips, of cheese cloth or regular ticking. For each sack a strip of ticking about 20 inches wide and as long as the desired width of the comforter is used. This strip is stitched together up the side and across the end just as a pillowslip is made; then turned and filled with feathers and the opening is hand sewed. The thickness of the comforter will, of course, depend upon the amount of feathers put into each sack. An exactly equal weight must be used in each to insure a uniform thickness of the comforter. About twelve of these sacks, each measuring about eight inches across when filled, will be required for a comforter of ordinary length.

The covering for the comforter may be of calico, sateen, flannel, or even of silk. The top and bottom covers are held together by basting, then lines of stitching are run across the width far enough apart to admit of the long feather sacks being drawn through from side to side like tape through a hem; then the edges of the comforter are bound and the comforter is complete. It is warm and elastic, there is no bunching up of the feathers, and the whole is easily cleaned by opening the two sides of the covers and pulling out the sacks of feathers to be dry-cleaned or hung on the line to sun and air while the covers are being washed or new ones provided.

When these feather comforters were made in the manner above described, they sold readily for $20 to $30 each, and, inasmuch as she made as high as

twenty to twenty-five of them in a single season, her income from goose and duck feathers may easily be estimated. A comforter made from the breast feathers of ducks alone often brought $40.

PLAN No. 449. BOTANIST FOR U. S. SEE PLAN No. 217

PLAN No. 450. MAKING GAS MANTLES PAY

In an eastern town, where gas is still used for lighting stores, a little lame old man is said to make from $60 to $75 a week by taking contracts to keep gaslights in stores and offices supplied with mantles, which he makes himself, and by cleaning and polishing the fixtures. His charge is 50 cents a month per light, and he has many hundreds of these to look after, sometimes having as high as forty or fifty in a single store.

PLAN No. 451. BUSINESS MGR. FOR U. S. SEE PLAN No. 217

PLAN No. 452. ONE GOOD SELLING PLAN

Mail-order people have many different selling plans, most of which bring good returns, but an agent in Ohio made quite a success of the plan briefly outlined as follows:

Selecting from the articles offered by a mail-order supply house one that usually retailed at 15 cents,

but which cost him 8 cents, including postage, etc., he had a neat circular letter printed describing the article in detail, its uses and advantages, and offering it at 9 cents, if ordered within a certain time. These letters he sent to all those names he had secured in former mail-order transactions, explaining that every once in a while he offered special bargains in some article or other, and that this was one of those occasions. As most people already knew it was really a 15 cent article, he received a large number of orders, and when sending the article he enclosed another circular letter, quoting the prices on the other lines of articles, on most of which there was a fair but not extravagant profit. These also brought many orders from new customers, and by continually enlarging his list, and quoting his articles as close to cost as possible, he gradually built up a permanent and profitable business.

PLAN No. 453. EARNED HIS WAY THROUGH COLLEGE

Two young men in a northwestern city wanted to be lawyers, and both wanted to go to Ann Arbor, Michigan. One had some money, the other had not. The one with money loaned his friend $100 and with $50 saved he had a total capital of $150.

By the time Ann Arbor was reached and the preliminary expenses defrayed, there was just $15 left of the $150, and the young man who had it realized the importance of adding to that as speedily as possible. Therefore, during his vacation, he devoted his time to selling books.

Arriving in a city in central Illinois with a bicycle, a prospectus, and just enough money to stay over

night at a cheap hotel, he struck out into the country the next morning, pushing his bicycle through the black, heavy and sticky mud of that rich agricultural section, until he came to a farmhouse. Calling there, he showed the prospectus of the book, explained its merits in a carefully prepared talk, and when the farmer's wife wavered between yes and no, he clinched a sale by offering to deduct 25 cents from the price if they would let him take dinner. They did, and he sold.

That afternoon he sold another book by offering 50 cents off the price for supper, bed and breakfast, and from that time on he needed no expense money, because he paid for his meals and lodgings by selling books to farmers and deducting the charges for them from the price of the book. And that made many a sale which he would not otherwise have made. At the end of ten weeks' work he had made $350 as net commissions on his sales.

The next summer he took the agency for another book, which he sold in the towns and cities, thereby avoiding the strenuous work of wading through mud, and that season he earned $400 net in commissions on his sales, so that he had repaid the $100 loan, paid all his tuition and other expenses in college and had some money left.

The third summer, still sticking to the book business, he employed agents and assistants to make sales under his supervision, and made $500 through this work.

PLAN No. 454. A COMMERCIAL ART BUREAU

A young artist and a salesman joined forces and established an art bureau, along commercial lines,

and made it a success.

The artist could not have secured business by personal solicitation had his life depended upon it, but he could draw—anything—anywhere. The hustler made no pretensions of being an artist, but he could get business whenever there was any, and very often where there wasn't any, to a casual observer. Therefore, they made a strong team.

Their first specialty was the drawing of designs for doctors, lawyers and other professional men, the drawing containing the name of the person, some special emblem or symbol of his calling, or any other distinguishing feature he might select. From these drawings he could have an engraving made and as many copies printed as he required for bookmarks or other purposes. For these designs they charged from $10 up and did a good business.

Then they began a systematic course of commercial art work, embracing illustrations for advertisements, thus adding greatly to the attractiveness of advertisements. This feature they extended to all lines of business, and before long the advertising columns of the local newspapers looked very much like a picture gallery, while the ads. were eagerly looked for and carefully studied. They also made illustrations for the works of young authors.

Within a year or two they had all the work they could do.

PLAN No. 455. A GOOD COLLECTION SYSTEM

There have been many forms of collection agencies designed, some being good, some bad and some indifferent, but the system planned and worked by a man in a northwestern city is certainly novel in its

every detail. It “gets the money,” and nets its promoter from $12,000 to $15,000 a year. So the idea must be good.

This agency, incorporated, has the creditors sign a contract assigning to it all the accounts, judgments and notes listed underneath, in consideration of the services to be performed by the agency, and authorizes the agency to use its discretion in settlements, to collect, receive, adjust and discharge the same.

The names, last-known addresses and occupations of the debtors are given, with the date of the last item, the amount due, name of employer, etc., and on all of these accounts collected the agency is to receive a commission of 50 per cent for the first $100, and 15 per cent on all amounts in excess of that sum, except on notes, judgments and accounts over three years old, all of which shall pay a 50-per-cent commission, the commission to be due and payable to the agency whether the debtor makes payment to it or to the creditor. On any account withdrawn from the agency by the creditor, the commission to be considered as earned in full, and be due and payable to the agency at once. The creditor is to report promptly to the agency any payments made on the accounts after being listed, and the refusal of the creditor to report shall be held as a payment, the other accounts listed being considered as security for the payment of commissions on claims withdrawn or paid, or refusal to report. The contract to be enforced for six months, except as to judgments, notes or accounts upon which payments have been made, suit commenced in process of settlement, or secured in any manner. Creditor not required to pay any advanced fees or retainer, except 10 cents on each claim for address

verification. In case the services of an attorney are advisable, creditor agrees to employment of one and to pay 50 per cent commission on amounts collected, where agency assumes responsibility for costs and attorney's fees.

The creditor signs his name, with his business, the date and his address, and lists below the names, etc., of those debtors he desires to turn over to the agency, and for each name or account so listed he pays 10 cents to the solicitor who retains the entire amount as part of his commission.

The solicitor then forwards or brings to the office of the agency the lists thus secured, and the agency thereupon pays him 20 cents more for each account so listed, making 80 cents in all. Therefore, a solicitor securing 100 accounts in a day makes $30 a day.

This seems like pretty good pay for the man who solicits the accounts, and it is, but when it is considered that the head of the agency, who perfected this plan, collects practically 95 per cent of these accounts, and retains one-half of most of these collected, it will be very apparent that he can well afford to be liberal with the man or woman who goes out and picks up this business for him.

As an indication of the magnitude of the business, he performs services for 4,000 to 6,000 clients in a year, employs five girls as stenographers and multigraph operators, and sends out thousands of letters every month, most of which, bring tangible results.

It's a big business, and there is a big field in which to work it.

The success of his plan lies in the rapidity with which he handles a voluminous correspondence, and in this he is materially assisted by the use of an

electrically-propelled multigraph, rubber stamps, etc. His business is conducted almost entirely through letter-writing and he has hundreds of forms of original letters and follow-ups suited to all classes of debtors, enabling him to make attacks from every angle.

PLAN No. 456. MADE AND SOLD SHOES

A Boston young man, some years ago, was traveling salesman for his father, a wholesale dealer in shoes. His experience on the road proved how hard it was to get dealers to push the sales of shoes of any make, and he decided to go into the business of making shoes on an extensive scale and selling them in his own stores. At that time he had no stores, and all the large manufacturers ridiculed his idea, but he went ahead, just the same, secured models of the most expensive shoes made, opened a little store in Boston, began making shoes of excellent value, yet which he could sell in his own store for $3 a pair—that was before the war, of course.

He advertised these $3 shoes, first locally then nationally, and the ads. brought a steady demand for the shoes, to which he had given a dignified yet easily-remembered name, and it was not long until he had more shoe stores, and still more. Now he has nearly 400 of them, scattered over most of the civilized world.

PLAN No. 457. SELLING HAIR TONIC

Never mind what kind of hair tonic it was. There are many ways of making various kinds, and those

who wish to go into the business of selling hair tonic can select the one that suits him best. But it's the selling idea you are after, and here is how one young man did it:

To avoid the necessity of sending a 12-ounce bottle by express, at a cost to the buyer of 40 to 50 cents, he got a hair specialist to condense it into one ounce, so he could send it in a common mailing case for less than 5 cents postage, and pay that himself. All the buyer had to do was to add enough water to the condensed preparation to make 12 ounces of good hair tonic, and to a list of names of people who had sent letters to other hair-tonic advertisers he mailed a neat little booklet telling all about his condensed hair tonic, and offering to send a 1-ounce bottle for 50 cents, also enclosing a fancy label for a 12-ounce bottle.

Out of 4,000 such names, he sold 900 of the 50-cent bottles; then he advertised and got more names, sent more booklets and got more orders.

However, in order to encourage sales of two bottles at a time, he offered a neat, small purse, that cost him 10 cents in gross lots, and offered this as a premium with each sale of two bottles for $1, and, as most of those who wrote him were women, the purse brought the orders.

PLAN No. 458. BOUGHT HIS BRIDE A BUNGALOW

An Indiana man and his bride were returning in their automobile from a trip to the country, and passed a beautiful rural bungalow on a small farm, which the bride greatly admired. She told her husband she would like to own that place.

Arriving in the city, he left his wife at her mother's

and drove to his office. Hastily glancing over the letters on his desk, he turned to the want ads. of the daily paper, and scanned them carefully until he found one which announced that a man about to establish a dairy wanted to buy any number of milch cows, up to fifty.

Suddenly he remembered that in a country paper, a few days before, he had read an ad. of an auction sale of milch cows, to be sold at a place about thirty miles from the city. He found the paper in his auto-coat pocket and saw that the auction sale was to take place the next day, so in the morning he kissed his bride good by, told her he would be back that evening, jumped into his machine and drove away.

Arriving at the place where the cows were, he looked them over carefully, saw they were of a good grade, looked at the sale announcement again, and noticed it stated that any purchaser of one cow could take the lot at the same price per head. Then he waited until a poor, scrawny heifer was put up for sale, bid her in for $35, and announced that he would take them all at that price. The owner and several bidders objected, but the auctioneer pointed to the terms of the sale, and, having the cash with him, our friend paid for the herd, hired two men to drive them to the address of the man who wanted cows, sold them at a profit of $1,000, and drove home that evening with the deed made out to his bride for the bungalow and little ranch she wanted. This is illustrative of the opportunity that appears when one knows both the sellers' and buyers' wants.

PLAN No. 459. SELLING WATCHES ON INSTALLMENTS

An experienced salesman in an eastern city, having an idea that if other kinds of goods could be sold on the installment plan watches could also be sold that way, decided to try it out and see.

Beginning with a capital of less than $100, he first arranged with a watch factory that turns out a fairly good timekeeper at a low price, to supply him with a certain number of watches at from $3 to $12 each, to be delivered to him in small lots at first, as he could pay for them; and having expended the greater part of his $100 for these, he worked it at first simply as a local proposition, doing the canvassing himself. As the watches all contained an American movement, the cheapest of them having a five-year guaranteed case, they gave good satisfaction, and the monthly payments were promptly made, almost without exception.

It was not long until the business was paying him from $250 to $300 a month, and at that time he began to make it a mail-order business, advertising in a list of papers recommended by a reliable agency.

He aimed to sell every watch for at least three times what it cost him, and as he required from 25 to 33 per cent as a cash payment, this usually paid the wholesale cost of the watch, while subsequent payments were practically clear profit.

To those replying to his ads. he sent a neat circular, with illustrations of the various watches he had for sale, with prices, terms, etc., and these brought a very large percentage of sales. He is now averaging $500 a month net profit.

PLAN No. 460. DID DISTRIBUTING

An Illinois man, living in a city of 25,000 people,

had noticed that much of the distributing done in his town was very poorly executed. He had seen boys entrusted with expensive and valuable literature, chuck great masses of it under culverts, into sewers and other out-of-the-way places, and then collect as though having done honest work.

He knew of several druggists, and retailers in various lines, who let tons of advertising matter, sent them by manufacturers and wholesalers for distribution, lie in the stores and go to waste because the retailers were too busy or too negligent to have it properly distributed where it would do the most good.

He therefore called upon these people and offered to do their distributing in an honest and capable manner, at a very reasonable price, assuring them that it was to their own interest to have this advertising matter get before the public as early and as thoroughly as possible.

Most of the firms, knowing him to be reliable, gave him their work, and almost immediately noticed a marked increase in the calls for the particular goods mentioned in the literature. Improvement came from proper distribution, and they were glad to contract with him by the year to do all that class of work for them, at a stipulated price per month. Altogether, these contracts netted him nearly $100 a month, and left him spare time for other kinds of work.

PLAN No. 461. A SUCCESSFUL SELLING PLAN

Many of the readers of this book will select one or more of the plans herein set forth, and no doubt some of them will require local canvassing to make a success. But a great many people, after having an

article ready for sale, will not know just how to start selling. In order to aid these people in disposing of what they have for sale, we give herewith the selling plan employed by a very successful salesman in Buffalo:

He was selling a fine massage cream, nicely put up in a dainty jar, and bearing a very fancy label. The jars held one ounce, and sold for 50 cents each. Instead of rushing up to a house and asking the lady who answered the bell if she wanted to buy some good massage cream, he provided himself with a nice premium, such as an ornamental clock, a set of knives and forks, a silver spoon or bon-bon dish—something really valuable, yet which at wholesale cost him only 60 or 75 cents, but would retail at $1.50 to $2. He also carried a number of self-addressed postal cards, with room on the back for ten names and addresses, under a request from ten ladies to call upon each with a jar of the cream. He also had several jars of the cream along with him.

When a lady came to the door, he would show her the premium first, and inform her that he was giving it away. This, of course, interested her. Then he would show her the jar of massage cream, give her one of the postal cards, and tell her that if she would buy one of the jars of cream, and have ten of her lady friends write their names and addresses on the self-addressed postal, and mail it to him, he would give her the premium. This caught nearly all of them, for the lady got the 50-cent jar of cream and a $1.50 to $2 premium for 50 cents, and for getting ten other ladies to sign an order for one jar each. Then when the ten orders came in on the card, he called with the premium and another card for each and made it a sort of endless chain. This isn't canvassing, it's planning.

PLAN No. 462. COLLECTION AGENCY SOLICITING

Elsewhere in this book is an account of a party in a northwestern city who made from $12,000 to $15,000 a year through establishing a successful plan of collecting old accounts, mainly by means of letters.

Practically every merchant doing business anywhere has a large number of accounts which he has been unable to collect, and it is from these accounts that the solicitor can earn a good living.

Calling upon the merchants of his home-city first, he asked to be allowed to take over these accounts, the merchant to pay him 10 cents for each account so assigned, and, as he frequently listed as high as 200 accounts in a day, he derived $20 from this source alone as he was allowed to retain the entire amount. Then, on receipt of the accounts at the agency, he would be paid 20 cents more for each account, thus making his income $60 for one day's work. This was unusual, however, but any good hustler can make a good living from this work.

PLAN No. 463. OPENED A "SURPLUS" MARKET

A man and his wife, who lived in a city surrounded by a good fruit and agricultural country, and whose only possession was a horse and light wagon, and less than $100 in cash, concluded to open what they called a "surplus" market, where they disposed of a great deal of farm and orchard products that would otherwise have gone to waste. They rented a small stall in one of the city markets, and the wife took charge of that, while the husband drove several miles into the country each day looking for surplus products that could be had for little or nothing,

simply to get them out of the way. He was thus able to pick up in a day a wagon-load of good, sound apples, peaches, pears, vegetables, berries, small fruits, etc., at a total cost of $1 or even less—often for nothing—and these he brought to the market stall and offered for sale at just about one-half the prices asked by other dealers. To be sure, the fruits were not wrapped and labeled, or the berries placed in boxes, but their quality was fully equal to those that were.

Small as was this beginning, it gradually led to something larger and better, and they now own one of the most profitable little fruit stores in their city.

PLAN No. 464. BOOSTED HIS HOME TOWN BY BOOKLET

A northwestern young man, who believed that more factories and other valuable enterprises could be brought to his home city through stronger literature than was being sent out by the local chamber of commerce, prepared a brief summary of resources, supplies of raw materials of all kinds, marketing conditions, power costs, and everything that could possibly interest a manufacturer looking for a new location.

This matter was contained in an attractive booklet, concise and forcible in style, and dealt only with established facts and figures, with data that could not be questioned.

Then he advertised throughout the eastern cities and stated that he would send this reliable publication on receipt of 50 cents per copy, and received many answers containing enclosures.

Later he prepared another booklet of special

interest to farmers and as the matter it contained was so different from the ordinary literature so widely scattered over the country by various corporations, it met with great success, and brought a great many farmers to the surrounding country.

PLAN No. 465. A HOME-INDUSTRY PAGE

When a new daily paper was established in a northwestern city a few years ago, a young man who was an untiring hustler for business, and who had had a great deal of experience in soliciting ads., proposed to the publisher to conduct a page devoted to home manufactures, and make it an important feature of the paper, on a commission basis of 40 per cent. The publisher agreed to this, as he was confronted with very strong competition, and every new feature he could add to his paper was just that much more in his favor.

The young man therefore had a 3-column cut made, showing a large factory in full operation and below was a prominent display line, “Patronize Home Industries and Buy Goods Made in ———,” the name of his town.

Following this were the names of all products made in the home city, alphabetically arranged, the name of the article coming first, with the name of its manufacturer immediately following, so that anyone wishing to buy a certain article had only to turn to this alphabetical list to find the name of the article wanted, the firm or concern that made it, and either phone for it or call in person to obtain it.

The page became so popular that the name of every manufacturer in the city, with the name of his product, was listed in it, and exactly $5,000 was the

revenue derived from it the first year. The manufacturers were greatly benefited by it, the paper got $3,000, and the young man who originated the plan drew $2,000 as his commission.

PLAN No. 466. REFRESHMENTS FOR SHOPPERS

A woman in Denver, who had often felt the need of some refreshments while out for an afternoon's shopping, and yet did not care to pay the fancy prices asked at most of the swell cafés where it was "all style and nothing to eat," evolved a plan that she believed would be gladly welcomed by the women, and at the same time yield her a good income.

Not having sufficient means to rent a choice store on the leading street, or convenient to the shopping district, she went to the proprietor of one of the leading department stores and made arrangements to establish a little refreshment counter in his store, where she could serve hot coffee, sandwiches, etc., to women during the day. The merchant was glad to add this feature to his establishment, as it would be a benefit to him in attracting trade, and to the women shoppers as well as to the clerks in the store who would appreciate refreshments of this kind, at a very moderate cost.

She made her own coffee, prepared her own sandwiches and the few delicacies she served, and they were exceptionally good. She made a reasonable charge for what she served, and, although the profit was not large on any one article, it was a steady income and paid her well each year, for her refreshment counter became a permanent and popular feature of the store, drawing a large volume of trade, and no charge was made for the space she

occupied. In fact, the merchant would have been glad to pay her to stay, if he could not have induced her to remain otherwise.

PLAN No. 467. LAW AND FARMING IN THE NORTHWEST

A young law graduate was without funds so decided to go back to his early work, teaching school. His work was not very profitable and, besides, he wanted to marry, so he borrowed $150 to wed the girl he loved and took her to Northwestern Canada. There he went into the real estate business and formed a partnership with a man who thought playing pool was his business. In February he decided to go by himself. In Canada a book is issued giving the legal description of land for sale, price asked and the commission to the agent. The only asset he had was this book and a knowledge of the farm country. All through the cold month of February his office paid him but 50 cents, but March was better and in April he did a good business. That year his commissions alone netted him more than $8,000. He could not practice law in Canada but he could make out deeds and give advice which netted him a sufficient income to save the $8,000. He purchased at a low price 1,000 acres of wheat land. At the end of three years this poor lawyer-school-teacher had 500 acres in good wheat, his land almost paid for, with his third year paying him more than $10,000 in commissions.

When I knew him at college he was a fine fellow, but felt somehow that the other fellows had a corner on success. Of recent years he has changed—his dress, manner and his enthusiasm impress you at

once on meeting him. What he has done many will again do in the coming years with as great results.

PLAN No. 468. COLLECTING BRASS TEAKETTLES

A woman made a comfortable living by collecting old brass teakettles and old furniture from the homes of well-to-do people, second-hand dealers, etc., and advertising them as antique wares. One room in her home was used for displaying these articles, and many persons called to see them, with the result that they were rapidly disposed of at a good profit.

PLAN No. 469. TAKING ORDERS FOR WALL PAPER

One woman, who has good taste in the matter of decorations, derives a good income from taking orders for wall paper from the home-owners of her community. She visits a home, notes the furniture, finishings, etc., and shows samples harmonizing with the same.

The effect is usually so pleasing that she is generally given an order for wall paper or wall stains, of which she also carries samples supplied by a reliable company, and every order means a handsome profit to her. She often visits neighboring towns and takes many orders, as her good taste is recognized and her samples are greatly admired.

PLAN No. 470. CABINET MAKER FOR U. S. SEE PLAN No. 217.

PLAN No. 471. TINSELLING POST CARDS

It was a mere boy who worked out this little plan of making money during his spare time, and found it paid exceptionally well for the small amount of time, labor and capital involved.

Possessing some artistic talent, he sent for a tinselling outfit, that was advertised, and inserted a few small ads. in the local papers, to the effect that he would tinsel post cards for 3 cents each, or ten for 25 cents, and do better work than could be obtained in the stores selling the cards.

Many orders were received, and the work he did was so satisfactory that orders were repeated in most cases, and it was not long until he had cleared $87 on the work that required but a few hours of his spare time.

He has now decided to give his entire time to this line of work, as he can easily make from $100 to $125 a month, which was good for a boy.

The best tinselling outfits can be purchased for about $1.50 each, and very quickly pay for themselves, after which the returns are practically all profit, although he tinsels up to five words on each card, all for 3 cents per card, while the stores charge 5 cents each, and then only put on the name of the town desired.

PLAN No. 472. GETTING A START WITH INK POWDERS

A young man whose ambition was to build up a permanent business from a small beginning, as he was practically without capital, concluded to start on one item at first, and gradually add others as he

could afford it, so he chose inks—not one, but several kinds of inks. These inks he purposed to put up in the form of powders, leaving only the hot water to be added by the customer. But the different formulas were all so good that from anyone of them an enterprising man could work into a good-paying business, and they are therefore submitted herewith as separate plans.

Here is the formula he used for producing a powder for a writing fluid that is equal to the best inks on the market and better than most of them. And the beauty of it was that he could sell enough of the powder for 10 cents to make a full pint of the very best ink, and realize a very good profit on it over that price:

Nigrosin, 1 ounce; soluble blue or water blue anilin, 2 ounces; salicylic acid, 15 grains; dextrin, $1^1/_2$ ounces.

This will make from one to two gallons of ink, when dissolved in hot water, according to the shade desired—the more powder the darker the ink. Fine for either ordinary or fountain pen, and sold well.

PLAN No. 473. BLUE INK POWDER

Many people prefer blue ink, and for them he made powders of an excellent quality as follows:

Water-blue anilin, 1 dram; dextrin, 5 drams; or according to the following formula:

Soluble Prussian blue, 1 dram; dextrin, 2 drams. Dissolve the powder in hot water, varying the intensity of the blue shade as desired, by using more or less powder.

This was a popular and profitable seller.

PLAN No. 474. GREEN INK POWDER

Green ink is a novelty, and for that reason many people like to use it. He made the powders for green ink as follows:

Green anilin, 1 dram; dextrin, 4 drams. To use, dissolve in hot water, using more or less of the powder as darker or lighter shades of the green are desired.

Very easy and cheap to make; very easy and profitable to sell.

PLAN No. 475. RED INK POWDER

Red ink is always in demand, but many of the red inks on sale at stationery and other stores are of a very inferior quality. Red ink made from the following formula, as this man made it, gives universal satisfaction in all cases where red ink is required:

Red anilin, 1 dram; dextrin, 1 dram. To use, dissolve the powder in hot water.

These various ink powders are usually put up in packages of a sufficient quantity to make a pint of ink, and this requires from a teaspoonful to a tablespoonful of the powder.

Having no capital, the young man began with the direct selling plan, canvassing from house to house and from store to store, and selling to his acquaintances whenever possible. From the profits these sales brought him, he was soon able to take up the trust scheme, sending twenty-four packages of the powder, put up in small envelopes, to boys and girls whose names he obtained in various ways, offering them a premium of a watch, a camera, roller

skates, silver spoons, or other articles he could buy cheap in quantities, when each one had sold and remitted for the twenty-four packages.

Later he inserted 25-word ads. in various papers, and made a large number of sales direct by mail from that source. Today he owns the largest and best patronized stationery store in his town.

HOW SEVEN BOYS EARNED MONEY

Seven boys, from 12 to 15 years of age, all pupils at the same city school, and all close chums, adopted seven different ways of earning a little money during vacation, and it is pleasing to know that all seven succeeded. Here are the plans they followed, one boy to each plan:

PLAN No. 476. CANCELED POSTAGE STAMPS

One boy went to the large business houses and collected all the canceled stamps he could find on envelopes received through the mails. Many of these were from foreign countries and brought good prices when offered to dealers or boys making stamp collections, while the domestic stamps he sold for 25 cents per thousand. During the vacation period that year he made over $50.

PLAN No. 477. BOUGHT A PRINTING PRESS

Another boy induced his father to help him buy a small printing press, and cards of various sizes. He then took orders for the printing of these cards for other boys and for men needing the cheaper grade, charging 75 cents per hundred and cleared up nearly

$40 above expenses, besides paying for his printing press.

PLAN No. 478. PARLOR MAGIC

The next boy with a taste for entertaining, and being clever at sleight-of-hand tricks, bought a book on parlor magic, and gave entertainments at his own home and the homes of other boys, charging 10 cents admission. He performed these tricks so well that everyone felt that he or she had received full value for the dime paid at the door, and the youthful entertainer realized a net profit of almost $60 during the three months of his summer vacation.

PLAN No. 479. DID SCROLL-SAW WORK

The fourth boy, being of a mechanical turn of mind, bought a scroll-saw, with which he made a great variety of very pretty things, and for these the neighbors were glad to pay good prices, especially where he made any special design to order. He was very skilful in his work, and was kept busy most of the time, so that his net earnings during vacation were $37.

PLAN No. 480. A LEMONADE STAND

The fifth boy had a taste for merchandising, and set up a lemonade stand in the front yard of his home, where many people passed every day. He had various-sized glasses in which he put his lemonade, properly made and tastefully displayed, and sold his product at 1 to 5 cents a glass, according to size. He also had some very good ice cream which he sold in small dishes at 2 to 5 cents a dish. Children were his

principal customers, but even at these low prices, he made a good profit on his sales, and the business netted him a little more than $30 altogether.

PLAN No. 481. DOING ODD JOBS

The sixth boy did odd jobs wherever he could find them, such as carrying satchels or parcels from stores, or to and from trains, pushing baby carriages in the parks, running errands for neighbors, and anything else that came handy. He was always on the lookout for work and was very seldom idle. His earnings were $23.75, and he was very well satisfied with that.

PLAN No. 482. COLLECTING OLD MAGAZINES FOR SALE

The seventh boy went from house to house, collecting all the old magazines that people were willing to give away, and sold these to dealers at a good price per pound, as anything made of paper was in good demand. This boy was more successful and his earnings were $70 during that three months of vacation.

SUGGESTIONS FOR THE FOLLOWING PLANS

A few of the following plans, are mere outlines containing suggestions which may be worked out in more detail by those who wish to make use of them. New features may be added as they suggest themselves to each person adopting one or more of the plans as a means of making a living. In giving so many under one heading, space will not permit a

separate method for handling each plan.

In order to determine the best selling plan, or the best method of profitably handling any of the ways outlined, it would be well for a person to read as many of the plans set forth as possible, and become familiar with the various means employed by others to obtain the best possible results.

Selling plans for produce named in this book are of various kinds, and include personal solicitation by a house-to-house canvass, the employment of agents to sell on a commission basis, placing the article on sale with druggists and dealers, mail order, advertising in suitable mediums, giving away of coupons to dealers, who in turn give them to their customers; the trust plan, or sending a certain number of articles or packages to children, to be sold by them at a certain low price, and paying a premium either in merchandise or cash; filling orders by parcel post; placing of general advertising through a reputable advertising agency, that will not only help to prepare the proper kind of advertising, but also be able to select the best mediums for that particular product; selling of certain items of information direct to the customer, telling him how to make practical use of certain ideas of which he had no previous knowledge.

All the above selling plans are set forth in various parts of this book, in connection with the statement of how certain plans were successfully worked by individuals who adopted them as a livelihood, and the testimony of these persons should prove a valuable guide to others seeking similar results.

PLAN No. 483. CADET OFFICER FOR U. S. SEE PLAN No. 217

PLAN No. 484. LITTLE "TINKERING" JOBS

Replenishing and replacing batteries for doorbells, mending kitchen-ware, and replacing various articles about the house will often give a very good income in a small place where experts from large establishments are not within reach. Many an elderly man, who could not do anything else, has made a comfortable living by doing these little "odd jobs."

PLAN No. 485. CARPENTER FOR U. S. SEE PLAN No. 217

PLAN No. 486. DESIGNER-LANDSCAPE. SEE PLAN No. 217

PLAN No. 487. THE "HOKEY-POKEY" SUMMER SELLER

One of the most delicious confections, and one that scores the largest number of sales during the summer season, is made as follows:

One can condensed milk; 2 tablespoonfuls cornstarch; a little cold milk. Put the remainder of the milk in a double boiler, and when hot add the cornstarch. Cook five minutes, then add the condensed milk, and set aside to cool; then add the vanilla, and freeze. Cut into squares or sticks and pack closely in a wooden pail, and it will sell readily for 5 or 10 cents a stick.

A splendid seller at fairs, picnics, parties, etc., and a popular delicacy in the city at soft-drink stands and

confectionery stores. Yields an unusually large profit.

PLAN No. 488. A SHOE POLISH IN POWDER FORM

Shoe polishes always sell, and it is only a question as to which is the best one. The following is not excelled:

Take powdered gum arabic, 5 pounds; sugar, $1^1/_4$ pounds; analine black, 3 ounces. Powder these and mix well. Then divide into ten packets, each of which will produce a pint of polish, or into twenty packets that will make a half-pint each, though more may be made from, a packet, as it is rather thick, especially for kid or glaze leathers. It can be used with either water or vinegar, or these combined, in which to dissolve the powder. Apply with a brush, and continue the friction until the superfluous fluid dries and the polish appears.

To make this a tan polish, use 1 ounce of chrysodine, instead of the analine black.

A fine polish and a good profit in this preparation.

PLAN No. 489. LETTER CARRIERS FOR U. S. SEE PLAN No. 217

PLAN No. 490. METAL POLISHING BLOCKS

These are made of precipitated chalk, 2 pounds; powdered tripoli, $^1/_2$ pound; jewelers' rouge, 1 ounce. Mix into a stiff paste, with 1 ounce of glycerine and a pint of water, previously mixed, and pour on just enough of the liquid to work the

powders to the consistency of fresh dough. Then place in little wooden butter molds to shape them and set aside to dry, then force out and fill again. The blocks are used with a soft cloth and a few drops of water, which will give metal articles a fine polish. You can sell all you can make of these, and realize a profit on them that will surprise you.

PLAN No. 491. CEMENT WORKER FOR U. S. SEE PLAN No. 217

PLAN No. 492. CERAMICS FOR U. S. SEE PLAN No. 217

PLAN No. 493. SOAP LEAVES FOR TRAVELERS' USE

These are made by passing sheets of paper over rollers and through a hot solution of liquid soap, then passing it over drying cylinders, and cutting it into sheets of the desired size.

They are so convenient and cheap that travelers will buy them and there is a good profit in making and selling them.

PLAN No. 494. HAVING THE BUTTER YELLOW IN WINTER

Just a little secret, but it is worth a good deal to buttermakers and housewives who pride themselves upon the color of their butter, and will pay

something to know just how to obtain it:

Just before you finish churning, put the yolk of one or more eggs into the churn, and you'll have just the color you desire—a rich yellow.

PLAN No. 495. REMOVING FOUL AIR FROM WELLS

To determine whether or not the air at the bottom of the well is foul, place a lighted torch or lamp in a bucket and lower it into the well. If it continues to burn when the bucket rests on the water, it is safe to descend. If it is extinguished, the air is foul. To remove this, lower a pail filled with burning straw, or by dropping two or three quarts of freshly slaked lime down the well. But test with the light again before descending.

Plenty of people who have wells would gladly pay a small sum to have this information mailed to them.

PLAN No. 496. A QUICK FATTENING FOR FOWLS

Fowls will quickly fatten if given a mixture of ground rice, well scalded with milk, to which some coarse sugar has been added, making it rather thick. Feed several times a day, but not too much at a time.

An ad. in poultry journals, offering to tell how this is done, for 25 cents, should bring excellent results.

PLAN No. 497. ARM AND BUST DEVELOPER

Regarding it as every woman's duty to look her best at all times, a young lady in Denver prepared a

most effective arm and bust developer from the following formula:

Lanolin, 2 ounces; cocoa butter, 2 ounces; olive oil, 2 ounces. These she melted in a double boiler, and heat until cold, when it was ready to put up in 2-ounce jars that sold for 40 cents each, and proved so satisfactory that she received hundreds of orders each month, through a few ads. judiciously placed, besides having a good sale through drug stores.

The directions she gave were to first bathe the parts with hot water, to open the pores, and then rub in the cream very thoroughly at bedtime for a number of nights.

PLAN No. 498. REMEDY FOR BRITTLE NAILS

Women who are annoyed by having brittle nails are always glad to learn of some effective way to make and keep them soft. This prompted a young lady in St. Paul to utilize the following formula:

White petroleum, 1 ounce; powdered castile soap, 1 dram; oil of bergamot, a few drops. This softens the nails, cures hang-nails and renders the cuticle around the nails soft and pliable, so that it can be easily removed with a towel or orange stick.

One small ad. in a leading magazine brought a great many orders, and by repeating the ad. in other periodicals, the young lady earned $1,500 clear profit the first year.

PLAN No. 499. BATH POWDER

The delights of the bath are greatly multiplied by adding a well prepared bath powder, and one of the

very best of these was put up by this lady, as follows:

Borax, 10 ounces; tartaric acid, 10 ounces; starch, 5 ounces. Mix the ingredients together, and perfume with lavender water. Two teaspoonfuls of the powder to a tub of water will soften and perfume the same making it at the same time more cleansing and delightful.

She put this powder up in 8-ounce paper boxes, and sold it for 25 cents a box. It proved a good seller all the year round and the profits were exceptionally large. The drug stores carried it in stock, as it assisted greatly in making other sales, owing to the demand for it.

PLAN No. 500. SACHET POWDER

There are many kinds of sachet powder, but none are superior to the following, which this lady prepared and sold in immense quantities:

Orris root, 10 pounds; lavender water, 16 ounces. Spread out the orris root in thin portions on a table, and sprinkle the lavender water over it. When dry, after the two have been well mixed, it is ready for packing.

She put it up in envelopes containing one ounce each, and these she sold in large quantities for 10 cents each.

Occasionally she would offer a package of the sachet powder as a premium with other preparations that were not selling as rapidly as they should, and thereby greatly increased her sales of other articles in this way. Besides, one package of the sachet powder usually brought repeat orders.

PLAN No. 501. SIMPLE METHOD OF SILVER PLATING

A Dallas, Texas, man made a very good living by coating small metal articles with silver, without the use of a battery, as follows:

First, he dipped the article to be silver-plated in a solution of common salt, then rubbed it with a mixture composed of one part of precipitated chloride of silver, two parts potassa alum, eight parts common salt, and eight parts cream of tartar. The article was then washed and dried with a soft rag, when it had all the appearance of silver.

By calling at houses and explaining what this would do, as well as by a few ads. in the local newspapers, he was soon getting all the work he could do, and as people were willing to pay good prices for having their ordinary ware look like silver, he made good wages at this business.

PLAN No. 502. STOVE POLISH THAT ENAMELS

To make an excellent stove polish that was really an enamel, a Colorado man prepared the following:

Mix two parts of black lead, 4 parts of copperas, and 2 parts of bone-black with water sufficient to form a creamy paste. The copperas produces a jet-black enamel, causing the black lead to adhere to the iron.

The cost of making this was very slight, and when people saw what a fine polish it made it was easily sold.

PLAN No. 503. BANISHING FLIES BY

FUMIGATION

A western man who was interested in the swatting-the-flies idea, yet wished to do so without using the messy, sticky stuff you put on fly papers generally, or running the risk of poisons, invented a fumigating flypaper that is easy and clean to use, and gets rid of the flies in a hurry. He makes it as follows:

Powdered quassia, 4-ounces; powdered chlorate of potash, $1^{1}/_{2}$ ounces; French oil of pennyroyal, $^{3}/_{4}$ ounce. Mix these well, then add $^{3}/_{4}$ pint of clear water and mix all together thoroughly. Soak sheets of blotting paper about 4x9 inches in size in this solution, stirring it up frequently. Dry the sheets in the sun or by gentle heat. A sheet thus prepared, if burned in a room, will clear it of flies.

The man put these up in packages of ten sheets each, and retailed it at 10 cents per package. The druggists and grocery stores bought large quantities, and when he advertised it in a list of good papers, he received a great many orders.

His first year's operations netted him a very good livelihood.

PLAN No. 504. CEREAL DISEASE—U. S. SEE PLAN No. 217

PLAN No. 505. SALE PLAN FOR ALMOND CREAM

Few of the accessories of women's toilets are more highly esteemed than is a preparation known as almond cream, and a lady who was especially partial to this, put it up in the following manner:

Distilled water, 90 fluid ounces; quince mucilage,

5 ounces; solution of soda, 1½ ounces; boric acid, 1 ounce; cold cream, ½ ounce; sweet almond oil, ½ ounce; glycerine, ½ ounce. Stir cold cream, almond oil and solution of soda together until a uniform soapy cream is obtained. Dissolve the boric acid in 60 ounces of water, warmed, and to this add the glycerine and quince mucilage, then add this composition slowly and with regular stirring to the former. Add sufficient perfume and the rest of the water, stirring until uniform.

The drug stores sold a large quantity, and she added to her receipts by making it a mail order proposition.

PLAN No. 506. SOLD PREPARATION TO ERADICATE PERSPIRATION ODOR

A physician in New York, who had made a specialty of preparing various toilet accessories for women, gave one of his patients the following formula for destroying the odor of perspiration, and she was so well pleased with its effects that she put it up for sale. She made a success of it, first through agents, then through the drug stores, and later through advertising it in a number of ladies' magazines. To-day it is one of the standard preparations for women's use, and is enjoying a large sale. It does the work, and the following are the ingredients:

Borax, 10 grams; starch, 10 grams; salicylic acid, 3 grams; powdered alum, 5 grams; talcum powder, 50 grams; napthol, 5 grams.

However, if the odor is not excessive, ordinary cooking soda, applied under the arms with a powder puff, is often efficacious.

PLAN No. 507. SOLD PREPARATION TO PREVENT OR REMOVE SUNBURN

An eastern woman, who was particularly susceptible to sunburn, prepared the following, which proved both a preventive and a cure:

Orange flower water, 2 ounces; rosewater, 2 ounces; tincture of benzoin, $^{1}/_{2}$ ounce; borax, $1^{1}/_{4}$ drams.

By applying this before going out, it prevented the skin from becoming sunburned, while in those cases where the mischief had already been done, she bathed her face with it several times a day, until the sunburn was removed.

This was so easy and inexpensive to make, and met with such a ready sale, that she found it extremely profitable to put it up in large quantities. Every lady who tried it gladly recommended it to her friends, and soon the drug stores were calling for all she could put up. A little advertising greatly increased the sales, and she is today enjoying a good income from it.

PLAN No. 508. CHAUFFEUR—P. O.—U. S. SEE PLAN No. 217

PLAN No. 509. CHAUFFEUR—MECHANIC—U. S. SEE PLAN No. 217

PLAN No. 510. CHEESEMAKER FOR U. S. SEE PLAN No. 217

PLAN No. 511. CHEMIST FOR U. S. SEE PLAN No. 217

PLAN No. 512. CLERK FOR U. S. SEE PLAN No. 217

PLAN No. 513. "TELLING THEM HOW"

A middle-aged man who had made a practice for many years of accumulating trade secrets, valuable formulas and various plans for making money out of little specialties not known to the public in general, was impressed with the belief that out of the itemized knowledge thus secured, he could render assistance to many people who were looking for something to do, and at the same time profit by largely himself.

He therefore had 1,000 copies of each of these money-making ideas printed in separate form, and advertised that for 10 cents he would send any one of them that might be selected from his list or any fifteen of them for $1.00. His expenses were confined to the cost of advertising, printing and mailing, and his receipts ran into hundreds of dollars the first year.

PLAN No. 514. ASSAYER FOR U. S. SEE PLAN No. 217

PLAN No. 515. COLLECTOR FOR U. S. SEE PLAN

No. 217

PLAN No. 516. ROASTING EARS IN WINTER

Green corn in the form of roasting ears is considered a delicacy even in its season, but to have the same thing in the winter time seems almost too good to be true. Yet a young farmer in Illinois did it, this way:

He gathered his sweet corn with the husks on, and putting a layer of salt in the bottom of a clean barrel that would not leak, he proceeded to fill the barrel, first with a layer of salt, then a layer of the corn, and so on until the barrel was completely filled. Then he put on top a large stone for pressure, and added a little pickle of salt and water. He set the barrel in the cellar, where it would be cool and yet not freeze, and found that it would keep perfectly for a year or more, if allowed to stay there.

That gave him an idea, and the next fall he put up nearly forty barrels of those pickled roasting ears, safely put away in his cellar, to be sold at high prices when the snow was flying.

PLAN No. 517. A QUICK FIRE KINDLER

A householder who had had much experience in building fires in the morning, and realized the difficulties and discomforts so often encountered in that necessary duty, experimented until he had perfected a kindling compound that could be relied upon.

He melted one quart of tar and three pounds of rosin together, brought it to a cooling temperature,

and mixed it with as much coarse sawdust as could be worked in, with a little charcoal added. This he spread upon a board, and when cold he broke it up into lumps about the size of walnuts. These ignited easily and burned with a strong blaze long enough to light any fire.

Being anxious to confer this advantage upon other households, he made up a large quantity and sold it to the fuel dealers in his city, at such a rapid rate and such a big profit that he commenced to make it on an extensive scale, and thereafter he looked upon the winter as his harvest time.

PLAN No. 518. COMMUNITY ORGANIZER FOR U. S. SEE PLAN No. 217

PLAN No. 519. COPYING PATTERNS ON CLOTH

An invalid woman, who liked working pretty designs on cloth goods, yet found difficulty in obtaining patterns to her liking, discovered a way of copying her own drawings on cloth, so that they could be worked as though they were stamped.

She mixed a quantity of finely powdered sealing wax with alcohol, until it was thoroughly dissolved. Then she dipped a clean pen in this liquid, and traced the desired pattern on tracing paper, and let it dry. She put this paper, marked side down, on the cloth on which she wished to copy the pattern, and pressed with a hot iron. The scaling wax in the liquid melted from the heat and stuck to the cloth, and formed a duplicate of the design she had drawn.

She was so well pleased with the results of the experience that she decided to make a profit out of

the information, so she advertised in the classified columns of the daily papers that on receipt of 25 cents she would instruct anyone how to do this work. Remittances came in, and the printed instructions were duly mailed, to the satisfaction of hundreds of women who sent for them.

PLAN No. 520. MAKING FURNITURE POLISH

If you knew that furniture polish was largely all profit, the selling of it would look like a good business to engage in. A young Tacoma man thought so well of the plan that he adopted it, and made a good income from it. He compounded it from the following ingredients, and it did the work:

He mixed equal parts of linseed oil, turpentine, vinegar and spirits of wine, shook them well, and applied to the furniture with a piece of linen cloth, afterwards polishing with a dry flannel cloth. It made old, dingy, scratched furniture look like new, and he sold large quantities of it, not only to families, but to furniture stores, second-hand dealers, and others.

Then he employed boys to go from house to house, leaving a small sample, with directions for use, with each housewife, asking her to give it a trial. A circular was also left with each sample, stating that in a short time an agent would call and sell the recipe for making it for 25 cents, and that enough of the ingredients to make a gallon of it could be purchased at any drug store for less than 50 cents.

As this looked so much more economical than to buy furniture polish at 25 to 40 cents for a small bottle, the originator of the plan found that, after paying the agent a commission of 40 per cent, he was still deriving a net income from it that averaged

close to $10 a day.

PLAN No. 521. FROM SHIPPING CLERK TO EMPLOYER

A Texas woman tells how she helped her husband rise from a poorly-paid shipping clerk to a business of his own where he became an employer instead of an employe.

Discouraged with the small salary he received, and noticing that the agents of the same company from outside towns appeared well dressed and prosperous, she induced her husband to ask the manager to allow him a commission on such sales as he might be able to bring in. The company agreed to give him 5 per cent commission on all orders he might secure, and the wife began writing letters to those she judged, from reading the papers, were prospective customers.

Receiving no answers to these letters she looked for the names of contractors and architects, and was soon in communication with a construction company that was erecting a large building. She interested the manager in brick, which the company employing her husband was making. Her husband informed his company of this prospect, and saw the construction company personally. The manager secured a large order as a result of this visit, and sent a check for $226 to the shipping clerk and his wife as commission.

The wife bought a typewriter and some letter heads, and carried on a correspondence with other contractors with the result that many more sales were made through her efforts, many more commissions were paid them, and shortly afterwards the husband resigned his position and gave all his

time to the sales end of the business.

To-day they own a good office where others are employed to help them, live in their own home, and are surrounded by many comforts they never dreamed of before.

Just because the wife had the wisdom to see ahead, and the courage and ability to carry out her plans to a successful conclusion.

PLAN No. 522. COMPUTER FOR U. S. SEE PLAN No. 217

PLAN No. 523. REFINISHING METHOD FOR FURNITURE REPAIRERS

A furniture repair man in Seattle discovered the following method of refinishing American or printed oak, a clever imitation of genuine quartered oak:

Clean up the piece, whatever it may be; if it needs washing, give it a good scrubbing, and then an equally good opportunity to dry. If you want to replace the figure, and it is not generally worn off, mix some dry Van Dyke brown with stale beer or cider, and pencil in the flakes. This can be done with a long camel hair "striper," or even with an artist's brush about one-eighth inch in diameter. With a little practice, the grain of the wood can be followed so that each piece can have its general design carried out. When this graining process has dried, coat with shellac, then varnish.

The effect produced by this method was so artistic that he was offered a good salary to take charge of all such work in a large furniture store in the city, but there are hundreds of other places in this country where the same method can be employed with equally good results.

PLAN No. 524. HE JUST TRIMMED TREES

There was one man in Portland, Oregon, who was

a competent and skilled tree trimmer. He knew all about shade trees, fruit trees, grape vines, shrubs, plants—everything that is worth saving and caring for in that line. He knew how and when they should be trimmed, and he obtained so much work that he was obliged to hire men to help him. But they had to be men who knew what they were about, or were willing to learn from him what they didn't know, so that he soon had them trained to do the work as it should be done.

There are plenty of openings everywhere for real tree-trimmers.

PLAN No. 525. GEESE ON THE FARM

If farmers more generally realized the profits to be derived from the raising of geese, there would be many more in the country, and thousands of dollars more in the farmers' pockets.

The wife of an Illinois farmer, who did realize how easy and economical it is to raise geese, and the profits they pay, in both flesh and feathers, made a specialty of them, and as a result of her foresight and enterprise always had money, while the other farmers' wives were continually complaining of the lack of pin-money. At last a number of them followed her example, and raised geese in great numbers. The care and cost of geese are small, compared with the expense of raising other fowls. They rustle their own living off of land that is good for nothing else, though in the breeding and laying season this lady gave them shorts and Indian meal twice a day.

From 100 geese, this woman generally realized from $250 to $300 a year, which was nearly all profit. She made the profits increase her flocks, until

she had several hundred, which brought her an excellent income every year.

PLAN No. 526. CONDUCTOR—ELEVATOR FOR U. S. PLAN No. 217

PLAN No. 527. CASH REBATE CARDS

A young man in Oakland, California, who was a good salesman worked out a little plan that brought him a good income.

He secured a first-class printer to make him up 1,000 very rich looking cards in colors. Then he called upon five prominent merchants, in different lines, showing them the cards, stated he was about to place these in the hands of the ladies at the heads of families in the city; that these cards entitled the holders to trade at any one of the five different stores named, and receive a discount of 10 per cent in cash at the time of the purchase; that he would call at these stores every month and collect a commission on all business each merchant had received through the cards, and that the use of these cards would greatly increase the merchant's trade. Most of those approached agreed to the plan.

Having secured the five merchants, our young man called at the residences, presented the card to the lady of the house, and assured her she incurred no expense or obligation in accepting it. In this way he distributed 200 of the cards.

Now, as it turned out that each holder of these cards spent at least $10 a week with each of these five merchants, his commission on the sales thus made amounted to $200 a month.

PLAN No. 528. CONSTRUCTION SUPT. FOR U. S.
SEE PLAN No. 217

PLAN No. 529. LOOKING UP OLD JUDGMENTS

Here is a plan that was very successfully operated by a young lawyer in a western city, and can be worked out just as well in every county-seat town in the United States:

He employed a young lady to go carefully over the dockets of both the superior and justice courts, and make a complete list of all unsatisfied judgments rendered during the six years preceding, so that they were not barred by the statute of limitations.

She made a careful note on a blank prepared for that purpose, of the number of the book in which the judgment was recorded; the case number; the name of the court; names of plaintiff and attorney; of defendant and attorney; of garnishee defendant, if any; amount of judgment; amount of costs; amount of attorney's fees, if stated; time judgment was taken, etc.

When she brought these reports to the lawyer's office he would consult a city directory or state gazeteer, to learn the present address of both plaintiff and defendant, then obtain from a reporting company the financial standing of the defendant.

He would then write the plaintiff, asking him to call in reference to the judgment, but not stating his knowledge as to the defendant's condition. When the plaintiff came in he would state he had a report on the defendant, which he could have upon the payment of $2, the cost of obtaining this data, but if the defendant was in such shape that the judgment could be collected, he would offer to collect it for 50

per cent, and have it assigned to him for that purpose. Then he would see the judgment debtor, and in many cases he was able to secure the entire amount. He would then enter satisfaction of the judgment on the court records, remit one-half to the plaintiff, and the balance was his. This plan made him $5,000 the first year.

PLAN No. 530. A CATCH PHRASE CONTEST

A well known firm manufacturing bookcases in an eastern city wanted a new catch-phrase for their advertisements, and offered a cash prize of $50 for the best one submitted.

A man submitted a phrase and won the $50. The firm, in sending him a check for the amount, announced that they would pay him a cash commission on all sales of their bookcases he might secure for them in his community, and being in that line himself, he was able to come in contact with many persons who wanted bookcases. As the merits of this particular one had been brought favorably to their attention through the effective advertising the firm was doing, sales were not difficult to make. The catch-phrase contest put them in contact with many hundreds of prospective purchasers for bookcases which were later turned into business.

PLAN No. 531. CANVASSING PLAN

To the canvasser or agent who has spent his life selling little 10 and 25-cent articles, shunning the homes of the wealthy through fear of being refused admittance, and wishes for something better, the

following plan should appeal:

A New York man got in close touch with several of the large importing and jobbing houses in eastern cities, and had become familiar with the better grades of imported laces, sold only by the best stores. He had acquired an intimate technical knowledge of these expensive goods, and was equipped with a complete outfit of samples mounted on cards that folded in four sections, covered with bookbinders' cloth and mercerized silk. He also had very rich business cards, containing his name as the representative of a big importing house.

Stopping in a town of considerable size, he would go to the best hotel, and soon would be in possession of the names of many society leaders. These he would call upon, send up his card, and, when admitted, state that he recognized the difficulty ladies have in obtaining fine laces outside the large cities, and that his house had therefore adopted the plan of offering its line of high-grade laces direct to the purchaser. In a most skillful manner he would lead the lady to the point of stating when he might present his samples for her inspection and practically every such inspection meant a large order, amounting to hundreds or even thousands of dollars. He would then ask the lady for an introduction to her friends upon one of her own cards, and this meant more sales—big sales—without number, for he used the card plan for introductions until he had supplied all the women in that town financially able to buy large amounts of fine lace. This required high-grade salesmanship, and his profits ran into many thousands each year.

PLAN No. 532. FURNITURE UPHOLSTERING AND

REPAIRING

An Indianapolis man made a profitable and permanent business of repairing and upholstering furniture, and by doing first-class work, at prices considerably below those charged by furniture houses, he secured the regular work of a large number of householders and some of the stores in that city. The various materials used, and the voluminous instructions given for performing the work in all its details, are entirely too long to be given in this book, but any one with a taste for this work will have no difficulty in familiarizing himself with the most approved methods, and can rest assured he can make a good living at it by diligent application.

PLAN No. 533. COOK FOR U. S. SEE PLAN No. 217

HOW SIX HIGH SCHOOL GIRLS MADE MONEY

Six high-school girl-graduates, who had just finished a course in domestic science, and were wondering what they could do to make a little money, were told by their instructress that she would give each of them a valuable household formula to work with, and that she would give a cash prize of $25 to the girl who made the most profit out of her formula in six months. The girls promptly accepted the offer, and went diligently to work with the following results:

PLAN No. 534. GOOD WHITE POLISHING POMADE

Girl No. 1 selected the following as the basis of her activity:

Tripoli powder, 1 pound; whiting, 1 pound; pumice flour, 1/2 pound; crude oleic acid, 1/4 pound; kerosene, 3 fluid ounces. Mix together with sufficient petroleum jelly to form a paste, and add perfume, such as oil of lemon, cassia, or nitrobenzol (mirbane) which gives the usual almond odor.

Making up a considerable quantity, in the above proportions, she canvassed a large part of the residence district in the city and took trips to outside towns, demonstrating and selling it, and received valuable aid from one of the drug companies when she put it on sale.

Her profits for the six months were $248.

PLAN No. 535. A FIRST-CLASS FOOT POWDER

The third girl chose a foot powder to work upon, the formula being as follows:

Finely powdered talc, 60 ounces; boric acid, 30 ounces; salicylic acid, 1 ounce; powdered alum, 1 ounce. Mix well, and scent as desired. The drug stores of the city told her they would take all of this she could make, as it was better and cheaper than powder widely advertised, and in the following six months her profits amounted to $287.

PLAN No. 536. A GOOD AND CHEAP HAIR DYE

Girl No. 4 thought she saw in a formula for a hair dye the foundation of at least a small income, so she chose that:

She gave samples to several elderly ladies of her acquaintance, and they were delighted with it. From these samples, indirectly, she sold several hundred

bottles, and then a young lady friend of hers, a very successful canvasser, offered to sell all she could make of it, on a commission of 40 per cent. She accepted the offer and, began making it in large quantities, while the other girl sold it, and at the end of six months found that her profits were $397.

PLAN No. 537. INSECT POWDER

Girl No. 5 was rooming at a house where cockroaches were driving the landlady almost frantic, and gladly chose the following formula as her field of operations: Persian insect powder, 4 ounces; borax 30 ounces; starch, 4 ounces; sugar, 3 ounces; cocoa, 4 ounces; tartar emetic, 4 ounces. Reduce all to a fine powder and mix thoroughly.

The landlady was her first customer, and soon dispelled the roaches. Then the girl visited all the rooming houses, hotels, bakeries, cafes, etc., in the city, and made good sales. The drug stores sold considerable of it also, while women canvassers sold some, and the profits of her plan in the six months were $275.

PLAN No. 538. STARCH ENAMEL

There was but one of the formulas left, and the sixth girl took that one, determined to make it a success. The formula was as follows:

Stearine, one powder; paraffin, 4 ounces; powdered ultramarine blue, $^1/_2$ dram.

Fortunately, this girl's uncle was the owner of a large laundry in the city, and he offered to make a thorough test of her product in his own establishment. The result of that test was that he offered to furnish the money for making this starch

enamel on a very extensive scale, and the sales were so large that by the end of the six months her share of the profits were over $700, and she not only took the prize offered by her domestic science teacher, but found herself a half-owner of a business that later made large profits each year.

PLAN No. 539. A DIABETIC GARDEN

A man who owned a small tract of fine garden and fruitland adjoining a western city, had suffered for years from diabetes, and all the ordinary forms of treatment had failed to improve his condition.

At last he purchased a book written by a celebrated eastern physician who had long been a professor of medicine in a leading university, as well as being associated with hospitals in large cities, and was an authority on diabetes. This book outlined a course of treatment which this man followed.

The source from which he received the most benefit and to which he mainly attributed his successful treatment, was that portion of the book relating to the proper vegetable diet for diabetic patients, advising the use of those containing the least amount of sugar and starch, and he raised most of these vegetables himself.

Acting upon the experience thus gained, he decided to extend this valuable aid and information to the thousands of other diabetics to be found in every community, and he thereupon inserted an ad. in a large number of newspapers, asking those so afflicted to write to him if they wished a certain and inexpensive treatment. To the hundreds who answered this ad. he wrote that he would supply the vegetables especially required for the diabetics, at

very reasonable prices, either summer or winter, as he had them canned for that purpose. Or, if preferred, he would mail the names of all the vegetables necessary, with complete instructions for their culture and use, for a certain amount.

These ads. and letters brought him a good revenue.

PLAN No. 540. A NOVEL COLLECTION IDEA

An eastern man, who had made a special study of human nature and of business morals, evolved a novel plan which enabled him to establish a small collection agency, and expand the business so rapidly by means of his idea that in the course of six years he was the head of four large collection agencies in as many prominent cities, and was deriving a large income from it. His letter heads and stationery all bore his name as “attorney and counsellor at law.”

His plan, though effective, was very simple: Securing accounts for collection, he would send to a bank in the debtor’s city a sight draft on the man owing the account, with instructions to the bank to return it to him promptly if not paid when due. He also had printed on the margin of the draft a detachable slip, saying: “No protest. Take this off before presenting.”

He knew that every man wants to stand well in the estimation of his banker, as the man who keeps his credit good can obtain bank accommodations which would otherwise be denied him, and he knew that if the account was correct, the debtor would pay it to the bank sooner than to anyone else. Therefore he was very successful in making prompt collections. In the few cases where his method failed to bring the money he was not out anything as he charged the

creditor 10 cents for every draft so sent out.

PLAN No. 541. COMPILED INDEX OF LEGAL FORMS

A young lawyer in a western city added considerably to his professional fees, and at the same time aided many other lawyers to install method and system in their offices by originating an alphabetical index of court papers and other legal forms, having the name of each paper duly set out opposite a certain number following, and keeping the forms in files for that purpose, each bearing a corresponding number.

By this means it was but the work of a moment to find in the index the name and number of the paper desired, and then turn to the file containing the number. It saved a great deal of time and space.

So convenient and time-saving did this method prove to be, that he secured a copyright on it, and had a large number of the indexes printed, which he sold readily to other lawyers in his own and adjoining states for $15.00 a set.

This was a great help to a young lawyer just beginning practice. His service was nearly all profit, and he was able to give time to the lawyer to pay, but he usually obtained all the payment on delivery. This will afford more than a living to any salesman.

PLAN No. 542. WROTE A BOOK ON SHOWCARD MAKING

A successful writer of showcards, employed by a large eastern retail house, felt that in helping others

to become as proficient in that line as he was himself, he could make money thereby, and he decided to write a book explaining every detail of the work in so thorough a manner that even those of only medium ability could understand and apply the principles as taught by himself.

He therefore prepared a book of seventeen chapters, treating exhaustively of every phase of showcard writing, including free-hand work, equipment, practice and principles, strokes, geometry of letters, round-writing pen practice, forms of lettering, outline, single-stroke letters, layout and spacing, ink and paints, primary and secondary colors, bronze, flitter, etc., catch-phrases, hints to card-writers, and much other valuable information.

He placed the price of his book at $1 per copy, and by advertising in trade papers all over the country he sold several thousand of them the first year.

PLAN No. 543. LAWYER TRADES FOR 80-ACRE FARM

A young lawyer, just out of college, located in a northwestern city of about 75,000 people, and, though his practice was not large during the first few years, he made a fair living.

An old, dilapidated frame house, within a mile and a half of the business center, was offered at a low price, there being a mortgage on the place for $1,800. The owner being anxious to get rid of the mortgage, offered to sell his equity for $50, and the lawyer bought it. Then he mastered his pride, went to work and cleaned up the premises thoroughly, and spent $150 for painting and other improvements, and moved into it with his family. It then looked like

a new place, and a number of trees with a good lawn gave it a very attractive and home-like appearance.

After he had lived in the house a few months, the owner of a farm within a few miles of the city, who wanted a home in town, and greatly admired this particular place, offered to trade the farm for the lawyer's equity in the city residence. The farm was worth $5,000, but had a $1,500 mortgage on it, and the lawyer made the trade, taking the farm, subject to the mortgage. The city house had cost him $200, while his equity in the farm was $3,500 or $3,300 ahead of his cash outlay.

Forty acres of the farm thus acquired were covered with a good growth of timber, which not only provided the new owner with all the fuel he would need during the rest of his life, but also enabled him to pay the interest on the mortgage every year through the sale of extra wood from fallen trees, etc.

There was an excellent 5-room house on the farm, surrounded by about six acres of orchard and garden, all in exceptionally good soil. He spent about $100 in fixing up the house and grounds and used the place as a summer home, going to and from his office in the city each week in his automobile.

He hired a young fellow in the country to plow, plant and cultivate the orchard and garden, and to sow the thirty-two acres in wheat, which brought him about $1,000, while the cost of having all this work done did not exceed $250. Part of the garden he planted in sugar beets and potatoes, and having bought a small grinder and cider press, he proceeded to make his own sugar, vinegar, cider, etc., while with the grinder he ground up sufficient of his own wheat to supply his family with the highest quality of whole-wheat bread, breakfast food, etc. As for his meats, he raised a few dozen chickens during the

summer season, and had spring frys in abundance, besides plenty of eggs. He also bought a couple of shoats at a low price, which cost nothing to raise, but which produced enough hams, bacon, pork and lard, when killed in the fall, to supply himself and family for almost a year. His milk, butter, tea, coffee, and other groceries did not cost over $100 a year, so that on his wheat crop alone he realized a net profit of $650, in addition to something like $200 worth of canned fruits and vegetables. Besides, the health of the family was greatly improved through a residence of a few months in the country.

PLAN No. 544. COTTON SERVICE—U. S. SEE PLAN No. 217

PLAN No. 545. KEEPING EGGS FRESH FOR A YEAR

Methods which are claimed to be infallible for keeping eggs fresh indefinitely are almost as numerous as the eggs themselves, yet many of these methods, while more or less expensive are far from reliable. However, a Denver poultry man, who had tried all the various ways of preserving eggs, finally adopted a method of his own, which has proved very successful.

Placing a dozen or more strictly fresh eggs in a wire basket, he dipped them in boiling water, deep enough to cover every egg, and held them there while he counted six. He then let them dry and cool, and packed them in oats, in a keg or barrel with oats on the bottom and between the eggs. Then he added a layer of oats and a layer of eggs, alternately,

placing the small end of the eggs down, until the barrel was full, then shaking it slightly so that the oats would settle all about the eggs. Some of these eggs were not used until a year afterwards, when they were found to be as fresh as the day they were packed.

Having proved his method a success, he at once advertised to sell the method for 50 cents, and derived an income of $1,200 a year, in direct returns, while the profits on his own supply of eggs, thus treated, were increased almost 40 per cent, as he could keep them until prices were high.

PLAN No. 546. CROP WORK FOR U. S. SEE PLAN No. 217

PLAN No. 547. INCREASING THE SIZE OF FRUITS AND VEGETABLES

If orchardists and gardeners were assured that they could almost double the size and greatly improve the flavor of fruits and vegetables, by a very simple and inexpensive plan, they would willingly pay almost any price for the information.

A fruit grower in California discovered this method, used it with good results in promoting the growth of his own products, and made a large amount of money by selling the secret to thousands of others engaged in the same line.

His method was to water his fruit trees and vegetables with a solution of sulphate of iron, and the effect was amazing. The size and flavor of those thus treated were vastly increased and yielded almost twice the revenue formerly derived from the

same products. He also treated flowers in the same way, and was surprised to learn that it gave them a peculiar brilliancy of coloring, as well as an exceptionally healthy aspect.

Having fully demonstrated the efficacy of this method, he advertised in a number of agricultural and horticultural journals, announcing his discovery, and offering to send the method to any one for 50 cents. The returns were surprising, and his receipts from this source amounted to more than $2,000 during the first twelve months.

PLAN No. 548. MAKING A SUBSTITUTE FOR EGGS

When eggs are selling at 50 to 60 cents a dozen most people are glad to use a substitute, especially when the substitute, for many purposes, is superior to real eggs.

A gardener in Los Angeles, who had experimented in many ways with vegetables of all kinds, discovered that carrots can be made a very satisfactory substitute for eggs. He boils, mashes and presses them through a coarse cloth or hair strainer, and uses them in making a pudding by introducing the pulp among the other ingredients of the pudding, using no eggs whatever. A pudding thus made is not only much lighter, but much more palatable than one in which eggs are used.

The results were so satisfactory, when used in his own home, that he at once wrote out full instructions for preparing the carrots, had 1,000 copies printed, and advertised to mail the information for 50 cents. He received so many remittances that his 1,000 copies were soon all used up, and several thousand more were printed. To-day he is in receipt of an

income that makes him a good living, simply through letting other people know about his discovery, and having them pay for it. But it is well worth the price.

PLAN No. 549. FATTENING HOGS ON HAY

How many farmers know that hogs can be fattened on hay? One farmer in eastern Washington knew it, and made profitable use of his knowledge, not only in fattening his own porkers at a small expense, but in supplying the information to other farmers. This is the secret of it:

Providing himself with a cutting-box, he cut very green hay short, mixed it with bran, shorts or middlings, and fed it the same as other feed. Hogs soon become fond of this, especially when soaked in swill or other slops. In the winter he fed his hogs the same kind of hay that he fed his horses, and they fattened on that as rapidly as on anything that could be given them, even corn or shorts.

Convinced that he had made an important discovery, he advertised in a number of farm and stock journals that for 50 cents he would send full information regarding the fattening of hogs by a new method, and received hundreds of replies containing enclosures. So many of these came in that they afforded him a steady and comfortable income, besides the greatly increased profits derived from fattening his hogs at a comparatively trifling cost.

PLAN No. 550. MADE MONEY WITH VACUUM CLEANER

While everyone recognizes the value of a vacuum

cleaner in the removal of dust and dirt from house furnishings, comparatively few people own them, as it requires considerable of an outlay to buy one, and more or less exertion to operate it.

A young woman in a western city, who was in the habit of thinking matters over for herself, thought she saw an opportunity in this fact to make a little money for herself by relieving people of these expenditures, and she therefore bought one of the best makes of vacuum cleaners, on the installment plan, and started out to build up a little business of her own.

Calling at a number of homes where she had reason to believe there was not one of these conveniences, she secured several contracts, on her first day's canvass, to come once a week and give the house a thorough going over with her machine, at a stipulated price per hour. Figuring that she could perform this service satisfactorily in two average homes each day, she continued soliciting until she had twelve permanent patrons, and then began her work.

From the very beginning, her receipts averaged $5 a day. She has not only paid all the installments on her vacuum cleaner, but has made a good-sized payment on a little bungalow, which is now her home.

PLAN No. 551. MADE AD. SOLICITING PAY

A young man from Chicago, who had been connected for several years with the advertising department of one of the city's big dailies, was obliged to go west on account of failing health, and decided to locate in a northwestern city of about

100,000 population.

Here he found a number of weekly publications, all more or less lacking in advertising patronage, and, being an expert in that line, he saw an opportunity to build up a good business for himself, while adding greatly to the revenues of those struggling periodicals.

He therefore interviewed the publishers, and made them the following proposition: That he would secure advertisements for them, up to a certain amount, at the regular rate of commission, and all in excess of that amount of advertising should belong to him.

The publishers were glad to make this arrangement, as it meant at least twice as much business as they ever had before, so he went to work and soon had doubled the advertising in each of the papers. It was then an easy matter to obtain still more, for his own exclusive benefit, and his net earnings the first year were over $5,000.

He also secured ads. for special publications, with the understanding that after enough had been obtained to pay the cost of the ads. the balance should all be his.

PLAN No. 552. TEACHING SCENARIO WRITING

A New York man, who had written many scenarios for motion picture companies, finally concluded to start a paper devoted to that industry, and adopted a novel means of securing subscriptions for it.

He advertised in a number of magazines that for 25 cents he would send his paper for an entire year, and at the same time would mail each subscriber a sample scenario, showing how to construct the plot,

together with a list of film manufacturers in the market for motion-picture plays, etc.

By this means he not only obtained several thousand subscribers, but enabled many aspiring scenario writers to construct plays that found a ready demand when submitted to the various companies making use of them. To be sure, he sent the same sample scenario to all his subscribers, and the cost of it was only the expense of having it printed in large lots. But this plan built up a good subscription list, which made his advertising space very valuable and brought excellent returns.

PLAN No. 553. CHILDREN'S PHOTOGRAPH SPECIALIST

A young photographer in a northwestern city, who was very fond of children, and was unusually successful in making good photographs of the little ones, opened a studio in an exclusive residence section of the city, and fitted up the lawn in front as an attractive playground. There were many trees all around the place, and these greatly heightened the park-like effect he wished to produce. Rustic seats, swings, etc., were arranged among the trees in front of the house, and the children of the city were invited to make it their common playground, under certain restrictions, of course, requiring them to be quiet and orderly.

Then he began the work of making photographs of children exclusively, arranging them singly or in groups and in various posings, on the lawn when the weather was good, or in the artistically-arranged studio at times unfavorable for outdoor work.

These pictures soon created so great a demand that

mothers brought their children from all over the city, as well as from outside points, to have them photographed. Within a year from the time he established his studio for children's photographs, he was enjoying an income that averaged $500 a month.

PLAN No. 554. CONDENSING GOVERNMENT PUBLICATIONS

A former newspaper man who was incapacitated for active service on the city dailies, concluded that he could still make a comfortable living by turning his talents toward condensing the numerous publications issued by the department of agriculture, compiling their salient features into one volume, and selling the work to farmers, stock-raisers, gardeners and others who had either neglected to send for the government pamphlets, or did not know they could be secured free, or did not read them.

He therefore wrote to Washington, D. C., secured copies of all the various publications obtainable, and made a brief, concise synopsis of their contents, in attractive form.

He bound them in one book with paper covers, and advertised in farm and other papers at 50 cents a volume.

PLAN No. 555. BUSINESS ADVISER

A New York lawyer who had had a large experience in business matters, decided to remove to San Francisco, mainly for climatic reasons, and concluded to enlarge upon the scope of his former

activities in the eastern metropolis.

He therefore opened an office and announced that he would act as business adviser to all, and would superintend the organization of large corporations, keeping them advised as to all business as well as legal aspects of their undertakings, look after the intricate affairs of established concerns that desired to improve their business methods, and give advice in all matters requiring careful supervision or reconstruction.

Being a man of unusual ability, he charged reasonable fees for his services, and in the course of a few years was held in such esteem that his advice was much in demand. This work put him in touch with propositions in which he was able to make big profits.

PLAN No. 556. MEN'S APPAREL ADVISER

If we are to consult a doctor when we are sick, a dentist when we have a toothache, a carpenter when we want a house built, then why not consult a specialist in apparel when we want to be properly clothed? That's what a Denver dealer in men's clothing and furnishings asked himself, and forthwith proceeded to find the answer.

Carrying an exceptionally fine and very complete line of the "best in men's wear," and possessing a taste in matters of dress that won the confidence of his patrons and the envy of his competitors, he decided upon a novel mode of procedure, and carried it out with success.

With tact that conveyed a compliment rather than a criticism, and gave pleasure instead of offense, he skilfully and diplomatically suggested to each of one

hundred of his closely intimate male friends that he would appreciate the favor of engaging as their adviser for a year in all matters of dress; in the selection of suits, overcoats, hats, shoes, gloves, and furnishings complete—not so much for the small profit there would be in it, but in order that each man so appareled could be pointed out as a model of perfect taste in dress, when fitted out from the dealer's stock of men's accessories, and in accordance with his well-known judgment in matters of that sort. He suggested that his patrons need not spend over $200 to $250 to be well dressed for that entire period.

To every one of these the dealer gave his careful personal attention, devoting hours, if necessary, to the smallest detail of his patrons' needs, and every man was a living advertisement of this clothing man's good taste in dress.

PLAN No. 557. ONE-MAN SALES COMPANY

A Seattle man who had had considerable experience in selling goods of various kinds, and had formerly been head buyer for a large department store, which gave him special knowledge of all classes of merchandise, as well as the retail prices of goods, decided to make use of his knowledge, so went into business for himself.

He had a full line of good stationery printed, calling himself the "Blank Sales Company," and used this in writing to manufacturers all over the country, asking to be quoted the very lowest prices on their products.

At the same time he advertised that he would supply any article of merchandise, at prices below

those asked by local retail dealers, and, in answer to inquiries for certain articles, quoted figures that were low, but the patron was in all cases required to pay the freight on the articles purchased.

Shipments were made direct from the manufacturer to the customer, he was not required to handle the goods, but collect and remit the net every thirty days, which left him a good margin of profit. His earnings the first year were very large. This business has no limitations.

PLAN No. 558. CANNING THE SURPLUS

A widow and her daughter, who lived in a rickety old house on a run-down farm in the Middle West, were greatly distressed by the lack of funds with which to improve the appearance and comfort of the old dwelling, but had never been able to accumulate the necessary funds to have it done.

The farm was every year yielding a greater quantity of fruit, berries, and vegetables than they could possibly use, and this surplus was all going to waste for the want of care. Finally the widow said to her daughter: “Let’s can this surplus, and we will get good prices for it later in the season.” So they began.

They had a few fruit jars and jelly glasses, all of which they filled with good grades of fruit, vegetables and berries, and then bought as many more as they could afford, besides what sugar they needed for canning. A few cans of their fruits, as well as some of their jellies and preserves, they sold to well-to-do neighbors and city people, at good prices, and so well pleased were the purchasers of their products that they never found it necessary to advertise or peddle their goods, for people came for

them and bought until the supply was exhausted. And the buyers were always willing to return their jars and glasses, when empty, so their outlay thereafter was small.

They cleared nearly $100 that first season, $220 the second year, and at the end of the third year they had enough money to fix up the old house and make it an attractive, homelike, country residence. But they still can and preserve the surplus from their orchard and garden, and are making a good living from it.

PLAN No. 559. SPECIALIZED IN FITTING CHILDREN'S SHOES

A young shoe clerk in Chicago developed so great a "knack" for correctly fitting children's shoes, with special study of the habits as well as the feet of the children, that scores of mothers who brought their little ones into the store would allow no one else to wait upon them. No matter how busy he was—they would patiently wait their turn until he could attend to the delicate matter of fitting each child, regardless of its age or disposition. This is his method:

For the active, outdoor boy he selects a heavier, more substantial shoe than for the studious, indoor child. He takes off the old shoe, notes its size and shape, measures the foot, feels of the arch, to see whether high or low, and chooses for the new shoe one that is one and one-half sizes larger than the actual measurement, to allow room for spreading. If the child is very heavy, he allows two sizes larger. He runs his fingers along the three small toes of the foot, when the shoe is on; if the toes are curled up, the shoe is too narrow. Then he notes the position of

the big-toe joint, to be sure the shoe is the proper length. For the child with weak ankles, or just learning to walk, he supplies shoes with whalebone supports in the back, and for the child with normal feet he advises the soft leather shoe with flexible soles. He disagrees with doctors who urge arch supports, as he says the shoe that keeps the foot in the best position is the proper one.

The reputation of his skill for fitting children's shoes spread throughout the entire shoe trade of Chicago, and one day the head of a large retail shoe house in that city came in and offered him a one-fourth interest in his business if he would take charge of the children's shoe department, and teach his art to the other clerks. It makes little difference what calling one is in if he likes his work and puts himself into it his opportunity is sure to come.

PLAN No. 560. KNEW THE SECRET OF HOME CANNING

Most of the housewives in America believe that home-canned vegetables nearly always spoil. That is because they do not understand the important part played by bacteria in the canning process. Vegetables contain a large amount of proteid, the favorite food of bacteria, and unless these bacteria are destroyed, vegetables canned in summer are almost certain to spoil.

On the other hand, fruits—and these include tomatoes—contain but little proteid, but a great amount of acid, (which bacteria especially dislike) and are therefore much easier to can, as well as to keep.

A young farmer's wife in Illinois, who had made a

close study of bacteria, knew exactly what to do in the matter of canning vegetables. She knew that bacteria, in order to protect themselves even against the heat of boiling water, form thick-walled bodies or spores, and that the first boiling simply causes the spores to grow, while a second or a third boiling effectually destroys them. She has tried this method often enough to be sure of it.

She therefore wrote a little booklet on "How to Can Summer Vegetables," placed the price at 50 cents per copy, and advertised it in a number of women's magazines and other periodicals. Many answers came in, enclosing 50 cents, and she sent out thousands of copies during the first three months. Often people make special study on certain subjects and have special experience along that line which if put in pamphlet form would be valuable to other people who would be willing to pay 25 to 50 cents for it.

PLAN No. 561. RAISING HOMING PIGEONS

Both patriotism and profit are what prompted an Ohio man to raise homing pigeons for war purposes, and the business has proven a great success, from every point of view.

From early boyhood pigeons have interested him more than anything else in the world, and he understood these remarkable birds very well.

These pigeons are not the soft, cooing dove of fiction, but are beautiful in color and line, alert, strong, tight-feathered, athletic, gamebirds with bright, farseeing eyes and marvelous courage. They are used in war for carrying messages from the front trenches to the bases back of the lines, and 97 per

cent of these messages, upon which either victory or defeat may hang, reach their destination.

A section of this man's pigeon loft shows separate apartments for each pair of birds, painted alternately black and white.

The birds manifest the most intense loyalty to their mates, and he has raised thousands of them for the cause of the Government, and, as they can be utilized with equal advantage in peaceful pursuits, a certain means of revenue is thus opened to thousands of other breeders of these wonderful birds.

PLAN No. 562. RAISING SQUABS FOR PROFIT

A young married couple, who lived near a car line in the suburb of a western city, decided to engage in the raising of squabs, as the hotels and restaurants of the city afforded a permanent and profitable market for them.

Having secured a few birds, together with a book giving complete instructions as to their care, feeding, marketing, etc., they constructed suitable quarters for them, and determined that, above all things, they would keep their nests and grounds absolutely clean; which is a very important part of successful squab raising. They had ample space for their birds, gave them the best of care, and constantly watched every phase of their growth and breeding, so that, from less than a dozen birds, with which they started in the spring, they had more than 150 by fall, all strong, vigorous, healthy specimens.

They felt that they could spare a certain number for the market during the early winter, and these they prepared with the greatest care and cleanliness, so that they brought top prices, and resulted in a

standing order from several of the leading hotels and cafes for all the squabs they could supply.

While their receipts from this source were only a little over $100 the first year, the second year brought them $350, the third year $600, and after that they could count on at least $1,000 a year net profit from their squabs, while the husband was earning a good salary as a salesman in the city.

PLAN No. 563. REVISING MANUSCRIPTS

A former newspaper man and publicity writer in a western city, who had written and revised many books, pamphlets, prospectuses, etc., became impressed with the fact that many persons who wished to become authors of short stories, serials, poetry and miscellaneous articles, were sadly lacking in the knowledge of how to prepare their manuscripts in such a way as to make them acceptable to publishers. He also realized that, even if they knew how to properly arrange their manuscripts, few, if any of them, knew the names, addresses and needs of the various magazines and other publications that accept certain classes of stories or articles.

Having a complete list of such periodicals and possessing both the ability and experience which qualify him to render valuable and timely aid to aspiring authors, he advertised, asking authors to send him their manuscripts for review, adding that he might assist them in finding a market for their productions.

Many answers were received, to the writers of which he sent a well-written letter, showing the necessity for competent assistance in such matters,

and quoting a reasonable graduated scale of charges for the work of revision, according to the number of words in a manuscript. In a short time he developed a good paying business.



Plan No. 563. The Eye of the Master will do Mor

PLAN No. 564. PUBLIC SCHOOL DIRECTORY

An experienced ad. solicitor in a California city, who wished to go into business for himself, conceived the idea of publishing a complete school

directory, which would be without cost to the school board, and would net him a good profit.

He therefore interviewed the members of the board, and said to them: “If you will furnish me with the school calendar for the coming year, the names and addresses, with telephone numbers, of the board of directors, the standing committees of the same, dates of regular meetings, personnel and location of the superintendent’s office, supervisors, attendance officer, health supervision, superintendent of buildings and journals, manual training department, department of household arts, high schools, evening schools, and graded schools, with names, addresses and telephone numbers of principals, assistants and teachers, and an alphabetical list of all the latter, I will print it in the best directory form, absolutely at my own expense, provided I shall receive all the proceeds of whatever advertising of an approved nature I can secure for the same.”

The board accepted the offer, placed all the required data at his disposal, and he then began to secure ads. for the directory. Advertisers were so favorably impressed with the value of his directory as a medium of publicity, that he contracted for enough to bring him in over $1,800. The directory, when printed, cost him less than $400.

PLAN No. 565. AN ADVERTISING SCHOOL

An advertisement writer in a western city, who had made a good success in that work, having enrolled practically all the leading merchants of his city in his list of patrons, decided to establish an advertising school, in order to teach others the art or profession in which he had become so proficient.

He therefore advertised in the papers of his own and surrounding cities, offering a thorough course of instruction in the designing and writing of advertisements, which instructions would be sent by mail upon receipt of $10, and many replies were received.

He accordingly prepared and had printed in attractive and comprehensive form a series of five brief lectures, as follows:

"General Instructions"; "The Study of Type"; "Measurements and Lay-Out"; "Building the Ad"; "Proof-Reading"; with instructions and examples relating to each, which made it easy to understand and apply, and proved a great aid to those who wished to make ad. writing a life business.

He received many letters expressing deep gratitude for the assistance thus afforded aspiring publicity specialists. This work yielded him a revenue of over $2,000 a year.

PLAN No. 566. AN ALUMNI DIRECTORY

The former president of the alumni association of a high school in a prominent western city figured out a plan which brought a great deal of pleasure to all its members, and incidentally netted him a profit of $2,000 for about two months' work.

He accomplished this by interviewing the principal of the high school, who was able to supply him with the names and addresses of nearly 80 per cent of the alumni members, and the balance he secured by calling upon those in close touch with such as had located elsewhere.

When his list was completed, he secured advertisements sufficient to fill several pages,

charged a good price for his space, and had the entire collection printed in attractive directory form.

Then he sent letters to all the members whose names were to appear in the book, announced the publication thereof, and placed the price at $1 per copy. The dollars came in until he had received over five hundred of them, and, having collected for the advertising and paid for the printing, he found he had $2,000 left. Then he went to other cities and did the same thing.

PLAN No. 567. BIRD-BATHS FOR ORCHARDISTS

A successful orchardist and gardener of Spokane, Washington, attributes a part of the profits he has derived from his fruit and vegetable culture to the encouragement he has given birds to come to his place.

Knowing a great deal about the habits and the needs of birds, he realized that ample bathing facilities for them are greatly appreciated and he at once proceeded to supply them with this luxury, for if there is anything a bird likes it is his daily bath.

To encourage them to make his place their permanent home, he built a wooden frame, about 12x20 inches in size and 6 inches deep, and into this frame he poured concrete, which he mixed, leaving a shallow depression in the center, which would hold about a quart of water. These concrete baths he placed on top of an upright piece of 4x4 scantling sunk into the ground. He put the bath on this post and filled the bath with water, and awaited results. Inside of ten minutes a dozen birds had gathered at the outdoor bathing place thus provided and were enjoying their bath as though it were the greatest

luxury of their lives. He then put up eight or ten more throughout the orchard, garden, and yard, and in a short time the place was literally alive with birds.



Plan No. 567. The Bird

Before long insects of all kinds had been reduced and his fruits and vegetables gave him better yields. He thereupon began to manufacture the bird-baths by the hundreds, at a cost of about 5 cents each, and through a little advertising was enabled to sell them for $1 apiece.

PLAN No. 568. BECAME A NURSE FOR DIABETICS

A New York young woman wanted to become a nurse, so she consulted a physician who was a specialist and recognized authority on diabetes, and asked him what he would advise as a distinctive specialty for her to follow. His answer was: "Become a nurse for diabetics. They are clean and easy cases to handle, involving no disagreeable duties, and as most of them are able to attend to their regular business every day, the nurse has an abundance of time for her own improvement. But she must know her business thoroughly, be an expert in every detail, and possess a personality that instantly wins confidence. If you have that personality and are well informed as to the nature and treatment of diabetes, you will succeed."

She was so greatly impressed with the soundness of this advice that she at once began to perfect herself in her chosen calling, and in order to do this effectually, she arranged to take care of several diabetic patients under treatment by this physician. This gave her a practical insight into the malady itself and the treatment it required, and after a course of study and experience with this specialist she made this work her specialty.

The first one came in the person of a wealthy business man who was just beginning to take treatment from the diabetes specialist, and had progressed so rapidly that he was in proper shape to be sent to his home, but was told that he would require the constant attendance of a thoroughly competent nurse for several months; that she must remain at his home during all that time, and that he must regulate his diet, activities and conduct strictly according to her instructions, to all of which he

readily agreed, as he did not want to go to a hospital for so long a time.

The nurse had thoroughly familiarized herself with all the books and treatises relating to diabetes, especially the works of the specialist from whom she had received such valuable training. She therefore had a complete understanding of what was required of herself and her patient, both while taking the treatment and afterwards. She was bright, companionable, a good reader, and frequently entertained him by reading aloud. She prescribed every article in his diet, explaining to him the virtues and harmfulness of various articles of food, the values of carbohydrates, proteins, and fats and the care with which sugar and starches must be used, if permitted at all. She made daily tests of his urine, voided at 7 o'clock every morning, after which she weighed him carefully and recorded the gain or loss from day to day.

She instructed her patient that it was better for him to eat too little than too much, and thus avoid the danger of becoming upset. She planned the daily diet in advance, so that he should receive the proper amount of each necessary element, and cautioned the patient to eat slowly. She recorded the character and quantity of food taken daily by the patient. She saw to it that all vegetables were properly cleaned and prepared before cooking, and served the given portions raw. For breakfast she gave him coffee, cream, bacon and one egg; for luncheon, clear soup, meat or fish, and vegetables; for dinner, tea, or cracked cocoa, and a small portion of a cooked vegetable, salad, meat or fish.

She insisted that his bowels move freely, but gave no cathartic for that purpose, as she knew of much better ways to produce this result. She saw that he

took moderate exercise, played games and indulged in other forms of entertainment, but all reference to his disease was positively forbidden, so that his mind did not dwell upon his condition, while his surroundings were made as cheerful as possible.

When giving an occasional massage, she used cocoa butter or other preparation containing fat, but no alcohol, owing to its drying effect, and was instructed to report promptly to the doctor any symptoms signifying coma, but fortunately nothing of this kind occurred.

She remained a member of the patient's household for six months, during the latter part of which he was able to go to his office and attend to business, but she limited his working hours to four each day, with positive instructions to come home at once upon the least signs of fatigue.

From that time on, she was never without a patient, and though her work was not hard, it required all her resources, so that she was warranted in charging well for her services.

PLAN No. 569. MOTION-PICTURE ADVERTISING

An advertising man in a western city successfully carried out a plan of advertising in the motion picture theaters of his own and thirty of the surrounding towns, and found it a profitable business.

He arranged with the managers of all these houses for a certain amount of advertising matter to be thrown upon their screens once each week for a year, at a figure which was very low. They were also to show motion pictures of the various departments of the manufacturers who were his regular advertisers,

with attractive mottoes designed to encourage the patronizing of home industries. These were highly educational to each community.

He then made advertising contracts with a large number of merchants, manufacturers and others in the various towns for space on the screens, at rates that netted him a profit of 300 or 400 per cent, and in addition agreed to supply his advertisers free, with all items of a local character which might aid them in securing more business. He subscribed for one paper published in each of these towns, and his free information bureau he conducted with the aid of a girl to cut out and mail these items to such advertisers as might be interested in or benefited by them.

His business proved profitable for all concerned. The theatre managers received good prices for the use of their screens, the advertisers obtained good results and the manager of the business made a profit of better than $4,500 a year.

PLAN No. 570. RAISING BLOODED DOGS

A man who was employed in a large stationery house in a northwestern city made extra money during his spare time by raising blooded dogs and selling them at good prices.

No matter for what purpose a dog was desired, whether for a child's companion, a watch dog or hunting dog, he knew exactly the sort of dog to supply, and had the very finest specimens of all breeds constantly on hand to meet the demand.

His prices ranged from $5 and $10 for a young puppy to $25, and even $50, for one grown and well trained. He had read everything published relating to

dogs, had the pedigrees of all the best ones, and bred only the best grade of animals. In the five years he was engaged in this as a side line, he cleared several thousand dollars.

PLAN No. 571. A "TRADE-TIP" BUREAU

A Minneapolis man made money by organizing what he called a "trade-tip bureau," which consisted entirely of himself.

He contracted with 100 manufacturers, merchants and others to keep them fully informed with reference to all matters arising within a radius of 200 miles of his home city, and information which might prove beneficial to them, at so much from each firm per year.

He then subscribed for all the newspapers in the territory named, and read them carefully. Whenever he found an item that would be of interest to any of his clients, he would promptly inform that particular person of the fact, and in most cases the information thus supplied led to an opportunity for making a good profit. He usually sent a little note with each bunch of information, commenting on its possible use in their business. When a threshing machine was destroyed, he informed the manufacturer of threshing machines. If a firm in an outside town failed, he reported it to the local firm that bought bankrupt stocks. If a mining operator visited the city, he tipped off the hardware dealer who had powder to sell.

These are examples of the various services he rendered his patrons, and they were so highly pleased with the results that they continued to renew their contracts with him from year to year. His

present income is more than $4,000 per annum.

PLAN No. 572. BOOKLET ON MAIL-ORDER BUYING

A Chicago man who had been engaged in the mail-order business for many years, and had become familiar with this work in all its phases, published a booklet of eighty pages, containing valuable information and suggestions to other mail-order agents in regard to buying goods to be used for that purpose.

Following a brief introductory, relating the changes that have taken place in the mail-order business of late years, owing to the changing methods of both factories and stores, the work touched upon securing introductions to the trade; contracts; letters vs. trips; points to be considered before deciding; will cheap goods stay low? buying staple lines; factory trips; depending upon salesmen; trade tips; when to load up; cash and trade discounts; new contracts; the purchasing of novelties; market tours; keen observation; test sales; large profits for all concerned; danger signals; purchasing agency goods; thorough tests; giving out duplicate orders; keeping costs down; your own trade-mark; watch territorial requirements; saving in packaging, etc.

It was just such a booklet as the thousands of mail-order agents in this country will buy and read with profit, and he sold thousands of them for 50 cents a copy.

Any other good mail order agents might record their experience in a similar manner with equally satisfactory results.

PLAN No. 573. MEMORY CULTIVATION

The following is the method employed with profit by a well known eastern man who teaches the cultivation and improvement of the memory. He inserts ads. in all the papers as follows:

"Stop forgetting. It may cost you money. Memory can be perfected by my simple Home Method. Education not necessary. Easy to master. Sent prepaid for 50 cents. SEND NOW TO ————————"

"*A good memory worth gold.* Helps you succeed—is better than education. MY HOME METHOD easily and quickly applied; easy as reading a book. Send 50 cents for it, prepaid, NOW. Address ————————"

"*How is your memory?* If it is bad, better it; if it is good, perfect it. MY HOME METHOD gets results. Easiest thing in the world. Send 50 cents NOW; get it prepaid. Address ————————"

The copy for the course, or folder, is substantially as follows:

How to Cultivate Your Memory

Forgetfulness is not a disease—it is a habit—and a bad and costly habit.

Perfect memory is necessary in all kinds of business. Why have to make notes of everything you wish to recall? Why "have a name or fact on the tip of your tongue," unless you can speak it?

Your mind is just like your muscles, so far as training goes. If you wanted to become physically strong, you would not overdo your exercise the first day. You would start with simple things, and then do the more difficult feats. It is the same way with your mind, follow these directions carefully.

How to Concentrate Your Mind

Memory depends entirely upon concentration. If

you have *riveted your mind* on what you hear or see or read, the *impression is deep*. It is like talking into a phonograph. If you whisper, the record on the wax is shallow, and difficult to reproduce. If you speak in a clear voice, then the record of what you say is cut *deep*, and can always be reproduced clearly.

To learn how to *concentrate*, you must start with simple things. But the first lessons must be *useful*.

The best way to concentrate is to begin with things that *denote action*.

For example, go into a room *once a day*, with nobody around to disturb you. Take a sheet of plain paper, and with a heavy, black pencil write something on it like this:

"*I can make my mind travel into any fact or study.*"

Place this before you on the table, and have nothing else on the table that will interfere. Set this paper on the edge, so that it is plainly visible when you sit in a chair about two feet away from the table.

Now, first of all, *relax*. Get your muscles *eased*. Sit back in the chair, breathe slowly, take a few long breaths, and close your eyes.

Sit in a comfortable position. Avoid all muscular strain.

Then *open your eyes and look at that paper*.

Look at it and ask yourself what it means. What is your mind supposed to do if it travels into any subject?

If you are going to run a race, you wear as little as possible. You must *feel like racing*. And so, your mind must not be weighed down with other thoughts.

Close your eyes and *think* about your mind's ability to *travel back into the past*.

What did you do a year ago today? What did you do a year ago yesterday? What did you do five years ago?

Keep the idea before you of making your mind travel back into anything you wish to remember.

Keep the Mind in a Definite Thought Channel.

Now, after a few minutes of this practice, take another sheet of paper and write on it:

"*I can dig up any fact in my mind.*"

Again relax and close your eyes, and then study these words. If your mind is going to dig facts out of your memory, it must not have other things to do at the same time.

Try to *dig up* the name of somebody you have forgotten, or something you have read.

Now, as you proceed from day to day, get relaxed and take some book or paper and read *some useful thing*. Try to *shut out* every other thought, so that your mind can *wade into the facts*.

Then sit back in your chair, with your eyes closed, and *analyze* what you have read. Ask yourself questions about it. The more interesting the subject, the more readily you will go into it.

After a few weeks you will begin to *look into things more carefully*, and make your *mind impressions deep*.

Get into the habit of concentrating on what people tell you, on what you *read*, or *see*, or *hear*.

Then you will soon learn how to *shut out everything that does not pertain to the subject*, and you will make your impressions stronger. Also, *you will begin to bring out truths that you have almost forgotten*.

Remember that the *subjective part of your mind never forgets*.

The more you get into the *habit* of permitting your mind to *flit*, the less you will be able to remember. The best students are those who make their studies *interesting*. The best business men are the persons who take *interest* in their business.

Tie yourself down to everything you do.

And then, every once in a while, hold a *mind review*.

Think of the different places you have lived, what you did, the people you knew, what became of them.

Exercise your memory regularly.

Unless it is exercised, it falls into disuse—like an unused muscle—and becomes weaker.

Within a few weeks, you will be able to concentrate your mind on anything you do or read or say. That is *practice* of the *right* kind. It is scientific practice that considers your *memory* as a *necessary part of your entire being*.

And remember, that you should so *concentrate* on these lessons that you can *repeat the thought*, the *ideas* contained in them.

With this kind of practice, memory will become a strong *asset* with you—and it is a valuable asset, too.

PLAN No. 574. CUSTODIAN FOR U. S. SEE PLAN No. 217

PLAN No. 575. PICTORIAL BUSINESS MAGAZINE

A western advertising man induced a talented local cartoonist to join him in the publication of a pictorial magazine of purely local events of interest, and together they soon made it the most talked-of publication in the city which had a population of about 100,000.

The magazine was well printed, on good paper, and contained items of interest to and concerning prominent people in all lines of business—merchants, lawyers, doctors, dentists, judges, politicians, and other well known people.

The artist was quite gifted in reproducing the features of people, and the faces thus drawn were often attached to bodies of supposedly the same people in more or less grotesque positions there being an element of humor in most of the drawings. The humor, however, was of the clean, inoffensive kind, and was greatly enjoyed by the victim as well as by his acquaintances.

In a short time they had over 2,000 regular subscribers to the magazine, which was published weekly, and with the growth of the circulation the advertising space became more and more valuable, so that inside of three years their annual income was considerably in excess of $4,000.

PLAN No. 576. GEORGE MADE SOME TENTS

A young man and his girl were strolling on the beach, when a violent storm arose. He opened his umbrella, and spread his raincoat over it. Then he fastened a 5-foot stick into the umbrella frame, inserted the other end into the ground, and the raincoat provided the walls of a hastily-constructed tent which kept them dry as they sat on a log while the storm raged.

This evidently gave the young man an idea, for he had a tentmaker construct 200 little tents for use on the beach, which he sold the people at the resort for $5 each.

The tents were made of light duck, fifteen yards in each, with fourteen strong sticks made to fit into each other at the ends. Eight of them, fitted together, made an 8-foot pole to hold up the tent, while the other six, three on each side, held up the sides, and made a rain- and sun-proof tent six feet square,

which served not only as a protection from the sun and storm, but made an excellent place in which to put on a bathing suit, as well.

This plan gave the inventor an income of more than $1,000 a year.

PLAN No. 577. BATHHOUSE CURTAINS FOR AUTOS

A lawyer living in a northern city, near which were a number of lakes, health resorts and bathing beaches, frequently took his family in an automobile to some of these places, and together they spent the day in bathing, playing golf, etc.

As the charges for the use of the bathhouses were rather exorbitant, and the bathhouses inconvenient, the attorney rigged up a set of water-proof curtains, enclosing the back portion of the machine, and attached to the frame above by means of hooks, thus giving all the privacy and protection of a regular bathhouse, which all the members of the family could use in turn, at no expense whatever.

Many other persons at the various bathing places noted the utility of the plan and asked the lawyer to make sets for their machines. So numerous were these requests that he at last decided to make the curtains in large quantities, and sell them at a profit of $2.50 per set.

He sold 200 sets that season, and 500 the following season. This was done with no advertising at all.

PLAN No. 578. PHOTOGRAPHED MINES

This photographer made himself familiar with photographing mines. For those who were operating mines and desired to sell stock and wanted pictures of the mines to interest investors, he had made a study of what kind of pictures would most interest prospective investors, and to those compiling prospectuses he made many valuable suggestions. He would make a fixed charge for the trip to the mine, and would spend several days at the property and do his work right or would not go at all.

After he finished his work the pictures were a real asset to the mine owners.

PLAN No. 579. DENTIST—INDIAN SERVICE—U. S.

SEE PLAN No. 217

PLAN No. 580. THE FARMER WHO USED THE PARCEL POST

In many portions of the country not one farmer in a thousand realizes the importance of the parcel post in the marketing of his products at a profit, but allows untold quantities of the very choicest grades to go to waste. Some of these farmers don't know, while thousands of others don't care.

There was one Wisconsin farmer, however, who did know and did care, and he made himself wealthy by utilizing the products that others wasted, and for which city people gladly paid good prices.

He began by making a sausage that was so good and clean and of such fine flavor that people all over the United States began to ask for it. He used the parcel post in delivering this to his customers.

He put up smoked meats that were really smoked,

with scented woods that imparted the most delicious flavor. He put up preserves, pickles, canned goods in glass jars, apple and peach butter, dried fruits and many other things, all of which he sent to the city by parcel post, where they commanded prices from 25 to 40 per cent higher than the products of canneries, packing houses, etc. Really fresh eggs, and pure, sweet farm-made butter, also formed a large item in his parcel post sales, while his fruits, all of the better grades, were always in demand. Everything he sold was recognized as honest goods, and these the public will always be glad to pay well for.

And just one little classified ad. in the Sunday edition of the city paper started the demand for his products, but it was an ad. that bore the imprint of honesty and real value, and by more than fulfilling his promises to supply the very choicest of nature's products for what they were worth.

PLAN No. 581. PURE FRUIT PRESERVES AND JELLIES

The following ad. inserted just once in a Sunday paper published in a Michigan city, brought a near-by farmer's wife so many orders that she was kept busy for months in filling them by parcel post, and brought her a profit of nearly $1,000.

Encouraged by her success, she enlarged her scope of operations the next season, and every season since then, until she is now in good circumstances. Here are the ads. which brought the business:

"*Pure* Fruit
Preserves—

"Guaranteed made from fresh picked fruit ripened on the branch and pure cane sugar in clean utensils

made by clean people, in a clean kitchen, and free from adulterations and preservatives of any kind.

"All the delicious flavor of fresh fruit preserved by home recipes."

"*Pure* Fruit
Jellies—

"Put up on the farm, by a farmer's wife, from the best old-fashioned recipes, from fresh picked fruit and pure cane sugar, and free of all adulterations, artificial coloring matter or artificial preservatives. Absolutely delicious and wholesome jellies cheaper than you can buy them in town and better than you can put them up yourself because you can't get fresh fruit in town like I can just off the branch. Made in clean utensils, in a clean kitchen, by clean, healthy people. Don't poison yourself with factory-made jellies, compounded of chemicals and dyes and sold as fruit jellies. My jellies taste of the fresh fruit, because they are made of fresh, ripe and wholesome fruit. Write to me for my special offer and try these delicious jellies for yourself. Sent in small and large quantities to suit you."

While most of her neighbors were allowing their fruit to rot on the ground, because they couldn't find a market for them, this woman always had a good market for her products.

PLAN No. 582. HOW TO OBTAIN FULL INFORMATION OF PROPERTY FROM ADDRESS

The following plan netted better than $1,500 in $2^1/_2$ hours. This would seem to be impossible but, like anything else when explained, is simple.

This man had moved from the country to live in the city, and having a large family it was important

for him to obtain a house. He tried to find a place to rent but found that property was being purchased rapidly. Somewhat discouraged, he called upon his brother. One house in the most exclusive end of the city, appealed to him but this house the real estate man would not lease for less than $30 a month for a period of twelve months. The address of the property was 820, 25th st. They called the city engineer's office by phone and requested the lot number, block and addition of the property. In possession of the legal description, they called the county assessor's office where the following information was obtained:

	Assessed	Real Value
Value of lot	$ 250	$ 500
Value of improvement	1400	2800
	$1650	$3300

House built in 1909. To build the house now would cost $3300. House consisted of 5 rooms 1st floor, 3 rooms 2nd floor. Fir finish. Plumbing. Stone foundation. 1/3 basement. Furnace. Brick fireplace. Oak floor, 5 rooms.

They next called on the county treasurer, who from the legal description gave the following information:

Taxes, 1917	$ 70.34
Taxes, 1918	77.55
	$147.89

Address given in 1916 of owner of property, Mary Jones, 2728, 16th Ave., San Francisco, Cal.

Next they called the abstract office and found the incumbrances against the property outside of the taxes and the following information was given:

Owner— Mary Jones; husband, John Jones.
No judgments against owner.
One first mortgage of $1,000 against property.
Second mortgage paid in 1918.
First mortgage made Jan. 1915, runs for 3 years to 1918, bears int. at 8%, payable semi-annually and held by N. W. H. Bank.
Property purchased by Mr. Smith, 1917, on contract.

The next step taken was to call up the N. W. H. Bank and here the most recent address of the owner was given as "Jones Apt., San Francisco, Cal. Interest on money paid. Company stated that even though principal is due, company is willing to continue the loan." The company also stated that Mr. Smith, holder of the contract, had given up his contract which had been paid down to $2,900.

Now we have the following situation: Two years taxes back; house empty and run down; mortgage due but can be extended if property is taken care of, and owner living in San Francisco, California, and a party ready to move in.

The next step to be taken was to talk with the owner by long-distance phone at San Francisco, California. All the preceding information was obtained in thirty minutes. In less than two hours a messenger had brought the owner and purchaser together. The purchaser was willing to continue the contract of $2,900 and pay 1917 taxes of $70.34. and pay $30 per month, 7 per cent interest on deferred payments, and must act at once. Owner told purchaser to move in at once, that contract would be signed immediately and forwarded for purchaser's signature.

All this was done in two and one-half hours. The purchaser was able to buy a house on a rent basis and made on the transaction more than $1,500, as

the place, with an expenditure of $150 in paint and repair work, will easily bring $5,000.

Few people realize what information is open to them.

If you are in possession of the legal description of city property or farm land anywhere in the United States all you have to do is to call or write the county assessor's office and they will gladly tell you all about it, thus saving you many dollars. The city engineer's office can usually give you from a given address the legal description of the property.



Plan No. 583. Think of Saving as w

PLAN No. 583. CITY GARDENS

Very few people realize what can be done with their back yards. Many people who live in the city could solve the much-vexed question of the high cost of living if they would put their own lot of land to work.

A high school teacher living in Spokane used the vacant lot next to him and put it in potatoes. The soil was gravel formation. Most people in Spokane believed it necessary to water their potatoes daily, but he put some nitrogen in the soil and kept the potatoes carefully cultivated and irrigated them two or three times during the season. He obtained an excellent yield.

The back lot of his house was 30x30, and that was where he put in most of his time.

The space used for his tomatoes was 12x12. He made the soil in this place a sandy loam and mixed in ground limestone and some stable manure. He used a seed from Damascus, Syria, and treated the soil with nitrogen. He kept careful account of what he raised and it ran over fifty tons of tomatoes to the acre.

He built a grape arbor 8 feet high, 6x6 which took up but little room in his back yard. He used the Worden grape as it is a little earlier than the Concord. This furnished all the grapes that his family of four could consume, and gave him sufficient grape juice for the balance of the year. He had a good cider press with which he used to produce grape juice.

In his side yard he had eight or ten fruit trees. These produced all the pears and crab apples he could use the year round. When the apple crop came on he took his automobile and bought many boxes for 75 cents per box, and in this way he had all the apples and cider he wished for the year. He also

made a drier, which is but an hour's work, and dried considerable fruit for winter use.

He raised in a space 10x12 a "Progress" everbearing strawberry which gave his family all they could use from June to November and all they wanted to can for winter.

He was especially proud of his bean patch, 10x15 —variety used was the Kentucky Wonder.

Beet patch, 2x8, variety planted—Egyptian.
Onions, 4x8, variety planted—Yellow Globe.
Carrots, 2x8, variety planted—Chantenary.
Lettuce, 2x8.

Radishes, he covered with a muslin cloth to keep them free from maggots—caused by the fly laying its eggs about the radish.

There were many berry bushes which formed a pretty fence for his back yard which produced all the berries the family could use. In addition to the above he had one hill of rhubarb, two hills of melons (cantaloupe) and two hills of cucumbers, which furnished all they could use.

In addition to the above space he made at the back end of the house a hotbed 5x10 which produced vegetables for him until winter and early in the spring. He made the soil in this as follows: Sod for the bottom, which is rich in nitrogen and on top of this put in about six inches of sand and leaf mould. This made a most excellent soil.

The above plan carried out by a man who is far more busy than the average during his spare time, not only made a living for one year for his family but increased his knowledge of out-door life and enjoyed the best of healthful exercise.

PLAN No. 584. LECTURES PREPARED AND SOLD EARNED WAY THROUGH COLLEGE

He was an excellent stenographer and owned a mimeograph outfit. He heard all the lectures in his course, and all other lectures he fancied in the college, and had many copies of these made up and sold to the students at a very low price.

You will find many students in departments who are interested in lectures that take place in other departments, and when unable to attend such lectures, are very glad to buy them from one who has attended.

This student also prepared questions that had been asked for a number of years in examinations, so that the students could get an idea of the kind of questions they would be asked to answer. He also took any kind of special work submitted to him and was able each year to easily defray all the expenses of his college course. A large school offers the best field for this class of work.

PLAN No. 585. RUNS BOARDING HOUSE—PAYS WAY THROUGH COLLEGE

Many young men who have had some experience in running a boarding house, put themselves through college, and often have a saving above their expenses at the end of their work.

I remember particularly two young men who did this. One ran his house on a cheap plan. He furnished board at a very low price, with no style, while the other gave more service, a little more dessert and charged a higher price.

These men employed students only who wished to earn their board in exchange for their services.

PLAN No. 586. SHAVED HIS WAY THROUGH COLLEGE

There is no reason why a man who understands the barber trade should not have a university training. There is always a great demand for his services at the university. Six hours out of the twenty-four will enable him to pay his expenses.

If he cannot get employment in a shop, he can run a student-shop of his own and employ only student barbers—each putting in a certain amount of time in the shop each day. The student body will patronize him in preference to anyone else.

PLAN No. 587. OREGON MAN EARNS WAY THROUGH COLLEGE

He was known by all as “Bill” and he was from the West. Bill, from the very first was a politician and would not take a back seat. He was an excellent talker and possessed lots of courage and self confidence. He had a few dollars to run on the first year, but after that it was up to him. He made himself well known to all in the university. Anything that required talk or scheming—he was there.

There was a big fair going on at St. Louis and Bill arranged to show the Oregon exhibit. He obtained this through letter-writing and friends. When Bill planned on going home he made arrangements with the railroad company to represent them and sell tickets to the other students. He showed them how cheap it was to see the West, and made it so attractive he was able to sell a large number of tickets in that way. Each year Bill was the popular man and got the orders for railroad tickets from the students.

If there was any place where his state should be represented in the East Bill was the one who obtained the appointment. He was wide awake at all times and never missed a chance to make money. In this way he more than paid all his university expenses.

PLAN No. 588. ASSISTANT TO TEACHER OF ELOCUTION

This young man was particularly interested in becoming a political speaker, so the first year of his university work he applied himself to the elocution course. He was studying law and saw its importance to the practicing lawyer. His interest was so marked that the professor became interested in him. The young man's means were limited, so the professor made him a member of his own household, which settled the board and room question. He secured a small salary for his services, and soon the classes in elocution became more popular and he was made an assistant and a good salary was advanced by the university. In this way he not only earned his way through the university but won an excellent reputation in elocution, and the fact that he was one of the faculty in a large university meant much to him in later years.

One must bear in mind that a young man in this way wins the respect of the faculty, and their friendship means a great deal when he starts out for himself. A letter or good word from one of the faculty of a large university will establish anywhere the ability of a man.

PLAN No. 589. STUDIOUS MAN'S WAY OF EARNING HIS WAY THROUGH COLLEGE

He was a young man of few words, but always hit the mark when called upon in class. His strength lay in his scholarship. He was not a success as a salesman and had no ability as a speaker. So the ordinary methods for earning his way through college were closed.

However, he followed his natural bent as a student, securing work as a briefer for one of the college professors who was working on a book on corporations. His first year's work was so satisfactory that his whole college course was spent on briefing for this professor. This gave him the best kind of board and room, besides giving him a wonderful knowledge of corporation law. He received also sufficient cash to defray all his college expenses and had his summer vacations to himself.

Many young men enjoy a wonderful companionship with the college professors in this manner, as well as earn their way through college. In a large college or university there is opportunity for young men to apply almost any talent they may possess and thereby pay for their living and education.

PLAN No. 590. HOW A WESTERN MAN EARNED HIS WAY THROUGH A UNIVERSITY

I well remember a young man from Salt Lake City, Utah, who arrived at the university filled with high hope for the future, but who possessed little money to accomplish it with. He was able by waiting on table to get through the first year, but was without money at the beginning of the first summer. He had

a taste of one year's life at the university and nothing could prevent his return the next year. He had never sold anything but he had precedent before him of what other men had done the year before, and found that hundreds of these men made enough to put them through their year's course from one summer's work. Possessing a somewhat philosophical vein he selected a Topical Bible to sell. I met him many times that summer. His troubles were many—trudging through the dust and mud of Illinois—but at the end of the summer he was back in his old place at class with a net profit of $250 saved as the result of his summer's work.

The second year he did not wait on table, but with a friend of his opened up a little office; sold stationery and did some typewriting work and turned many dollars of profit to himself and friend. His stationery store provided a very good income and he continued the business to the end of his course. What he did, you can do.

PLAN No. 591. PAINTED AUTOMOBILES IN WINTER

He was a good painter, but during the winter he had very little work; yet by the following plan it became the most profitable and busy season of the year.

During the early fall he saw some of the auto owners and made an arrangement to re-paint their cars during the winter. He made a study of auto painting and was able to furnish as high class a job as the auto owner desired. If the upholstering of the car was worn or of poor taste he made suggestions for adding greatly to the beauty of the car. His wife

did the upholstering and acquired great skill in that work and the profit from it went to her.

Cars painted and upholstered by him soon brought to him an excellent reputation which brought him a very profitable business from year to year.

PLAN No. 592. SUIT ORDERS PUT MAN THROUGH UNIVERSITY

He was one of the best dressed men in the university and knew what kind of clothes a man could wear. There is no time in a man's life when he more desires to be well dressed than when he is in college.

This young man was popular in the school, and a very good mixer. He took measurements for suits, and let every one know it. He not only put a good suit on one but gave good style. If the hat, shirt and shoes did not go with the suit, he did everything he could in a tactful way to show what should be worn.

He worked for the business and secured it. His friends were very loyal to him as through his advice their appearance was improved greatly.

Many young men represent laundries from near-by cities and earn their way in that manner. Others make it a side line.

A good side line which will net many dollars during the school year is making up posters or post cards.

PLAN No. 593. Y. M. C. A.—Y. W. C. A. PUT THEM THROUGH UNIVERSITY

I knew a young fellow who worked at the Y. M. C.

A. at the university. He was taking law. For his work in the association he was furnished with a good room and board and his work there did not conflict with his classes. He was an able assistant to the secretary and proved a very valuable man.

This work qualified him to become a first-class secretary, after he completed his course, which work enabled him to make a saving before going into the practice and also made a host of friends, which is essential to any man who would achieve success in the practice of the law.

The Y. W. C. A. is represented in every large university, and there is work for a few women who may in exchange for their services receive room and board.

The above plans are a great advantage, as they not only qualify one to earn an education but also prepare for a profession after their college course is finished.

PLAN No. 594. WENT THROUGH UNIVERSITY BY APPOINTING AGENTS

Before his arrival John had married and was the head of a nice family of three. He possessed a bright mind but had his own way to earn as well as that of his family. This to most people is a barrier, but to John it was not, and here is the way he did it:

Previous to entering the university he had sold books for a Chicago book company. He requested the company to finance him for one year by advancing $100 a month, for which he would secure and train agents during this period. The offer was accepted and John went to work.

He soon developed into one of the most active men

there. He was the political head of the law department and had a voice in all of the student activities. If anyone wanted anything he always saw John. In the debating society he was also active.

The lively interest he took in important matters enabled him to secure the services of many agents for summer work. He put out something like 100 men selling books during the summer. They all made sales, but fifty of the number came back successful. John watched them all summer—was out in the field with the men—encouraging them. When he found a man failing he changed his territory and put him on his feet. He rendered a great service to those fifty by enabling them to go through the university as well as rolling up a nice profit for himself and the company.

This man to-day is the head of that Chicago book company and has won for himself a good success.

PLAN No. 595. WESTERN MAN'S WAY OF GOING THROUGH UNIVERSITY

This man was about thirty-two before any opportunity presented itself for him to have a university education. He had finished high school, and from that time became a worker. His hobby was speaking and writing, and he had soon become the spokesman for the men he worked with. He was sincere and earnest and won a good reputation among his fellow-workmen. Several occasions presented themselves for him to champion their cause. The members of his association, knowing his desire to go through the law school, managed to finance him and he repaid them by assisting them in whatever way he could. He finished his law course and began practice with a large number of clients

which guaranteed his future.

Many young men, while I was at the university, made it a point during the summer to give addresses on temperance or some political subject, or by public speaking assisted men who were either preparing or running for public office.

PLAN No. 596. BIBLES PUT HIM THROUGH UNIVERSITY

He was a man past middle age, had never had any special advantages, but had a remarkable will and was open and above board in his religious faith. He believed the Bible was one of the best books ever printed and he had a good understanding of it. So he met all students who were inclined toward religion and obtained as many agents as possible to go out with him to sell Topical Bibles. He put out a considerable number of agents, worked with them, and encouraged them, and at the end of each summer he put away $400 or $500 net.

As a salesman he was not above the ordinary, but believed in his book and worked with it from summer to summer. The Topical Bible, he claimed, not only put him through the university but in placing it among the people he felt that he was doing a work worth while.

PLAN No. 597. INSURANCE PUTS MAN THROUGH UNIVERSITY

The second year of my course at the university I almost decided to sell insurance. Several of the boys, the summer before, had piled up profits as high as

$800 net in that work.

Some of my friends went out and received training for two months before the summer vacation. They sold insurance in communities where they were well known. One of the boys, for his summer's work, netted more than $500. He sold exclusively to the farmers of Illinois.

A man who goes out during the summer from the university and makes a good record, brings himself to the attention of the insurance company and oftentimes secures some excellent opportunities after his college course is finished.

PLAN No. 598. SANG THEIR WAY THROUGH UNIVERSITY

Four young men made their way through the university in about as pleasant a way as possible—by singing their way through. This quartet was excellent. On Sundays they sang for the church, and at any college meeting they were always called upon. They put on several concerts during the year and on several occasions they organized entertainments in the near-by towns and were well rewarded by the receipts.

During their third year they organized a number of singers and arranged for a trip to occupy several weeks and to cover many large cities. This effort was very successful, and not only profitable to them but a very good advertisement for the university.

These four singers not only defrayed all university expenses, but secured an excellent opportunity to see different parts of the country and had a saving to start with when their course was completed.

PLAN No. 599. ENTERTAINER PAYS WAY THROUGH UNIVERSITY

He could do sleight-of-hand tricks and was able to do some good hypnotic work. He understood how to arrange for and advertise his plays.

He made it a point to give several entertainments each year in the near-by cities. During Christmas time, spring vacation and summer he was busy. The entertainments given at the university and the Saturday-night performances in some of the adjacent towns were sufficient to defray all his expenses.

PLAN No. 600. SOLD ALUMINUM WARE SUMMERS AND PAID UNIVERSITY EXPENSES

A tall, slender chap, whom I at first thought to be a rich man's son, told me that he had that summer made $550. On inquiring I found he sold aluminum ware during the summer in Illinois. He not only worked in the cities but in the country as well. He would find some housewife in the city who would permit him to give a demonstration of his aluminum ware cooking utensils. He would then get this lady to invite in a number of her friends to see the demonstration. For this he would make a gift of some one of his wares to the one who had favored him. He was enabled to show the value of his wares and made many sales. A series of such demonstrations in the various homes soon established the reputation of his goods and created a good demand for them.

Through this plan he paid all college expenses, and had a small sum to start in business with at the close of his college course.

PLAN No. 601. CHAMPIONING RELIGIOUS DOCTRINE PUT HIM THROUGH THE UNIVERSITY

There are a great many different religious sects in our country, and from our colleges and universities these sects obtain material that will assist their causes.

Two of my friends at the university took a law and literary course covering a period of six years. They were good speakers and had very strong leaning toward certain religious beliefs. They made a very close study of same until they became very valuable exponents for their denominations. They were sent out on special lecturing trips and all the time they could spare was put in at active work along that line. The compensation they received from this work more than financed their university course.

They obtained unusual experience in public speaking, which was later to prove a great asset to them in legal work.

A man who is an able speaker on matters concerning the law, and who is a champion of certain religious ideals can go into any community and in a few weeks will be better known and more highly regarded than men who have passed a life time there.

PLAN No. 602. COLLEGE ON STEREOSCOPIC VIEWS

Stereoscopic views are simple, but very important when one considers that by their aid a student may defray the expenses to his coveted goal the completing of his college course.

Jim was a big raw-boned fellow from Indiana. He was a man of wonderful energy and enthusiasm. Life

was new to him every minute. It seemed his difficulty was lack of new opportunities for him to show what he could do.

He had no money after paying for his books, but by waiting on table and making himself generally useful he managed the first four or five months, and then he became associated with a fellow-student who sold views and thus made his way. Jim liked pictures of travel and felt that he could easily sell such views, so he immediately obtained an outfit and started after orders—and he got them. If anyone was a friend of his they would soon hear about the views.

The following summer he went out into the farm country in Indiana. Lots of views had been sold years before in that country but that was no obstacle to him; people, he thought, must have more. His views were lit up with his own imagination. He showed the religious people views of the holy lands. Anyone who had any religion at all would yield him an order. He came back that year having cleared more than $600.

PLAN No. 603. SMALL TOWN WEEKLY AND REAL ESTATE

He left his home in Iowa and dropped into a little western town of some 1,800 inhabitants. He had about $500 but that would not go very far. He liked newspaper work as a profession, so he started a weekly publication at which he worked hard and soon made it pay enough to provide himself and family with a living. But that did not give him a future, so he decided he would specialize in farm sales. He knew what a good farm was for he had made a study of farming. He obtained everything the government had to give on this subject, and

advertised in his own paper. In that way he soon became very well known by all the farmers in his district and also had good connections with the farm banks.

He finally found a farm at a very low figure on which he obtained an option for two years to purchase, and then decided what kind of a crop should be put in. He did not have the capital himself so he went to some people with money and explained to them the deal he had and how he was to work it and told them that he needed capital and was willing to give one-half the profits for the cash advanced on the crops, or, in case of sale, one-half the amount made on the deal. His proposition was so good he had no trouble getting the cash and said he never had any trouble in financing his farm deals in that way. After obtaining the money, he boosted the farm in his paper.

He claims he makes his sale when he buys the farm. If he is to sell the farm on commission, he refuses to sell unless he is paid 5 per cent, and the land must be priced right or he will not try to sell it. But he claims the money is made when he buys. After the farm is bought he hires all the work done and pays liberal wages and expects results. He secures men who are trustworthy. The farm is cleaned up and put in order before it is offered for sale.

Last year, for example, land that was being summer-fallowed he put in peas which brought 60 cents a pound and produced 15 pounds per acre which was a low yield yet it paid the following amount per acre:

$ .50	to drill
3.00	seed

.50	cut peas	$9.00	
.05	thrash	$4.05	
$4.05		$4.95	net profit per acre.

He has two salesmen who average the year round nearly $400 a month, and they find it easy to sell where they are the owners and operating their own farms. This year they have three farms totaling 700 acres which will net them more than $20,000.

Here is a man who started out with $500 in cash and now has an income of not less than $15,000 a year. He says if he was without money to-morrow he would work the local weekly and real estate business together.

PLAN No. 604. THIS LAWYER MADE MONEY BY KEEPING A DAILY RECORD

It is safe to say that nine-tenths of the members of the bar do not keep daily records. This often determines whether or not the lawyer is a success or failure.

When an estate is put into an attorney's hands he should in these matters have a daily record, and his charge should be based on this record. But most attorneys go before the court, state generally how much time has been consumed, and ask for say, $500; but instead of such an allowance they usually get $100. The attorney might be entitled to the $500 but he has nothing definite to show. In all probability the heir and executor of the estate consumed much of his time, and had an account of his time been kept and even a plumber scale of wages applied, he might be entitled to $1,000.

The following is the kind of record one attorney

used with profit to himself. He had a loose leaf $8^1/_2$x11, punched for filing away.

Attorney

Daily Record

Month . . . . . Year,.191. . . . Posted . . . . . .

Hours	Name of person or work done	Subject matter	Wh
8.30 A.M. to 6.00 P.M.			

Memorandum.

If attorneys would keep records of this kind it would do away with loafers, etc. in his office. At the end of each month do as the doctor does—render a bill for services. In no event should a charge be made for less than $5.00

If the bar of your community has no minimum fee get busy and have one established and after this understanding is reached tell your clients what the bar association requires and see that the newspapers give proper publicity to your minimum fees. This kind of work will bring about a better and more intelligent bar in your community as it makes their work more profitable and they would put more time on reading law and less on thinking about where the next dollar is coming from.



Plan No. 605. She is Busy Eve

PLAN No. 605. LAWYER'S PLAN TO SAVE ON TYPEWRITING

A lawyer must have an office and a stenographer. Usually he can afford his office, and as far as books are concerned he can obtain them on time. But his stenographic help is always a problem as most of the time he cannot afford to have a stenographer.

He may find that a large part of the time his stenographer is more of a nuisance than a help. He is

compelled to pay her $80 a month when over half of the time she is without work.

This attorney obtained a dictaphone and experimented with it for about a month. He accustomed himself to the use of it. When he kept the receiver of the dictaphone against his upper lip his voice took very clearly, but the stenographer who did his writing was not very familiar with the dictaphone, so he found the names of offices that had dictaphones, which information the companies selling dictaphones were glad to furnish. He then got in touch with their stenographers to ascertain if they had time to do extra work and found several willing to work for him. In this way he was able to get a price of 12 cents per roll—which contains 800 to 900 words. The stenographer figured she could do about four rolls an hour, which would give her about $4 a day.

The attorney dictated his work in his spare time. She called for the records, did the work and returned the rolls, shaven and ready for new dictation. It was a great advantage to the lawyer as he was only charged for the time she was actually writing his work. As a matter of fact, in using her extra time he could do twice as much as any other lawyer and stenographer could do under the ordinary method of dictation at one-third the cost. In that way all his work was done, when he had business to pay for, and there was no overhead expense when he did not have the business. This easily saved him $60 a month.

PLAN No. 606. LAWYER SELLS LAW BOOKS

This lawyer found that while our country was at

war with Germany his practice dwindled down to almost nothing. He loved his profession and he had a professional pride that riveted him to his chair in the office. He loved his wife and family too, and when they had to do without any of the necessaries he felt it was up to him to move and move fast. He shook himself until he had a real circulation and determined he would take a trip into the northwest "for his health"—the real purpose being to sell law books.

He started the first of the year and by May 1st had sold over $50,000 worth of law books. He was a man not afraid of a jury, and he was one lawyer who knew business. Of the $50,000 worth of books he sold at least $10,000 was his—all made within four months.

This young lawyer was allowed a trading privilege of $30, in the event that it was necessary to make a sale. The point was that, so far as the old books were concerned, it made little difference, but in this manner he was sure to make a sale.

This plan was good and it took. There are many lawyers to-day out of business and do not know it. A little adventure into the selling game outside of their community would not only prove very profitable but would act as a tonic and would enable them to find their real selves, and they could come back to their practice with renewed energy and perhaps a new viewpoint which would put them where they belong.

PLAN No. 607. SHEEP ON SUMMER FALLOW

Here is what one farmer accomplished:

"On September 1, 1913, I owned 123 head of sheep worth approximately $613. During the

following year I fed them $50 worth of feed and pastured them on summer fallow. I figure they saved me $150 worth of labor in eating off the weeds. During the year I sold $375 worth of sheep and $125.80 worth of wool, and at the end of the year I still had 135 head worth $675. I therefore figure my net profit, exclusive of labor, $660.80. I cannot understand why more farmers do not run sheep on their summer fallow."

PLAN No. 608. LIKES HOGS AND SHEEP

He made a living from stock, and here is his statement of what he did:

"Recognizing the necessity for more modern methods in farming, I started in four years ago by fencing my 500-acre ranch with hog-tight woven-wire fence. I also purchased a bunch of hogs and went in debt for both the hogs and the fence. The first year I sold $1,400 worth of hogs and have averaged $2,000 per year since. I also purchased some sheep and found that by running them between harvest and summer fallow I was able to keep down the mustard and weeds. In this way I made a profit on my sheep from both wool and mutton. I am now out of debt and am satisfied that stock farming pays. I believe that if diversified farming methods are followed, sixty to eighty acres is enough for one family."

PLAN No. 609. GOOD MONEY IN COWS

Here is what a farmer did with a few head of stock in Western Wisconsin, and he gives an account of his

work as follows:

"On October 1st, 1913, I owned eighteen cows, eight heifers, four calves and one bull. The following year I fed $312 worth of pasture and $415 worth of feed, all of which, with the exception of $160 worth, was produced on my farm. During the year my sales of cattle and dairy products amounted to $1,200. At the end of the year I had remaining twenty-two cows, eight heifers, three calves, one steer and one bull, worth $2,040. I figured that I cleared $753, exclusive of labor."

PLAN No. 610. HOGS ARE MONEY MAKERS

You will note that the following profit was made before we were thinking of war. Hogs are always profitable. Here is Mr. Farmer's statement of what he did with a few hogs in Washington state.

"On September 30th, 1913, I owned twenty cows, thirty barrows and gilts, and one boar, worth approximately $610. During the following year I fed $704 worth of pasture and grain, all of which were produced on my farm. On September 30th, 1914, I owned twenty cows, eighty gilts and barrows, two boars and 120 pigs, which I figure worth $2,090, making a net profit of $750, exclusive of labor."

Why will people insist on living in the heart of the city, with poor living conditions for their families, and work like slaves without a ray of hope for their future, when the country is only a few miles outside with good schools, plenty of fresh air, sunshine, hills, pastures, woods and streams and always a good environment for the family, and the best kind of a living and an easy possibility of plenty? Answer the question if you can.

PLAN No. 611. INTERESTING POULTRY FIGURES

To show what a hen paid before the war, here are a few figures which show the possibilities of the hen in the city.

"According to your request, you will find below data on my poultry business:

From Nov. 1, 1912 to Nov. 1, 1913:

Cost of eggs per dozen	16 c
Cost of feed per head for the year	$1.49
Net earnings per hen for the year	1.49
Number of eggs laid per hen for the year	111
Average price	37 c

From Nov. 1, 1913 to Nov. 1, 1914:

Cost of eggs per dozen (includes interest on coops)	12 c
Cost of feed per head for the year	70 c
Net earnings per hen for the year	$2.50
Number of eggs laid per hen for the year	107
Average price	37 c

"One-half the hens for 1914 were the pullets of 1913 and were supposed to fall off in production 20 per cent. The balance were pullets."

The Department of Agriculture is back of you in any endeavor you may wish to make in farming. If you want information on any problem, write to the department and they will forward you an up-to-date book on the subject. They have pamphlets prepared treating of the way to handle chickens in the city, raising of fancy birds, and many other subjects relative to the chicken.

PLAN No. 612. BELIEVES IN SHEEP

Many town people have an idea that before the war farming was not a very profitable business, but that is not the case. Here is what one farmer has to say:

"In 1913 I purchased 1,188 sheep, mostly lambs. In 1914 I clipped about one dollar's worth of wool per head and then sold 300 head at $4.75 to $5.25 per hundred pounds. They were out nearly all winter at strawstacks and grazing, my only expense being thirty-five tons of alfalfa at $10 per ton. You can easily see that I have made a very nice profit. I believe that nearly all farmers should keep a flock of sheep."

It is easy to understand why our great men and women of high talent in all walks of life come from the farm. The business of farming enables them to make the best kind of a living with much less wear and tear than attends work in the city. He has time to think; nature is about him; he is not worrying about his grocery bill and how he will get enough to eat next week. His living is assured for a year. The sun, rain and land look out for that. His wife is not worrying him about the latest style of clothes for herself and children.

Try it out for yourself—get a few sheep and be independent.

PLAN No. 613. REMARKABLE YIELD FROM TWENTY-THREE ACRES

The following figures taken from a 23-acre tract, near North Yakima, Washington, illustrates what can be accomplished in the irrigated valleys of the Inland Empire, when intensified farming methods are

followed:

Six thousand boxes of apples, 10 tons of cherries, 400 boxes of peaches, 700 boxes of pears, 100 crates of small fruit, 1,800 boxes tomatoes, 40 tons of wheat and alfalfa hay, 15 tons carrots and mangel-wurzels, 2 tons grain and vegetables, 50 bushels corn, 400 pounds butter, 14 pure bred Duroc hogs, 220 dozen eggs, one Holstein heifer and one colt.

PLAN No. 614. FOURTEEN HENS MAKE $3.33 EACH

Here is what a city man did, given in his own language:

"January 1, 1914, I had on hand fourteen pullets, worth $8.40. During nine months I sold $12^1/_2$ dozens of eggs at 35c per dozen, a total of $49.87. I also sold $26.15 worth of chickens, and at the end of 9 months I had remaining a flock of 48 pullets, 6 cockerels and 8 hens—62 in all—worth 60 cents each or a total of $37.20.

During the nine months I spent $7.50 for eggs for hatching and also $89.80 for feed. This makes me a profit of $57.50 from the original 14 fowls, or $3.33 each.

It should be stated that, in addition to the feed paid for, the stock was supplied with table scraps, which cost nothing under the circumstances and would have added largely to the feed bill had its equal in feed value been paid for at market prices. However, I feel that my experience illustrates a great saving in poultry feeding if table scraps are utilized."

PLAN No. 615. SHEEP MAKE MONEY FOR THIS

MAN

Here is what this farmer has to say:

"In January, 1913, I owned a flock of ninety sheep worth approximately $900. During the following year I purchased a buck for $32 and fed $50 worth of pasture and $80 worth of salable feed. I sold $225 worth of sheep and $210 worth of wool and on October 1, 1914, I had 125 head of sheep remaining, worth $1,250. I therefore figure my net profit, exclusive of labor, $623. However, the sheep made me more money than this, as I let them run on summer fallow and they saved me the expense of cutting the weeds. It seems to me every wheat farmer should have some sheep."

PLAN No. 616. LIKES DAIRYING

This farmer makes the following statement:

"January, 1913, I owned 12 cows, 1 heifer, 2 calves and 1 bull, worth approximately $916. During the following year I fed $135 worth of pasture and $365 worth of feed, all of which, with the exception of $120 worth, was produced on my farm. During the year I sold $1,100 worth of cattle and dairy products and on January 1, 1914, I had remaining 9 head of cows, 3 heifers, 5 calves and 1 bull, worth $870. My profits therefore, were $554, exclusive of labor, manure, etc. I have conducted my dairy business as a side issue to my general farming and feel very well repaid for the attention I have given to it."

In many articles of this book I have given illustrations of profit in farming before the war to show that regardless of the times there is always money in farming.

PLAN No. 617. BEEF CATTLE IN FERRY COUNTY, WASHINGTON

This farmer gives his experience as follows:

"According to my experience here in Ferry County, a herd of cattle doubles in three years, aside from keeping themselves. There is always a cash market at your door for anything you have to sell. I have 1,100 acres of land and keep about 100 head of stock through the winter; raise considerable small grain and feed up all my straw as well as what hay is necessary. I now have a nice start in pure bred Short Horn Durhams of milk strain, which gives me good milkers as well as big steers."

PLAN No. 618. GOOD YIELDS OF WHEAT AND OATS

He made money before the war; what do you think he made during the war? He tells what his farm did in the following account:

"I harvested 135 acres of wheat this year which furnished thirty-two bushels per acre, a total of 4,320 bushels. It cost me $459 to grow it, $200 for cutting and shocking, $345 for threshing. The interest on my investment in land at $80 per acre, and on horses and machinery for two years is $1,536. This leaves a net profit of $829 at 80c per bushel. My oats made a yield of 50 bushels per acre."

PLAN No. 619. $1,000 A YEAR FROM POULTRY

Here is what a small farmer accomplished in Washington state with poultry in 1910, 1911 and

1912, when prices were much lower than now. He gives his experience as follows:

"I will be glad to tell you the result from my poultry business. I began January 1, 1910, with 250 hens, 19 roosters, 12 ducks and 20 bantams, which I invoiced at $340. During the year 1910 I sold as follows: Market eggs, $542.50; hatching eggs, $437.15; market poultry, $210.30; breeding stock, $350.75; or a total of $1,541. The cost of maintenance during this time, which includes feed, stock purchased, etc., was $840.50, leaving a profit of $700.50.

"During 1911 my sales of market eggs were $631.65; hatching eggs, $627.40; day-old chicks, $85; market poultry, $253.35; breeding stock, $403.90; total, $2,001.30. Maintenance during the same time was $910.70, leaving a profit of $1,090.60.

"Up to November 20, 1912, my sales for that year were: Market eggs, $705.20; hatching eggs, $422.50; day-old chicks, $154.60; market poultry, $235.80; breeding stock, $392.40; total, $1,910.50. My maintenance was $895.75, leaving a profit of $1014.75. On November 20, I sold my entire stock, which brought me $695.00, or a gain from my original investment of $355.

"My total profit for the three years was $2,805.85, which, added to the gain on investment of $355, makes a grand total profit of $3,160.85 or better than $1,000 a year. I might also add that, aside from caring for the poultry, I cultivated 11 acres of ground. The income from this and from two Jersey cows was $500 a year."

When a man takes a real interest in his work it is remarkable what he can accomplish.

PLAN No. 620. BIG PROFITS IN TRUCK GARDENING

This man operates a truck garden with the following success. The figures given are before the war prices. The soil resembles gravel and is watered by pumps. Here is his account:

"I have been truck gardening in the vicinity of Spokane for twenty-six years, and now have a small tract in the Spokane Valley and inside the city limits. Here I find I can produce all of the crops that will grow in this climate, but at present I am making a specialty of celery, cauliflower and asparagus.

"Celery gives me a gross return of $600 to $1,200 per acre, and it costs me from $300 to $500 to grow and market it.

"Cauliflower gives returns of $400 to $800 per acre, and it costs me from $100 to $300 to grow and market.

"Asparagus yields 3,000 to 3,500 pounds per acre on an 8-year-old bed which I sell at 9 cents per pound. It costs about $1^1/_2$ cents per pound to grow, cut and market, so that my profits vary from $225 to $265 per acre. I figure the land on which I grow these crops worth $1,000 per acre, making an investment charge of $60 per acre. I believe there will always be a good market in the Inland Empire for garden products."



Plan No. 620. The Early T

PLAN No. 621. PROFIT ON 130 ACRES OF WHEAT

This man was farming in the Palouse country, south of Spokane, Washington. You can see what he was doing before the war, and you can figure out for yourself what he made after the war began. Here are his figures:

"I raised 4,030 bushels of wheat this year from 130 acres, an average of thirty-one bushels per acre.

It cost me $331.50 to raise the crop; $334 to harvest it, and $332.64 to thresh it. Sacks cost me an additional $175.

I figure the interest on my investment in horses, machinery, and land at $80 per acre would be $1,404 for two years. I have not sold my crop yet, but at 80 cents a bushel it would net me $647. I expect to get $1 per bushel and this would make a profit of $1,453."

PLAN No. 622. THREE CROPS IN ONE SEASON

He made a living on a small piece of land in the following manner:

"I have six acres of ground on which I am making a specialty of growing cauliflower, celery and cabbage. I figure that I have cleared over $1,500 this year, above all expenses. From one little plot, about 14x20 feet, I have sold a crop of radishes, spinach and endive, bringing me a gross return of over $35."

PLAN No. 623. BEEF CATTLE MONEY VELVET

The following is a little side money for the farmer. His statement is as follows:

"On January 1, 1912, I owned ten head of beef cattle worth $500. During the year I fed $60 worth of pasture and $150 worth of feed, all of which was produced on my farm. During the year I sold $120 worth of cream and traded $90 worth of cattle for hogs. On December 31, 1912, I had nineteen head remaining worth $860. My profit for the year, exclusive of labor, was $360. While this is not a very large amount, yet at the same time I consider it

velvet, and I gave but very little attention and time to that part of my farming."

PLAN No. 624. PASTURES ALFALFA

This farmer makes a good living on his small farm. Profit based on prices before the war.

"I have thirty-five acres of alfalfa from one to five years old. I cut two crops of hay each year, yielding from $2^1/_2$ to 3 tons per acre, and in addition pasture the third crop. I can sell all the hay I can raise at from $9 to $10 a ton unbaled. At this rate it is bringing big returns on $75 to $100 per acre land."

PLAN No. 625. ALFALFA BRINGS GOOD RETURNS

This farmer does well with twenty-five acres based on prices before the war.

"I have twenty-five acres of 4-year-old alfalfa on sub-irrigated land. I cut two crops a year, averaging three tons per acre, and use the third crop for pasture. I can sell my hay for from $10 to $14 per ton unbaled. While there is not a great deal of alfalfa raised here I am sure that it will do well and bring very good returns on the investment."

PLAN No. 626. ALFALFA BETTER THAN WHEAT

Farmers in the Northwest country usually summer fallow, and many put in alfalfa, which is a good crop for summer fallow and is profitable. Here is what one man's experience was whose profit is based on 1914 prices for alfalfa:

"In 1913 I sowed sixty acres of non-irrigated land to alfalfa. I cut off of it the first year $1^1/_4$ tons per acre which I sold at $10 per ton, making $900 gross returns. Besides my hay crop I sowed a field for pasture during the fall, but cannot tell just what it was worth."

PLAN No. 627. FARMS TOO LARGE

Here is what a woman did in the State of Washington, and the following statement is in her own language. She must have made money on $2 wheat.

"Twelve years ago I started in owing $2,500 on 320 acres. Since then I have purchased two more sections in Lincoln county, Washington, and two sections in Canada and have never had a mortgage on my home place. The money has all come from the ranch in Lincoln County.

"This year I had 85 acres of barley, which yielded 50 bushels per acre, and 640 acres of wheat, which yielded 29 bushels per acre. I sold my barley at $1.20 per hundred and my wheat at $1 per bushel. My 1913 crop was still better, as part of my wheat made 52 bushels."

PLAN No. 628. LIKES THE WEST

Here is what he did with $3,000:

"I came to the State of Washington twelve years ago from Central Illinois with about $4,500. I purchased 160 acres at $50 per acre, paying $3,000 down. I bought fourteen head of cows at a cost of $700, sowed most of my land to grass, alfalfa,

timothy and clover.

"The first five years I practiced dairying and mixed farming, selling the whole milk, hay, small grain and potatoes. I also have a one-acre orchard, which has produced an average of 200 boxes of apples per year, besides what we used. Four years ago I bought 120 acres more, paying $100 an acre. I now have a farm that is worth $30,000 and feel that I have done very well, but no better than any one else can do who will follow mixed farming and give it careful attention. I believe mixed farming will pay anywhere."

PLAN No. 629. FINDS HOGS PROFITABLE

He handled hogs as a side line, and his results run as follows:

"On October 1, 1913, I owned 11 sows, 90 gilts and barrows, 2 boars and 60 pigs, worth approximately $1,270. During the year following I purchased $60 worth of hogs and fed $1,310.21 of feed, all of which, with the exception of $310.90 was produced on my farm. During the same year my sale of hogs amounted to $2,316.33, and on October 1, 1914, I had 8 sows, 100 gilts and barrows, 2 boars and 8 pigs remaining, worth $856. I figure my net profit, exclusive of labor $532.33—not very bad for a side line."

PLAN No. 630. BEEF CATTLE PAY WELL

Here is a man that made money during the war. This is what he says:

"In October, 1912, I owned three head of beef cows, worth $225. During the next two years I

purchased $721 worth of cattle. I do not have a record of my feeding costs, but it would not be very much, as I pastured them on cheap pasture most of the year and fed only a small amount of hay for three months in the winter. During the same two years I sold $827 worth of butter and cattle, and on October 1, 1914, I had sixteen head remaining, worth $1,360. I figure my net profit, exclusive of labor and feed, $1,241. I am now satisfied that I can make the beef cattle business pay me a nice profit, and will go into it on a larger scale."

PLAN No. 631. HE WANTED TO BE SECRETARY TO THE MAYOR

Every mayor's office needs a secretary to look after the office and make his dates and appointments for him, as this saves a great deal of time. This kind of work calls for a man who has a neat appearance and is genteel and makes a good impression; a man who understands all methods of putting off callers whom the mayor does not care to see; who knows how to find out whether the people calling on the mayor have come to raise money, etc., ascertain the full nature of their business and make proper arrangements for the mayor's time. Such a person is a valuable asset to the mayor and can save him a great deal of time.

This young man knew that there would be few men who were capable of holding this position. He was a college graduate and stood well socially, had a great deal of natural ability, and supported the mayor in his election. He felt that if he was appointed secretary he could not only help the mayor, but would give him a distinct political

advantage. He finally received the appointment and made good.

PLAN No. 632. BECAME COUNTY COMMISSIONER

I knew two men, one a secretary to the County Commissioner, and the other in the auditor's office. They each desired some day to be commissioners for their county. They served in their respective capacities for five to six years. This gave them a good income, a chance to establish their homes, properly educate their family, and finally they came to the conclusion that they were sufficiently well acquainted, and capable of handling the office of county commissioner, and proceeded to announce themselves as candidates for this office. They worked jointly, each supporting the other, and in this way they had all their friends in their joint support. They were not good speakers, but they were well liked in the community and the years that they had served the people, had proven of great value to them. Everybody knew them as deserving. They had served the county for years, and why could they not serve as commissioners in as good a manner as they had served in their other positions? The men who were contestants for the office had had no prior experience, and they used to good advantage the argument that being trained in the line of work which they had done, that they were better qualified than the other parties to serve the country's needs, and they succeeded on that program.

PLAN No. 633. A LAWYER BECOMES A JUDGE

To build up a political success one is invariably dependent upon his friends, and an aspirant for office will be very much surprised when he enters the race and finds how very few working friends he actually possesses. He may be well known in the community, and have a good reputation, but when he makes an attempt for public office, he will be fortunate if he finds ten men of the thousands of his friends who will come out and work conscientiously for him. This is especially true of the man who lives in a large city.

This young lawyer was fortunate in respect that he had a father who had won an enviable reputation before him, and with five or six friends who would put their entire time at his disposal, concluded to make the race for the judgeship. He put out the regular cards and allowed his friends to deliver them, and put out the necessary literature. He then obtained all the newspaper comments he could get, and he was fortunate in having one friend who was a reporter, who assisted him.

He was not regarded as a public speaker, but his friends came to his rescue on this point, and did everything they could to make up this deficiency. Two of his friends knew politics; knew who controlled votes and who did not. These two men worked unceasingly for his interests.

What I have stated is the general procedure of the man who intended to make a political career a success, but his main dependence rested upon his following the advice of his friends, who said: “Now judge make good on the bench.”

He started in with a very ordinary experience, but he was courteous to all. He made it a special point not to make a statement from the bench that would be injurious to the attorney or would prejudice him

with his clients. He realized that when two attorneys stood before him arguing for their respective sides, that one was sure to be mistaken. But, too, he further realized that both sides of the question were serving to bring about a right and proper decision in the matter, which was to assist him in giving a right judgment.

No matter how tired he might be, or how put out with the arguing of cases, he made it a point to be patient. Especially was this true of young men who appeared before him, and in this manner he won high appreciation of all members of the bar. Any time he was criticised, he had hundreds of supporters of the bar to defend him.

Each time he comes up for election his success is assured. They know him to be patient and courteous and a gentleman on the bench and thoughtful of other people's rights and interests, and also they know of his sincere desire to bring about justice between the litigants.

There is no doubt about the integrity of the court, but often times a word from the bench may be said in anger or impatience, which will greatly prejudice the attorney who stands before him with his client. And many times it is the cause of a loss of hundreds of dollars worth of business to the attorney.

PLAN No. 634. AN ATTORNEY BECAME MAYOR OF A CITY

When he first started to practice it was very discouraging, as he was limited in funds and had a family, and for that reason he took up work in the city clerk's office. In that capacity he could serve, and soon he became the adviser of the city council.

He was familiar with all of the details of the clerk's office and the doings of the council, and could also advise them as well as the city attorney's office. Often his suggestions to the corporation council's office, were gratefully received. For seven or eight years, he met the public daily.

He determined to make the race for the office of commissioner, which paid $5,000 a year. His friends were loyal to him. He was familiar with politics from start to finish, and knew that he had thousands of votes; he also knew that he had the kind of friends who would support him. Assured of his friends' support, he went about the city himself, making a direct canvass for votes. He realized that every effort meant that much more in his favor, even though he was quite sure of a certain percentage. He felt that if he was once elected he could make a showing that would keep him in office from year to year. He knew that he was far more familiar with the work than any other candidate.

Most of the candidates were business men, who had had no prior experience with the city government, and he argued that if he had served the city well for ten years, that he would be better qualified to serve the city than those who had had no prior experience.

To the surprise of a great many he was elected, and after receiving his office, he was given one of the most difficult tasks, which he handled with credit to himself.

PLAN No. 635. A LIVING OUT OF POLITICS

A great number of men and women in your community and state are making their living entirely

on politics.

If you are to choose this work for a living, it is necessary to bear in mind that you must be an adherent of some particular party and you must be enthusiastic for it from beginning to end, as leaving this party will be considered a breach of good faith on your part, and you will lose much of your friendship, which is essential to keep you in your position. Also bear in mind, you who hold positions in political work, that your previous work has a great deal to do with it. That is, you must serve as an assistant, say, in the clerk's office, the treasurer's office, the assessor's office, and in this way you will acquire thousands of friends. And then, the newspaper must not be lost sight of, as a person may have thousands of friends in his community, and if for some reason or other he has awakened the antagonism of the newspaper men, he will find that it is one of his greatest difficulties, and may even lose to him victory which should be rightfully his. Another factor one must consider; he must have friends of the right sort. You may think you have hundreds of friends who will get out and put in much time in your behalf, but when once you depend upon them you will be surprised how few there are. If you are fortunate enough to have ten men who will get out and put in their time and really give you their support, you are very fortunate indeed.

Then there is the following to be considered; you must take yourself seriously—believe that you can be of real benefit to the community by serving in that capacity. You must not leave your friends to do it all; you must do everything you can to assist your friends. Get a car and drive out into the country and get acquainted with the farmers.

If you have it in mind to win success you must not figure in days, but you must figure in years, and build up slowly for the future.

Also have clear in mind that, once you are elected, the kind of service you desire to give. You will find if you are fortunate enough to be nominated and elected that the opportunities for real service in your city, county or state, are very great. You will find that the usual method followed by politicians is to work for the future, letting the mistakes of the past take care of themselves.

You will find in public service that there is great opportunity to build a reputation for doing things, and if you are in continual fear of injuring somebody's feelings while rendering a real public service, you will not make a success.

PLAN No. 636. AN ATTORNEY BECOMES SPECIAL COUNSEL FOR THE CITY

He had no political standing but he knew the employes of the different departments of the city, and thus he became aware of what could be done for the city in the way of collecting back assessments, supposedly-outlawed claims etc.

He made a memorandum of these as best he could from a superficial examination, and took the matter up with the councilmen of the city. He had the support of the councilman of his district who furnished him a great deal of information. He then set about to become acquainted with the councilmen of other districts, and was successful in winning some of them to his support.

No sooner had he stirred up interest in this subject and got the matter squarely before the council, than

he was advised that there were other attorneys who were seeking this appointment for the work to which he had called the council's attention, and was advised not only to submit a commission proposition to the city council, but a salary proposition as well. Finally, through the activity of his friends in the council, he was named as special counsel for the city for a period of six months. It was up to the attorney to make good.

He made his own investigations, obtained his own material, and brought actions. He immediately got into contact with some of the newspaper reporters, and showed them the work he was accomplishing, and had proper attention directed to it.

At the end of six months he was able to make an excellent record, which continued his work another six months, and in that way he continued without any political standing, until he was appointed a regular assistant in corporation counsel's office at a salary of $200 a month. This employment continued until new political lines were drawn and a new corporation counsel put into office, after which he was continued as special counsel. Each six months he made a showing, with the result that he stayed in the office for two years, based entirely upon the showing he was able to make at the end of each six-months' period.

From this work he derived $175 to $200 a month, and won a good acquaintanceship in his work and an invaluable experience. He not only handled cases which brought him in contact with thousands of people in the community, but he also received experience in the police court, and in that way obtained an experience similar to that of an assistant in a prosecuting attorney's office. This plan could be followed in many of the cities in our country, as

there is always an opportunity to find something wrong in the average city government, in remedying which an attorney can render a good service. As a matter of fact, you can always depend upon it that the mistakes of former administrations are left alone, and to attempt to stir them up politicians of the city believe will make unnecessary enemies, besides the reformatory work can be done by a special counsel without injuring the future of the parties in office.

PLAN No. 637. AN ATTORNEY BECOMES CHIEF JUSTICE IN THE PHILIPPINE ISLANDS

To win this position in twelve years would seem impossible but if you knew the man and the plan he pursued it would appear to you quite possible.

In the university he developed himself in public speaking. He became a good speaker, and before his term had expired had won a reputation as an excellent debater. He was not of the argumentative type, but more of the persuasive turn of mind. He endeavored to win people to his convictions rather than to compel them to follow his ideas. He took an extra year at the university and obtained a special degree. Before his school was over he concluded that the Philippine Islands offered the best opportunity for a young man in the law work, so he secured, through his connection at the university, a position to instruct in a law school in the islands, as the American law was to be followed there. From instructor he was soon advanced to the head of one of the law schools, and within twelve years after leaving the university he was appointed to the position of associate justice of the supreme court in the Philippine Islands. Being an American and

familiar with the American laws, and having specially qualified himself while at the university for this work, he won, with little difficulty, the position which he now occupies.

PLAN No. 638. A PHYSICIAN BECOMES CORONER

While at the university this young doctor learned something about politics. As soon as he got settled in the community he made investigations of the coroner's office. When politics opened up he became a candidate and made an original campaign for the office. He could speak and tell stories far better than the average man, and he made a good impression in his addresses. The political party arranged dates for speakers, and being one of the best speakers he was called upon in a great many cases. He made a clean campaign, not calling attention to any weaknesses in the former holder of office and won the support of his fellow doctors. He had an automobile and made it a point to reach many of the farmers in his county. His campaign was successful. In this way he won a good acquaintanceship in the country and obtained an excellent experience. Usually the county records show that either the Republican or Democratic parties, for years, have dominated the situation, and it is a matter of getting the nomination on one of these tickets. Nomination in these cases means, virtually, an election.

When he first came to the town he made it known he could speak and would be an aggressive man in any campaign, and showed his strength by addressing the various meetings that he attended, and in this way, got recognition from the organization and everything was done to give him an

opportunity to have the nomination with as little competition as possible.

PLAN No. 639. A DEACON MAKES MONEY ON TAX DEEDS

I met this gentleman in connection with some old back taxes which the city claimed were against certain properties. He showed willingness to pay the back taxes at once without any argument, and after making his payment entered into a conversation with me relating how he had acquired this property and how much he had made. One rainy day, he said, he attended a sale at the courthouse, and there being no bidders present, for the property there offered for sale, except himself, that he acquired this piece of land for a $150, and two years later sold the same piece of land for $3,000. He said that for the last six years he had made his living by punctually attending these tax sales and, from time to time, making good purchases. He took a great deal of the property that, at the time of the purchase, he did not know what to do with, but later used it for trading purposes and profited on it very handsomely. He made more than $3,000 a year in that work alone. He found, in attending tax sales, that about the same crowd were always present, and soon he made arrangements with them for the purchases of different properties that each wanted to secure. In other words, he would not bid when another party wanted a piece of property, and the other party would not bid when he wanted a piece of property, and in this way, they obtained their property at a low price.

There is a Chicago corporation that follows this business entirely, however in the connection with it,

they purchase tax certificates. They say that about 25 per cent of the property on which they purchase tax certificates, come to them, and out of this they make very good money.

PLAN No. 640. THE DOCTOR MADE MONEY

When I was a boy about ten years of age, I well remember the new doctor coming to the city. He received his furniture and appliances for office use, and showed them to us with great pride. He started in and worked very hard. His office was in a very unpretentious building in a small Iowa town, and, naturally, the first year his practice was limited, but everything he did he kept strict account, made his charges, and rendered his bills. He was not very insistent on pay at once, but he was anxious to render anyone service. No matter how far out in the country the patient lived, he would make every effort to reach them. As a matter of fact everybody knew that when they called him, he was always available and would be there at the earliest moment possible. He followed this practice for years, and saw to it that none of his bills outlawed, and while he had to wait for his money, he made a charge sufficiently large so that he could very well wait until they were able to pay him.

Five years passed and he had the reputation of being one of the busiest doctors in the community. At a certain time each year he made it known he was going away to take further instructions in medical work, and gradually he became quite proficient in operating and started a small hospital of his own where he could give the rural people the proper treatment.

The farms in that vicinity began to increase in value. The people whom he served a few years before, whom most doctors thought would be unable to pay, became prosperous, and most all of the bills that this man had rendered became an asset.

He not only obtained the experience and pleasure of rendering his patients assistance, but he believed in the country as well, and to-day he is one of the wealthiest men in that part of the country. He put his fees into farm land which has increased in value from fifty dollars per acre to three hundred dollars per acre. Any doctor can succeed in following this plan in the community where he may be practicing.

PLANS No. 641 to 649 SEE GOVERNMENT SERVICE—PLAN No. 217

PLAN No. 650. HOW A DRUGLESS DOCTOR BUILT UP A PRACTICE

He and I were working together on a city newspaper as advertising solicitors when one day he told me that he was studying nights to become a chiropractic doctor. He said very little about it, because his wife did not favor it. However, he had put his time to this study. He continued his studies for six or seven months until he felt that he was able to launch out for himself. The question then was, where should he start. He had only a little cash and to stay in the city where he was once an advertising solicitor, he felt it would be difficult for him to build up a reputation as a drugless doctor. Of course, he resigned his position as advertising solicitor and opened an office in conjunction with a dentist in his

own city. He secured his equipment and started after the business. He made it a point first to see all of his friends and let them know that he was in the drugless practice. He kept at this work and got in touch with hundreds of people. He worked diligently with his patients, and they told others, and after six months of hard work holding the creditors back his business began to pay. Before the year was over he had a practice that was paying from $500 to $800 a month. After a couple of years of practice, he let it be known he was going east to take advance work as a chiropractic doctor. He wrote letters to all the people he had treated on his return.

He was always enthusiastic about his work and made a very careful study on the subject of anatomy, and could talk creditably with any doctor. He was very active in the welfare of the drugless doctor and did any and everything he could to assist their mutual cause. He started without any capital, the money for furniture was borrowed. He made up a card, giving a certain number of treatments for a certain amount of money, sold these to all of his patients, which gave him ready money. This was all done without a line of newspaper advertising and with the opposition of the medical fraternity.

PLAN No. 651. A LAWYER SPECIALIZES ON INSURANCE LAW

As soon as he had graduated he went into one of the leading law offices of an insurance company and there made a two years' study of insurance law from the insurance company's standpoint. He was given little opportunity to progress in the business, and found himself at the end of three years without any

business of his own to depend on, so to get recognition from the company seemed hopeless.

He did know "insurance law," so he opened his law office. He saw the other attorneys and made it known that insurance law was his specialty, and that he would not infringe on any of their business, if they would give him an opportunity to work with them on that law. Of course, it is very difficult to get a lawyer to agree on any matter concerning business that may interfere with his own, but they soon realized when they received a case involving insurance they needed his services.

In a very short time the insurance companies became aware of this young man's ability and finally, one by one, he obtained their business. As a matter of fact, you will find but a few lawyers who know anything about insurance law. They cannot know much about it unless they make several years' study of the subject. However, when you once secure this business it is permanent and will guarantee you a very good income, and it is well worth a lawyer's time and attention put to it to make himself competent in this work. It will pay any lawyer to look around him and see if there are any others in his community who are making a specialty of this law; and if they are not, prepare for this work.

PLAN No. 652. HE BECAME A "TRIAL LAWYER"

No sooner had he graduated from law school, than he determined to become a "trial lawyer."

He studied law for two years with one of the leading Law firms in the city. His income was small, but he was patient. He realized that he must know a great deal about briefing, and this was a good way to

obtain the knowledge. After this he went into business for himself.

He had been in the practice only six months when an opportunity came to him to become an assistant to the corporation counsel. This he promptly availed himself of, and in a short time he was in receipt of an income of $150 a month, with his office paid for and a chance to do work on the side.

He retained this position for a year, and became acquainted with hundreds of people of the right sort. He practiced in the police court, and handled many matters before the council which required, on his part, good ability as a speaker. He was from the South and loved anything that had talk to it. After his experience with the city he went in for himself and worked patiently for a year with little results. A case came to him from the Italian section and he obtained such a favorable decision that this case brought him much business, and soon he was in receipt of a net income of $400 to $500 a month.

He made a specialty of evidence and mastered it so well that it required little thought on his part to conform with the ordinary rules. He understood cross-questioning, of which he made a very careful study. He worked for years with his speech until he was able to present a matter before the jury in a clear, concise and convincing manner.

This young man to-day, with the experience of twelve years, has made an unusual success as a “trial lawyer,” and is getting his share of the important cases.

Coupled with this ability he understands well the value of his services and renders his charges on the amount of time devoted to his clients. He keeps strict account in much the same manner as is set forth in another article in this book, and he sees to it that for

all services he renders his clients are duly notified so they feel all along that their interests are properly taken care of. And when the client knows the amount of time the attorney has devoted to their interests they are willing to pay a reasonable charge.

PLAN No. 653. AN ATTORNEY BECOMES A COURT CLERK

This attorney thought it was important to first serve as clerk for the court, so he worked in this capacity for a year. In that manner he became familiar with all the abilities of the men at the bar in that community. He watched and observed how they conducted cases, and discerned what abilities each possessed. He also became familiar with their standing before the judges of the court, as well as their standing before the bar. In other words, he learned many tricks of the trade, and also became familiar with all the records of the court house, which in after years was to be of advantage to him. He also enjoyed the association of a judge who afterwards turned out to be a real leader in national affairs.

With this training he went in business for himself. He possessed high qualities as a business man, as well as those of a good lawyer. He was not anxious for the trial work, and settled his cases as best he could out of court if possible. He realized that being in court continually would net but little money for him and his client. He was not a trial lawyer, and did not care to make a reputation in that direction, but he was well liked by all of his friends and close acquaintances: in fact, they would do almost anything for him. He was a member of a church of

his neighborhood, and when it was necessary to have a certain man from their district, he was selected by his friends to run for the office of state representative and won by a large majority, and each time the election came along he was re-elected representative, and finally state senator.

He has built up a good, substantial law practice, and he has succeeded financially in a way that is a surprise to all, however his fees were not invested until after he had made a careful study of the business into which he launched. Many lawyers believe that when they are in the practice that it is not credible to them to know about the rules of business, but this is a serious mistake. They should study those as well as the law and know what their business opportunities are. If a man is good enough to reach a right course in a lawsuit, there is no reason why that man should not be as successful in reaching out and securing for himself the right course in business.

PLAN No. 654. HE BECAME A LAWYER'S LAWYER

For years he had been a very successful trial lawyer, and because of that success he had been approached by many lawyers to take up their cases and put it through to a final success. He finally put his entire time at the disposal of the lawyers of his city. He found in the city in which he was practicing, had a population of about 400,000, that young lawyers who have been in the practice for years have but little experience in the trial court, and often have had but few cases and for that reason make many mistakes. He was loyal to the attorney who employed him and saw to it that they were not placed in an

embarrassing position. This brought him large and lucrative business.

I well remember his advice when in the university, how to prepare a statement of facts. He first had the client make his statement, and after it was made would ask the client to go home and prepare it in his own hand-writing and submit it to him. He would have this typewritten and later examine and question the client concerning it, and then he would have him wait a few days and re-state the entire case again to him. After this he would go over and make a statement of facts of the case himself, and would repeat this from three to four times and have it typewritten until he had an accurate statement of the facts, upon which he built his theory of the law. He felt that no attorney had done his duty until he had gone over the statement of facts in this manner.

From this plan alone, he realized more than $500,000.

There is an opportunity in many communities for attorneys of good standing to render this kind of service to his fellow attorneys, and there are always young men in the community who will avail themselves of such services if you render this to them in a way that will not discredit them before the bar and the court.

PLAN No. 655. A DOCTOR IN A SMALL TOWN MAKES A SPECIALTY OF SURGERY

Soon after his college course was completed he settled in a little town of about 2,500 population in the state of Iowa, in the midst of a great farming district. He liked the practice of medicine. At first he took up general practice in the town and made it a

point to respond to all calls given him. He was business-like and gave people to understand that he was to receive pay for his calls and rendered bills accordingly. His genial manner won people's confidence in his sincerity. Each year he devoted about two months to preparing himself for surgery work, which he intended later to make his specialty. Securing a dwelling house in a town he started a small hospital. This gave him an opportunity to render the proper service to the people of that community. Soon people found that, instead of going to the large city, they could get as good if not better service in their own home town from the local surgeon.

Throughout that part of the country he won a very high reputation, with the result that he had more work than he could perform in his small hospital, and later he bought an old business-college site and converted it into an up-to-date hospital. After the establishment of this hospital it occupied all of his time.

This was not done in a day, but by slow and careful building he attained enviable success in his practice. His brother, who settled in the same community, possessed greater ability as a surgeon, but because of his lack of knowledge of business methods and the following out of a good plan was not able to acquire the same degree of success.

PLAN No. 656. HE BECOMES AN ATTORNEY IN A SMALL TOWN

He came from the West to the university and as soon as his course there was completed he at once returned, to one of the small towns, having a

population not exceeding 1,000. In this town there was one attorney, and for that reason many men would not consider the place sufficiently large for two lawyers. However, he made up his mind that this was his opportunity. The town had a farming community around it which later proved to be good.

The people of that community were very glad to have another attorney and gave him a chance. The first year he netted more than $2,500; the second year $3,500, and in the third year he sold out his business and went to the county seat.

He favored prohibition, and went into the campaign as a prohibition candidate for the office of prosecuting attorney, and won. That office he held for two years, and enjoyed a good private practice at the same time. Later he devoted his entire time to private practice, at which time I visited with him. He averaged then $6,000 a year.

The opportunities to the lawyer are far greater in the small town than in the larger cities. Out of my class of about 500 students, all of the men who went into the small towns in the Northwest met with success. Usually their incomes ran from $2,500 to $3,000 the first year.

The young attorney who bought my friend's law business saw a possibility of organizing a little trust company and formed a corporation, interested parties in the town in the project and some outside capital. After three or four years he is rated as worth not less than $75,000. He was not only a good lawyer, but a good business man as well. These facts are not exaggerated, but are plain truths, and there are many opportunities for men to make the same success in many small communities throughout the country.

A lawyer who has back of him a farmer's bank or

trust company is very fortunate, as this is a leader to a large business.

PLAN No. 657. THIS LAWYER MADE MUNICIPAL LAW A SPECIALTY

He had been in the private practice of law for about five years and was not doing well. He concluded to get into the corporation counsel's office and make municipal law his specialty. He was fortunate to get an appointment and soon developed into a first class lawyer for the city, and won a good reputation from his work done. The community in which he resided had a population of 350,000 to 400,000, and after about two years' work for the city he went in practice for himself. He made a specialty of the municipal law. Any matter that was to come before the council, or any service that he might render people with reference to city affairs, was the kind of business he was after. He used none but creditable methods and he left no stone unturned which would bring him in touch with business of the best character.

There are many ways an attorney, who understands municipal law, can render service to the people in large cities. After five or six years of private practice all the attorneys in his community would not take a case involving city affairs unless they had his advice or he was put in on the case. In return he sent cases to his fellow attorneys and did not engage in any but municipal law practice.

Municipal law practice is very profitable, as the clients are invariably able to pay for the service rendered.

The medical men have their specialties, other

kinds of work has its specialties and the lawyer is behind the times who does not consider this when he enters the practice of law.

PLAN No. 658. A LAWYER MAKES A SUCCESS IN A LARGE CITY

This young attorney located in a small town in Oregon and there, with the co-operation of one of the leading politicians of the state, was able to build up a good practice.

His acquaintanceship and connection established him in the community of 15,000, in which he made his initial step, and soon he had a small, but substantial practice. His plan was eventually to go into the city of Portland. He possessed one excellent ability, and that was to make friends. He was quiet in manner, a fair speaker and a good student. His friends were people of the best class and meant much to his ultimate success. In business he had good judgment.

After three years' practice in the little town he went to the large city and made his beginning. He was able to keep some of his clients from the small town. He met people in the large city with whom his political friends were on very good terms, and was able to get into connection with a good law firm. He was not admitted in the partnership, but was allowed an office in the same suite, and used their library and had the privilege of their stenographer's services. This association meant much to him. After twelve years of building, he now enjoys a big practice and is permanently established in the community, and counts many of the best people of the city as his friends.

No, he did not take up politics and has taken no part in it. He has aspirations in that direction, but he feels it is essential first to have a strong financial standing before he enters into any political campaign. “The average young lawyer does not realize how important it is,” he says, “to establish, cultivate and make the best kind of people their friends. They not only shape and mould the lawyer’s own life, but are, by reason of their standing, able to determine what his success shall be.” He believes that people are known by the friends. He says this is particularly true in a large city. Fifty friends of the right kind are worth a thousand that are not.

PLAN No. 659. THIS LAWYER WRITES FOR NEWSPAPERS

This lawyer says that one of the best ways of developing your abilities is to write, and he found time in the establishment of his early practice to write for the newspapers of his community. He lived in a large city, and certain columns of the newspapers were usually open for the discussion of public questions, and he took that opportunity to get acquainted with the community. However, he was very careful to see to it that he wrote only his own true convictions, and, when matters were thrown open for public discussion he endeavored to suggest through the columns some topic of general interest. He did not hesitate to write on this subject, and made it a point to put forth an article of sufficient strength and value which he could later support if it were attacked, and in this way he engaged in many controversies in the community which brought to him an increase of business. He also made

arrangements with a farm paper to answer legal questions in its columns, such as queries on line fences, and the like, and made a nominal charge for the answers. He answered a column to a column and a half of questions each month, and made a certain charge for his opinion on other subjects which he could not answer in the paper. This was all done under the auspices of the farm paper. They were very glad to give him a certain amount per month for this service. This brought him during the year considerable business. He states that the income he can directly trace to this kind of writing, netted him not less than $1,500 to $1,800 per annum. Also from time to time, on certain matters of general interest, he would put out a little pamphlet under his own signature and sell for a small figure—10 or 15 cents. From this source he derived several hundred dollars a year, as well as bringing his name before the community in a novel and interesting manner.

During the first four or five years' practice of any attorney, he can very well afford to do this kind of work and it will help establish him in his community. It will not only make him acquainted, but will at the same time develop his ability as a writer and a thinker.

PLAN No. 660. HIS INTEREST IN POLITICS MADE HIM MONEY

He was a young fellow full of ambition and energy and was interested in all subjects which came up for political discussion. He was especially interested in matters in which the temperance issue was involved. He was a "Progressive" and did not hesitate to tell people of his political convictions. He was a good

speaker and had trained himself in this work. He could talk before any meeting or gathering and make a creditable impression.

When I first saw him he was introduced as the "Boy Speaker" of that community, and the speech he delivered was very good. He could excel most of his seniors. Soon his services became much sought after by all aspirants for office in his political party, and this won for him recognition.

Coupled with this ability he worked hard for his friends. If a man has friends, and they believe and have confidence in him, they will let everybody know it, and they let everybody know that this man was the right kind of fellow for public office. The result was that when his friends were successful he had a selection of some of the employment they had to offer, and as a result got an appointment as clerk to one of the courts which gave him an opportunity to study first hand—the law.

He now enjoys an income of $100 a month, as well as the privilege of studying and observing the way lawyers conduct their cases. He is planning to later take up the law. He is associated with the various judges of the superior court, and his friends are among the best people of the city.

What he has done, many young men can do if they only have the initiative to follow out the general plan which he has adopted.

PLAN No. 661. REPORTER LIVES FOUR YEARS IN WASHINGTON

This is undoubtedly a wonderful experience for any man. He was a reporter on one of the daily papers, and was acknowledged as one of the very

best men in his profession. His income was small, but he counted among his friends many of the best men in the community. Some of these, of course, had ambition for public office. One in particular engaged his services, and to give him as much favorable publicity as he possibly could during his campaign for United States Congress.

This is an opportunity that is presented to many men who are on the staff of large daily newspapers. He proceeded at once to do everything he could. He advised the man running for office what things would make good news matter and what steps he should take to enable him to get the proper publicity in the paper. His advice was very good, as he was experienced in newspaper work. This service had much to do with the final success of the man winning the race for United States Congress. With his success the reporter was appointed secretary to the congressman and went to Washington and lived there for four years.

PLAN No. 662. CHEMIST FOR U. S. GOV. SEE PLAN No. 217

PLAN No. 663. THROUGH COLLEGE ON CLASS HISTORY

It is often supposed that a man who is not a good speaker and does not show much enthusiasm will find it almost impossible to earn his way through college but such is not the case.

This man was a good writer and a clear thinker. For each class that was about to graduate he prepared a class history. This volume became more

valuable as the years went by, and he had no difficulty in placing it with each member at a reasonable profit. There are many classes graduating at a university and he derived sufficient income in this manner to pay all university expenses.

PLAN No. 664. BOOSTER FOR BOARDING HOUSE PAID BOARD

He always managed to have fifteen or twenty boys who wanted to eat where he ate. With this following alone any boarding-house was glad to give him his board free. His board was two-thirds of his college expense, so he arranged with a boarding-house each year to bring at least twenty boarders to the house and keep up that average. This was a valuable help to the man running the boarding-house. Every business must have its booster or business-getter, so why not a college boarding-house?

PLAN No. 665. ATHLETIC ASSISTANT PAID UNIVERSITY EXPENSES

A man who takes an active interest in athletics can become a great help by assisting the coach or manager. Two men defrayed all their expenses at the university by acting as assistants in athletics. They enjoyed the opportunity of many side-trips, and after their course was completed received good offers through the coach and general manager.

Often this field of service is overlooked by those who must earn their way through college. The opportunities for a good man to assist the coach are numerous in baseball, on the track and in football,

and there is an opportunity to assist in the gymnasium.

PLAN No. 666. HE RAN A SALES COMPANY

About ten years ago I met a young man who was possessed of exceptional energy and push. With him something must be done and the time to do it was to-day. He ran a little collection company, and if he couldn't get prompt results he lost no time in bringing suit. The profits of the business did not develop fast enough for him, so one day he quit this work.

He felt that selling was his life-work. He had experience as an auctioneer, but now he determined to become a real business doctor and give people such treatment that they would know of his company throughout the state. He made good, and last fall when I met him he was making $8,000 a year, owned a house in the most exclusive part of the city, had a fine car, and this is how he accomplished it:

He opened a cheap office, then had printed a post card with the picture of an old doctor on a hurry call, printed in red, with wording as follows "Let us head Old Doctor... your way. He is the original business Doctor... Sales Company, Phone and address." He obtained from Dun & Company the names of the merchants in his city. With this card he got in touch with the business.

Most merchants know little about advertising, and know little about putting on a sale. Many merchants want to operate with less stock, others wish to sell but can not.

The young man makes a contract with the merchant for twenty days if possible. He receives 10

per cent of the gross sales. All advertising is to be arranged and paid for by the merchant, and the agent's entire sales force is placed at his disposal.

A large sheet—24x36—is prepared and circulated by the local merchant. He prints about twenty-five of these circulars on muslin cloth so that the advertisement will remain in place on telephone poles, fences, etc., and the surrounding territory is circularized in this manner.

A page is bought in the local newspaper, and large cuts and vigorous copy is put in the ads.

It is essential that a large crowd be present the first four or five days, and here are a few of the many plans that bring them:

A prize of $10 to be given away, and those present Monday morning at 9 to 9:15 will receive tickets for the prize. Then he delivers the tickets. The free ticket requires holder, who has signed it, to return to the store at 2 o'clock Monday afternoon, when three judges, selected from the people, are to conduct the drawing and award the prize. The ticket holder must be there in person or the prize goes to someone else.

Just before the prize is awarded the agent makes the announcement that the person who makes the closest guess on his weight will receive $10 in gold. The people must call at the store and put their estimates in at 9 o'clock the next morning. At 2 o'clock the same day they must be present if they wish to win the prize.

Before this second prize is awarded, he announces that $10 will be given to the person who would make the best guess on the number of grains of wheat a rooster will eat in three minutes. Next morning at 9 o'clock the amount must be given at the store, and at 2 the prize is given out. This insures a large crowd at the store for three days.

If it is near Christmas he lets everyone know there will be a turkey chase in front of the store at ——. Six turkeys are placed on top of the store and he is perched up on a box in front. He announces that the first turkey that falls among them is anyone's turkey that gets it. The second is for boys up to 18 and the third is for women, the fourth for the men, fifth for the girls, and the last for the old maids; he then changes it to everybody. But before the sixth is dropped down he makes the announcement that in on the cashier's desk is a jar of beans and the one who makes the best guess on the correct number of beans will get a first-class rocking chair. This is important as it brings them into the store after the turkeys are all gone.

He was not a card-writer but soon developed some skill which was of great assistance in his work. He always arranges the stock so that it shows to the best advantage. This work is very important and usually takes three or four days. For this service he is paid 10 per cent of the gross receipts and this amount is paid at the end of each day. His busy season is from September to April 1.

In many cases after five days have passed, and he has made $500, the owner of the store makes him a proposition to allow him to finish the sale for the remaining fifteen days, which he usually settles for $300.

He not only handles merchandise, as above related, but auctions stock for farmers at 3 per cent commission. He makes a specialty of auctioneering hardware stores, and his success is extraordinary. He will take up a knife, make a sale at a certain figure, and at once, and at the same price, offers for sale all knives of the same kind. He sells a tub at a certain figure and the balance go at the same price.

He is now going into the business of auctioneering real estate. He has sold large tracts of land. He has on his staff six high-class salesmen and he devotes his entire time to directing the sales work. He is doing all in his power to educate those who think "sale" to connect that thought with the name of his company.

Three of his seven years were hard, but the last four he has been able to develop a net income of $8,000 per annum.



Plan No. 667. The Widow

PLAN No. 667. ENTERTAINS CHILDREN.

A mother with a little 8-year-old girl was compelled to earn her own way. She had one asset—a home in a good neighborhood close to a school. She was a good entertainer and the idea came to her: "Why not give children's parties four afternoons of the week?" She acted upon this idea and gave parties for children from 1 to 5 o'clock Tuesday, Wednesday, Thursday and Friday, when school was closed, and when school was in session she arranged for parties on Saturdays from 1 to 5 P. M.

She would entertain fifteen to twenty youngsters and give them a real wholesome time. She charged 50 cents for each child. This gave the mothers their Saturdays, and the way this lady conducted her parties was instructive to the children. She taught them how to play games and specialized in teaching good manners.

The mothers were very glad to take advantage of her parties. She arranged to have a different lot of children each day.

While school was in progress and a mother found it necessary to be gone all the afternoon, she arranged with her to have the child call at her house after school and she would look after it until the mother called. For this service she charged 25 cents. When the mother was to be gone all day she would tell the child to call at the hostess' home at noon and eat her lunch, which her mother had prepared for her, and to stay there after school until the mother called for her. For this service our hostess charged 50 cents.

During the summer months her parties made her $30 a week, and while school was in progress she made about $20 a week.

PLAN No. 668. RAISED CHICKENS

He resolved that chickens could be raised on a large scale.

He devoted 80 acres to them in the following manner. He planted wheat, and immediately after doing so he put hundreds of young chickens on the eighty acres to make their own way. He arranged for water and made a large number of little houses on wheels wherein the chickens could roost and lay. Each day he collected his eggs. When it was necessary, he would move the houses about their length.

When fall came he sold all chickens that were over two years old and saved this money to buy pullets with the following spring. The chickens obtained plenty of food and the results were very profitable.

When winter came he had accommodations for their keep similar to that of other chicken raisers.

The eggs he gathered he put in storage until the prices raised, at which time he sold.

During the winter months he did not make any special effort to have the hens lay.

PLAN No. 669. ADVERTISING PLAN TO GET ACQUAINTED

I met a young man in the Middle west who made a specialty of introducing the men at the heads of business concerns to their customers. One at first thought, believes that the heads of a great store, lumber company or other business is known to all, but he is not known outside of fifty or sixty families.

This young man has a contract with all the local weeklies in a district that supplied purchases to the

city he was working in.

He showed to merchants that he represented thirty or forty papers in the territory that he sold to, which papers had a combined circulation of 30,000 homes, and that but few persons in these 30,000 homes knew what he looked like or what his signature was like. So he suggested to Mr. Merchant that he run a picture of himself with an invitation to the people when they were in the city, to call at his store.

This plan netted our advertising salesman more than $150 a week. It not only embraced the merchants, but included the professional class as well.

PLAN No. 670. INFORMATION BUREAU

This man realized that the average merchant spends money in advertising to get customers, so he organized an information bureau to do all in his power to find customers for various merchants.

He employed girls to read several hundred newspapers, as the daily and weekly papers contain much information which leads directly to business advantages. He obtained from the county auditors a list of farmers in each county, their names and addresses, the kind of farming they were engaged in. In fact, anything from any source that could be put to the advertisers' use was obtained. In two years this service paid him more than $500 a month.

A service of this character, intelligently used, is valuable, and almost any city is a great field for it. Along with it one should run some kind of a weekly publication in which he could carry advertisements and give his information free to his advertisers, and in this way would realize a higher rate for his

information.

PLAN No. 671. ATTORNEYS BUILD LAW PRACTICE ON COLLECTION

These two attorneys realized that in starting in the law practice in a city of 100,000 was a very difficult matter, and this is the way they did it: They opened offices and started in the collection business. They did not make it on a commission basis, but on a certain amount per week, which would enable them to know just what their income would be.

They went among the cheaper stores of the community and secured their collections at very low rates. One took one side of the city in the morning and in the afternoon, the second took the other side of the city, thereby leaving one man in the office all the time. Their law office was a desk in a real estate man's office. In this manner they finally built up a large collection business from which came a good many cases. In about a year they were able to have an office of their own. With reference to the other expenses, they were both single men, and so built a house outside of the city, somewhat removed from the business section. They lived over a year and a half in this manner; did their own cooking and so their living expenses were reduced to a minimum. They took more collections, and continued to work. A few cases began to come in; and they finally built a very good law practice. This took two or three years, but when once acquired the business was permanent.

During the war, when business was slack, they resorted to the same method of getting in touch with the public, and keeping a permanent income flowing into the firm. While this plan is not strewn with

roses, yet if pursued with the same determination it will result in establishing a practice in the large city.

PLAN No. 672. WOMAN BECOMES ISOLATION HOSPITAL NURSE

This woman was thrown on her own resources and had to devise ways and means of making a living. The only field open to her at the time was to take care of "Flu" patients. She was not a trained nurse, but found that she could do this work very well. She worked hard for a few months, and word was brought to the health officer of the city concerning her work. They finally called upon her, and offered her a position in the Isolation Hospital, to take care of smallpox patients. She went into this work, not caring whether she got the small pox or not, and fortunately, even though she had never been vaccinated, she seemed to be immune, and for almost a year took care of the worst cases, and never contracted the disease.

For these services she received $75.00 a month, including room and board, and had a day off each week for herself. There was no night work in her service, because the people who came to the hospital did not pay any fee. Her salary was paid by the city.

In this hospital six or seven nurses are employed, so there is quite a field available for women in this work. Grateful patients gave her tips which ran as high as $25.00 to $30.00 a month.

PLAN No. 673. AN ATTORNEY REPRESENTS AN EXTREME POLITICAL PARTY

This man naturally was not content to follow the ordinary conservative lines of winning success. He thought it was for him to represent the extremest in politics, so immediately after graduation he associated with people of that kind. He was always present at their meetings and gave addresses. He championed their cause; and finally, when trouble arose, he was named as their attorney. He entered heart and soul into the fight, and made a reputation in this work.

His ambition was to make his office the headquarters of all labor organizations. In several of his actions he was very successful. He was especially good at gathering evidence, and was a good fighter when it came to court.

In a period of five to six years, he won a national reputation, where attorneys in the class he graduated were scarcely known outside of their own community. He was a man who could not sit still in his office—he had to have something doing all the time, and in his line of work he found opportunity for the true expression of his nature. As a matter of fact, the extreme element found it very hard to obtain the services of an attorney, and especially one who had his views.

PLAN No. 674. ATTORNEY RUNS FARM

This attorney was practicing in a city, but felt that, in order to be assured of a permanent success in that community, it was best for him to have a farm close to the city. He secured a farm and made it his home. It was on an electric line, and this made it easy for him to go to and from the city, to attend to his business. His farm guaranteed him a living each year,

and during the time when wheat was up, he made big profits from the sale of it. His living expenses were defrayed by the farm, and, besides he was enabled to save some money each year, and everything that he made from the practice of law was clear profit. This enabled him to champion various causes that otherwise he could not have afforded to do. It placed him in the position of an attorney with a fixed income, and enlarged his field of activities, so that he could build for years along certain lines, which is essential to any professional man's success. He did not have much capital in the beginning, but he secured the farm on easy terms and was able to pay for it in about five years, and had the farm clear of all debt. He understood well the science of farming, took all the government reports on farming and made himself proficient in that line. He secured many clients in the community where he was farming. This gave him a great advantage over his fellow-members at the bar.

The great trouble with the average lawyer is inactivity, and if he is not active, he is like any other dead man—nobody knows of his whereabouts and cares less, but if he is engaged in doing some collection work, coming in contact some way or other with the public generally, he will have business and it will continue to grow from year to year.

PLAN No. 675. MANUFACTURING, ADVERTISING PLAN

In a city of about 125,000 inhabitants, a complete list of the names of the manufacturers, their addresses and the names of business managers and the telephone numbers was made, each on a card.

These cards were arranged alphabetically and a man was put on the 'phone for about ten days inquiring of each firm what articles they manufactured, the trade name of the article being put on the back of the card. The result was that over 1,200 different kinds of articles were made by some 300 manufacturers. Then a dummy, made up, giving a page to the matter, the size of a newspaper, and in the center was placed a cartoon favorable to the manufacturer. This was to be sent to the people in the surrounding towns. Each article made, was listed alphabetically with the name of the article appearing first and after this the name of the company. These 1,500 articles made about two pages of matter. After 2,000 of these were prepared by the printers the salesmen started calling on all manufacturers in the community, at the rate of eight to twelve a day, and presented his proposition to them, which was as follows:

To run in forty papers surrounding the town in which they were located, going to something like 45,000 homes of farmers and people living in small towns. For this they were to pay $10.00 a thousand. Most of the manufacturers, rather than run a line or two, desired to run display, putting in the picture of the article they made and a little statement concerning its virtue of same and giving their addresses.

Five weeks of this kind of soliciting resulted in more than $1,000 worth of contracts being signed up, and many thousands of dollars worth of business prospects for in the future. The salesmen were taken off and the general salesmen of the company followed up the prospects, with the result that over six thousand dollars was made from the plan. This meant a net saving on the part of the company of $3,500 to $4,000.

This is a good plan and a fair way to cover the people in the farm community for the manufacturer. He then covered other classes of advertising in the same way.

PLAN No. 676. HIGH-SCHOOL BOY EARNS WAY

He was a hard working young fellow, and he called upon the neighborhoods in different parts of the city after his high school was out, and sold brushes of different kinds to be used in the homes. He had a fair introduction, and showed up the advantages of his brushes in a fair way.

Night after night, week after week, he continued this work. Saturday was his best day, as he usually made three or four dollars on that day alone. He netted from this work something like $10 to $12 a week. It was hard work carrying a suitcase filled with brushes, from which he showed his wares, but it paid his expenses through his high school and enabled him to get his education. He stuck to his work and won out.

This is a plan that any young man of energy and push can follow at odd intervals to make his way through high school.

PLAN No. 677. LAWYER GETS ON SCHOOL BOARD

After getting out of the law school he did not have sufficient funds to open an office, so he became a teacher in one of the high schools in the city in which he desired to make his home. After teaching for about two years, he determined that he would go

into practice for himself. This he did. He felt that it would be an advantage to him to hold some kind of public office, and so he ran for and secured a membership on the school board. This position he was well qualified to fill, having taught for several years preceding his study of the law. After that he joined an athletic association and ran for office in the association and was made one of its directors. In these two positions he enjoyed a good opportunity for coming in contact with the best people of the city, and when politics was alive, he was one of the main members of the political organization, and had much to say about who should be elected to office.

He served as assistant prosecuting attorney for some time, got the experience that he desired, and then continued with his practice. From these offices, which have been a great advantage to him, he has won an excellent reputation in the community.

PLAN No. 678. HE WANTED TO BE A LAWYER

He went into a railway office as stenographer and studied law as he worked. He was a man of excellent appearance and untiring energy, and he worked until he had passed the bar examination for his state. He prepared to make himself a specialist on railway law, and continued study for three or four years. During that time he acted as assistant to the railway attorney, but instead of staying with the railway company for years, as most attorneys do, he identified himself with one of the best trial lawyers in his part of the state, who made a specialty of damage suits. He was a valuable adjunct to this firm as he was familiar with railway law.

By reason of the fact that he had a knowledge of

railway law, from the railway standpoint, he was very successful in his work.

PLAN No. 679. LAWYER BECOMES RAILWAY COUNSEL

After finishing at a law school, he obtained an appointment as assistant to the counsel for a railway. He studied for two or three years, in this capacity, and worked with the counsel of the railway until finally he won recognition for his services from the company. The railway counsel was changed, or left the service, and he became counsel for the railway at that point.

This kind of work pays well, and he has an assistant or two under him, and enjoys a good reputation in his community.

PLAN No. 680. NEWSPAPER MAN MAKES EXTRA MONEY

Reporters on newspapers make extra money by following the career of men who are public spirited. They become familiar with their aspirations and try to help them make good, by giving them all the newspaper support they possibly can. Of course, this cannot be done without compensation, and the reporter is paid extra for this work. It is valuable aid, for the man who desires to attain political prominence. The reporter, as a rule, is under-paid, and this enables him to increase his income considerably.

The reporter's advice alone is worth a great deal, as the average aspirant for office does not

understand what is, and what is not, a good news article. The reporter can be absolutely fair with the paper and render this service.

PLAN No. 681. HE BECOMES CHAMBER OF COMMERCE SECRETARY

There is a large field for any man who has ambition for public work, in the chambers of commerce of the various cities of our country. He can identify himself as an assistant, or in some other capacity and win a good reputation as a man of value in this work.

From time to time there are inquiries from this source for the right kind of men for the work. The salaries are good, ranging from $5,000 to $10,000 a year, and the work, itself, is extremely interesting.

This really is a first-class advertising man's job. If a man understands advertising, and understands the advertising of communities, there is no reason why he should not be a capable man for this position, and such a man usually knows what is good news value, and what articles can be put in the paper, and what effect these various articles will have for the benefit of his community. It is usually a business proposition and supported by business men, exclusively; professional men and politicians having little to do with this work and the young man who can make good will soon find a position awaiting him.

I know a few men who have made excellent records in this direction and are now the recipients of $8,000 to $10,000 a year. It took them at least five to six years before they were qualified to hold a large position. One started in as a newspaper reporter, and the other started in as an editor of a

paper, and finally developed into an advertising man.

PLAN No. 682. LAWYER BECAME STATE REPRESENTATIVE

He was always the champion of the issues that arose in his particular neighborhood club, and he finally decided that if he were a state representative, it would be a beneficial experience for him, as well as an avenue through which to become known in the state generally. So he went about increasing his friendship, becoming acquainted with everybody in his district, and finally announced himself as candidate for the state legislature, and he was very much surprised at the ease with which he won the election.

He was repeatedly returned to the legislature and has almost become a permanent fixture in this capacity. He has always seen to it that the newspapers give him proper mention, on any matter in which he is engaged. He makes it a point to call the attention of the reporters to it if it has any news value at all. By this studied effort and work on his part he has made himself good timber for the United States Congress. Not only that, but he has won a large friendship among the people of the various states, which has brought him a good deal of valuable practice, and has given him business opportunities.

A young lawyer makes a very serious mistake when he does not pay attention to his opportunities in this direction.

PLAN No. 683. HE BECAME POLICE JUDGE

After winning an election as justice of the peace, it is always the ambition of the justice to become police judge of the city. To win this position does not only mean the increase of one hundred or more dollars a month in salary, but also gives a good opportunity for a lawyer to build up a reputation, which may lead to a judgeship in the superior court. Of course, the mayor and city council of a city determine which justice will be the police court judge, and a friendly standing with them will aid in determining whether or not a candidate will be police judge.

Most of the people of a city and the county know more about the police judge than they do about the superior court judge. As a matter of fact, the newspapers of the community give far more publicity to the doings of the police court than do those of the superior court. Every little matter that comes up before the police court, serious or otherwise, is printed in the local daily, and all questions of any consequence that are to come up will first take place before the police court. So a lawyer, who occupies this position, and has good judgment, and takes his cases seriously, has an opportunity to make a good record for himself, and if he handles his opportunities in this position properly, he can become judge of the superior court.

This work brings him in touch with all the police branches and their work, and the county prosecutor's office as well. As a matter of fact, many persons in the profession believe that it is best for a man who desires to become a superior court judge, to first become justice of peace.

PLAN No. 684. ILLUSTRATOR FOR U. S. GOV. SEE PLAN No. 217

PLAN No. 685. HE WANTED TO BECOME CITY COMMISSIONER

There were at least thirty persons aspiring for the $5,000-a-year job and he was but little known. Although he felt that he was strong enough to get the nomination, yet most of his friends advised him that they did not think that he could succeed, but they would do their best for him. He went in for all there was in it; he worked both night and day; he obtained the support of many young men in the city. He had stalwart friends in the police department and with their support and the support of their friends he gained the nomination.

With the nomination secured, he felt sure of election. However, he did not give up his personal efforts but worked both night and day until the night of the election, and then he did not give up until all of the votes were cast. The way he had worked for himself was an inspiration to his friends. However, it might be said that he had three or four friends who were especially valuable to him, and knew the political situation far better than he, and they did not hesitate to support him to the limit, as they believed in him and felt sure that if once elected he would make a good record. When the votes were counted, he had won by a large majority.

Many men believe that it is unbecoming for them to work for themselves, but this man did not think so. He felt that the enthusiasm of his friends would lag if the man who was running for the office did not believe enough in himself to work with them.

PLAN No. 686. HE RAN FOR JUSTICE OF THE PEACE

When he came into the community he was little known; in fact, up to the time he ran for the nomination on the Republican ticket, he was scarcely heard of, but prior to his nomination he billed the entire town. He had small boards placed at the various bridges and public places in the community with a large picture of himself, naming the office he desired to secure. He also had the telegraph poles tacked with large posters, bearing the same announcement. This publicity was so striking that it caused a great deal of comment all over the city, and when the nomination came up he secured it easily, and nomination in that county meant—the election!

PLAN No. 687. HE FIRST BECAME COUNTY ASSESSOR

This attorney, from a financial standpoint, was not prepared to go into the practice of law, so he became an aspirant for the office of county assessor. He was not a good speaker, but he made up his mind to work strenuously for this office, and so he obtained the support of ten or twelve of his friends who worked for him, and, finally, he secured the office.

Many of his friends could not understand why he wanted such an office, but when once nominated and elected he had many people to appoint who make the assessment of the property in the county. These men were naturally people who supported him, and this enabled him to build up very strong political support throughout the county with this support as a nucleus which re-elected him many times.

PLAN No. 688. A MIDDLE-AGED LADY'S WAY OF MAKING A LIVING

The following is a plan that represents lots of hard work.

This woman believed she could sell goods direct and obtain higher-class and better-grade goods by directly representing the factory. She made arrangements with a certain factory, and started in to sell. She made a specialty of women's and children's underwear, stockings, etc., and sold large quantities.

In this house-to-house selling of these goods, she netted more than $70.00 a month. In her travels she also found opportunity to sell other products, such as honey and other household articles which she carried as side lines. If there was a demand by her customers for goods she did not carry she made it a point to get the desired articles for them.

PLAN No. 689. A LAUNDRY PLAN THAT PAID

This man ran a laundry in a city of upwards of 150,000 inhabitants, and the population was increasing daily. He figured that if he could see the newcomers before the other laundries did that they would just as soon patronize him as the others, and yet he would like to know something about their reputations as to payment before obtaining their business.

Therefore he got in touch with a first-class information bureau in his city and secured all the names of people who came from the smaller towns into the city, and as soon as he got their names and the town they left he directed a letter to the editor of the paper in the town from which they had come inquiring as to their present address and their

reputation for paying. After securing their address and statement as to their reputation for payment of their bills, and if he ascertained that they were good, he immediately called upon them at their new address in the city, and obtained their business. He had no competition in his work and this plan alone made his laundry a prosperous business.

It might be stated that if there is no information or clipping bureau in your community, it would be well for you to take all of the newspapers of the surrounding towns, which could be secured by direct subscription or by going to the local newspaper where, undoubtedly, all of these papers are sent in as exchanges, and by an arrangement with your local newspaper, they would be glad to allow you to read and go over these papers. The items in these papers will show the names of people who are leaving the small towns and the communities to which they go; then find out through the transfer men and companies where they are.

PLAN No. 690. HOW HE BECAME A BANKER

When I knew him at college he was a man of wonderful and unusual strength and good nature. He was as democratic as a person could be, and was liked by all who knew him.

If you were to pick out a banker in the crowd at school, he would be the last man, perhaps, that you would think would follow the banking business. After his college course he went into the stock business. He was well liked by all of the stockmen in the district in which he lived, and he had an acquaintance extending through the entire Northwest. But the stock business did not

particularly appeal to him. He then entered into other lines of work and finally became closely associated with a man engaged in the banking business. This man had taken over a bank in one of the farming communities and asked this party whether he would like to spend a part of his time in this little bank and see what he could do in the way of assisting it. This work interested him from the beginning. He immediately took possession of the bank as though it were his own and began to build it up. In a short time he had doubled its deposits. His record was so unusual that the head of the bank in the city became interested, and as his showing continued the president of the bank became convinced that he should be in the city bank, so he made arrangements for him to come. He went at things with the same untiring energy in the city bank, as he had in the country bank, with the results that the deposits were greatly increased.

I remember one day going into this large bank and I was somewhat surprised at seeing him as one of the managing officers of the bank. I asked him how it came that he was there, and he told me that he had been associated in the banking business for a number of years. The position which he had obtained did not in the least effect his pride and he possessed the same spirit, which manifested itself so agreeably in his school days. He said he had been helped, and that it was his desire to help others as he had been helped—that was his attitude in the banking business. Instead of possessing the ordinary cold and distant attitude of the average banker, he was the opposite. In his former work among the stockmen of the Northwest he acquired a large acquaintance, and they all thought a great deal of him, and had confidence in the institution with which he was

connected. They rather preferred to deal with a bank with which he was connected.

Your friends often determine whether you are to be a success or a failure.

PLAN No. 691. WONDER COVERS

"Wonder covers" for rolling-pin and bread-board are the invention of a Maine woman, but anybody can make them. For the rolling-pin, the cover is of stockinette or any elastic knitted textile fabric, made to pull over the pin in a stretched-tight way, like a jersey sleeve, and tied at the open end. The other part of the equipment is a mere square of canvas (sailcloth), to lay upon the bread-board.

Provided with these covers the housewife can manipulate the softest dough without any danger of its sticking to pin or board. But before using nearly a quart of flour must be rubbed into the pin-cover the first time it is slipped over the rolling-pin, and a little flour must be rubbed into it the same way each time it is used. With careful use the covers will stay clean a long time. When necessary to wash them, it should be done with cool water and a small scrubbing brush. Then they may be ironed. But the flour should be thoroughly washed out of them before they are ironed.

PLAN No. 692. CHICKEN CANNED

Down in Alabama a woman makes a living by taking orders for canned chicken and chicken by-products.

She puts one pound of meat in a number 2 can,

and the gravy adds from 4 to 8 ounces, and she receives 80 cents a can for it. She claims that at this price she makes good money and she does so by using the best of soup meat in soups and gumbo. One rooster by this method brought her $3.50.

The above price might be increased, and a little advertising and personal sales work would develop a good business in any town.

PLAN No. 693. A GOOD FARMER USES OTHER PEOPLE'S FARMS

A young farmer was limited in capital and could not buy a good farm, so he purchased a few acres in a good district and went to work.

He soon found that the farmers in his neighborhood did not understand their business.

He took over a large neglected orchard for a crop arrangement and in a short time had contracted for land for two to three years that the farmers were neglecting, which gave him a large farm.

He went to work and in several years not only made a good saving but was able to finance himself for a farm of his own.

PLAN No. 694. STARTED A CLOTHING STORE

This young fellow was, from a business standpoint, about helpless. He was born and raised in the Old Country. When he made application to relatives who ran a department store for employment, he did not possess any qualities that they could use. They gave him work for two weeks, during which time he must find a position elsewhere. At the end of two weeks he

managed to stay another four weeks. He realized he must do something. He had no capital, but he decided to rent a store building in the poor end of town. After hours he went about getting all the old clothes he could collect from door to door.

He cleaned the old suits as best he could and offered them for sale at a low price. He worked night and day, taking but little time for sleep, and he soon began to make sales from his stock of old suits.

He obtained the assistance of another poor fellow who wanted to help him. In a few months he was able to pay his help a regular salary. Twelve months from the time started in business he had a fine stock of clothing on hand and was employing four salesmen and making a good profit.

Thrift coupled, with a good plan, will make a success every time. The young man I have mentioned above had a very poor appearance, was not educated, and had much to overcome, but his willingness to sacrifice clothes, amusements and even food and sleep for a good plan brought him permanent business in a remarkably short time.

PLAN No. 695. CLOTHES CLINIC

She had a family of six and she was the sole support of the home. All six children were too young to work. The mother was ambitious for their education and determined to do all that was possible to give them all the educational advantages of other children.

To begin with, she had some old clothes on hand, and she soon became very skilful in making them over into handsome suits for the boy and pretty dresses for the girls. In fact, her children were the

best dressed of any in their school. Their clothes all had the appearance of being made by a tailor. She dyed their shoes and made hats, coats, dresses, underwear, neckwear and stockings. She became familiar with dying and learned to remove stains from clothing.

People soon learned of her skill in this work. She arranged to teach other mothers her art and received a good income every year from this source. She would also, for a certain sum, take an old suit or dress and help the mothers plan and cut out the kind of dress or suit it could be made into.

During the war-time her work became very popular, as lots of good material was found in old garments. Her specialty enabled her to assist others to make a great saving in the home every year.

The government offered good assistance in this work during the war. The Board of Vocational Education, Washington, D. C., puts out a pamphlet on “Clothes for the Family” that would be an asset in any home. During the war, in different parts of the country, there have been fashion shows of clothes which were made from old garments. In one instance a pretty little dress was made from a pink woolen nightgown.

This should be an excellent specialty for any ambitious woman. Clothes should not be wasted when there is so much poverty.

A man and wife could base substantial and profitable business on the above lines. Among the well-to-do, old clothing consisting of excellent cloth can be purchased for a song. These garments can be made into first-class outfits, by proper cleaning and tailoring, and sold at a good profit.

PLAN No. 696. PROFIT FROM ONE PIG, $587

A Tennessee boy in May, 1918, invested $50 in a pure-bred gilt, and now figures his profits at $587.35. She farrowed seven pigs, part of which the boy sold for $133. With this money he purchased a boar of excellent breeding, which he exhibited at the East Tennessee Division Fair, winning the grand championship of the breed over all exhibits. He won $87 in prizes, $45 of it in competition with experienced farmers. His animals are now valued at $525. This, with the money from sales and prizes-winnings, amounts to $745, from which he deducts $157.65 for feed and care, leaving a profit of $587.35.

This plan would certainly pay a boy's way through high school, besides giving him a knowledge of stock raising that would be invaluable.

PLAN No. 697. GIRL MAKES 3,000 GALLONS OF SYRUP

A home demonstrator, who a few years ago was a member of one of the canning clubs under the direction of the United States Department of Agriculture, in connection with the state college, now owns and operates an evaporator for the benefit of the farmers of New Kent County, Va. In the past season 3,000 gallons of canned syrup or sorghum have gone from her little plant. She says the turning out of thirty to forty gallons a day has been easy and pleasant work.

Why not start this business in your community?

PLAN No. 698. THE BEST BEDBUG PREPARATION

The effectiveness of various exterminators of bedbugs is described in Bulletin 707, issued by the United States Department of Agriculture, Washington, D. C., embodying the results of experiments by the Bureau of Entomology. Hydrocarbon oil sprays (kerosene, gasoline, etc.) were found to be effective against bedbugs, killing, in most cases, 100 per cent within forty-eight hours; coal-tar creosote emulsions were effective, when used undiluted, but their effectiveness fell very rapidly when they were diluted; mercuric chlorid, as a dust and a 6-per-cent-water solution, was found to kill 100 per cent; pyrethrum was found to be very effective, while pyrethrum stems were of little or no practical value; tobacco powders were to be found of little or no value, and hellebore to be absolutely ineffective.

Why not put this up and give it a name and create a demand for it?

PLAN No. 699. BUILT HER HOME ON $40 SALARY

"How I paid for my home: As a girl, seven years ago, I built a seven-room modern house costing $3,500. My income at that time was $40 a month, as I worked as a maid in one of the best families. I built the house as a home for myself. When I started to build I had the lot paid for and $700 cash as first payment. The rest of the debt was paid at $35 or more per month. It never involved any hardships, and I was quite often praised for owning such a fine house.

"When the house was finished I rented it for $36 a month, so as to make better payments, and it did not

take long before the house was paid for and was mine.

"The foundation is 36x44 feet; there are seven large rooms on the first floor, four closets, a linen closet, bath, large front and back porches, a half basement with hot-air furnace, laundry with stationary tubs, storeroom, coal bin with air-tight chute. The attic is finished and the walls of the house are built strong enough to add another story if desired.

"Owning a home not only proved a good investment but gave me real satisfaction. I was highly respected and well esteemed by my neighbors and people in general.

"My experience may show that any man or woman can own a home, even with a small income, with a little saving and a plan."

PLAN No. 700. RECEIVED $100 PER MONTH FOR 40 YEARS

An income of $100 a month is not out of the ordinary, but when that income has been steady and all saved for forty years, it means a great deal.

He was a farmer, and never had the opportunity of a high school or college, but in spite of this handicap he made a success.

He stayed with his father until he was 23, at which time he decided to go in for himself. So he took up a homestead in Minnesota. The first year he put up his shack, 12x16 feet, and broke forty acres of land. His brother took up an adjoining farm.

It was discouraging in those days, he said. It was a long way from the railroad and people. One ox, an old cow and a plow were all they had to work with,

all other farm implements they made themselves. Wheat and oats were the crops, and 25 bushels per acre was the first yield, and 70 cents was the price they received. The first year they saved about $300. The second year they broke and planted forty more acres and saved $800.

In ten years' time the railroad was built, the farm was all under cultivation and a saving of $6,000 was made. Then along came a man with $12,000 and paid this amount for the farm. With the $6,000 he had saved, he now was worth $18,000.

This man has always followed the plan of pioneering. Not only has he and his brother done so but his son also, and he is now up in the Alberta country farming a large piece of land.

A plan like the above, coupled with thrift, will never fail. He stated to me that he has lost but little during the forty years, and has saved more than $100 a month during his forty years of farming.

If you want to homestead go to the United States land office and they will tell you how much land is subject to be homesteaded.

PLAN No. 701. DO YOU WANT TO BECOME A PLUMBER

My conception of a plumber has always been a husky, dirty-faced fellow who is full of independence and presenting an exorbitant bill for his services. But my impressions were changed when I met Bert.

Before going into the plumbing and heating business he sold pumps and windmills. He came to the city, and this is the way he became a first-class plumber in one year without previous experience:

He started a repair shop of his own, went out with

a soldering iron and got the business. When he took a repair job he took his time and carefully figured out how the plumber put his work together, and after a year of careful study and some experiments of his own he took contracts for plumbing. He made a special effort to do the work right so there could be no complaint about it afterward. He spared no pains and never allowed himself to hurry or slight his work. If he used more time than the job justified, he made an allowance for that. When he heard of a person "knocking" his work, he called on him at once and tried to satisfy him and make him a booster instead. He also put in heating plants which work was very profitable.

His profits were $10 a day the year round, and he plans to make it run $20 a day the coming year. His business is only an ordinary and modest little plumbing and heating concern in the outskirts of a city of 100,000. There is nothing impossible in his plan. He works regularly eight hours every day and likes his work.

PLAN No. 702. REPRESENT LOCAL WEEKLIES

He represented a list of local weeklies, running from forty to sixty in number. Through the Type Foundry Association this space can be secured very cheap, something like 3 cents an inch per paper, costing to our man to run and advertisement in forty papers the sum of $1.20.

He went over all the newspapers and publications that covered his immediate territory and clipped from them all the classified advertisements or display ads. that looked to have a prospect for business. This clipping was pasted to a form letter, which he had

prepared, calling attention to the advantages of these forty papers to his proposition. His price to them was $7.00 for the entire list, one time. An order of one inch meant a profit to him of $5.80.

His net profits for orders—and this is always cash business—nets him more than $100 a month. There is room for this business in every city of over 50,000 population in the United States. The letter-writing does not take over one hour a day, and he mails about eight letters per day.

This is a good business for a woman at home or a man could use it to great advantage during his spare time.



Plan No. 702. He Washes so Oth

PLAN No. 702B. WINDOW-WASHING AND HOUSE-CLEANING

When he came to city he “was down and out.” He was a capable fellow, but owing to domestic trouble he worried and drank a good deal. He was in this shape when I first met him. He got a job washing windows and kept at it. His employer knew nothing about window-washing or house-cleaning—he was a business-getter instead—and finally as he was unable

to pay this man for his labor, he turned the business over to him in payment for his services.

He quit drinking when the state went dry. He then saw great possibilities in the window-washing and house-cleaning business. He could do the work himself, and if those he hired did not do their work properly he was quick to see it and let them go.

He would contract for the year to wash windows for an entire building at something like 15 to 20 cents a window. He would go over all the windows once every month. His arrangement was cheaper than having the janitor do it. He also contracted to wash the halls and elevator shaft. He got business where others could not. He and the men he hired knew how to work.

When he had an unusually dirty job he used the following combinations with great success: Citrus powder, three-fourths part; Wyandott powder, one-fourth part; softsoap about the size of a hen's egg in a bucket of water. This solution was allowed to stand over night. When a place was real dirty he went over it at least three times, washing with the grain of the wood. He was especially careful to see that no streaky work was done in the washing of walls, etc. He washed a square place at a time and was particular to see that the sides and corners were as clean as the center, then when the next square was done there was no overlapping of several inches. He was also careful to see that the base-boards of the room were clean, especially the corners and bottom, which if neglected always remain unclean in appearance.

It is true that his work is not regarded as a high calling, but he believed that if his work did not reflect credit on him, he would reflect credit on it by performing his services well. He also cleaned houses,

using a vacuum cleaner.

His business is very profitable and produces for him a very good living.

PLAN No. 703. WHAT ONE GARDEN PAID

Records of the boys' and girls' club work of the United States Department of Agriculture are full of instances of boys and girls who grew more than enough vegetables for their home tables and who either canned the surplus or sold the remainder at a profit not to be sneezed at.

For instance, Thomas Bresnan, of Springfield, Illinois, a lad of 15, made a net profit of $283 on a garden that was 310x410 feet.

Thomas had a hard time with worms, but he learned how to fight them. His garden was so far away that when he needed lime he carried a heavy sack of it three and one-half miles from Springfield. Some of the lime spilled out and got into his eyes, and Thomas got mad and quit, but only until he talked with his club leader, then he went in again and won, as above mentioned.

PLAN No. 704. FATHER LEARNS A NEW TRICK

Early frosts are the bane of the tomato grower. When a severe one seemed due one February night in Florida, both a little girl, who had one-tenth of an acre planted, and her father, who had three, got busy covering up their plants. "Father" put tomato baskets over the plants to protect them, and so did Anna, but she did not stop at that; she placed a handful of soil on top of each of her baskets. It required some time,

but it was time well spent, for when the baskets were removed Anna's plants were just as fresh as before the freeze, while "Father's" had suffered considerably. When the first picking was made in the latter part of March, her father gathered thirteen crates from his three acres, while the girl gathered eleven from one-tenth acre, from which a net profit of $175 was made.

PLAN No. 705. GROWS THIRTY-ONE VEGETABLES IN HIS HOME GARDEN

Among the striking examples of individual achievement in home gardening that have been reported to the United State Department of Agriculture, is that of George A. Williams, an employe of the Government Pension Office in Washington.

Despite the handicap caused by the loss of an arm, Mr. Williams last season grew thirty-one varieties of vegetables in his home garden of slightly less than one-fifth of an acre. He sold in his neighborhood vegetables worth $326, in addition to those used by his family of four persons.

Despite the success in this instance, the Department of Agriculture does not advise home-gardeners to strive for a great variety of crops, but to concentrate their efforts on a few.

Did you find it hard to get ahead last year? If so, perhaps your back yard will put your effort on the profit side.

PLAN No. 706. WHAT A GIRL NEARLY BLIND DID

Of all the stories of girls' efforts that have come to the United States Department of Agriculture, none tells of more devoted work than that of a Berkshire County, Massachusetts, girl, who is blind in one eye and losing the sight of the other.

She raised a pig when the government called for more meat, and when the army called for fruit pits to make gas-masks, the number of stones she gathered was the second largest individual number in the country. And she cultivated a garden successfully when the government told the necessity for more food production.

"I was very much interested in club work this year, and I was very happy while working in my garden," wrote this girl in her story. "I knew that all the time I was working in my garden I was helping Uncle Sam."

Except a few furrows turned by her father, where the land was particularly rough, all the work in her garden was done by the girl, and in addition she helped her father in his food plot. Between the lines in her report may be read some of her difficulties.

"The greatest delight my pig had," she wrote, "was jumping the fence and rooting in my garden."

But nothing daunted her, and the surplus products of her work, stored for the family's winter use, made a fine showing.

When the father is having a hard time to make both ends meet the children can do a great deal to put the home on a successful basis and receive an education while doing so.

PLAN No. 707. SAVING EGGS IS PUBLIC SERVICE

The storing of eggs during the season of greatest production, when they are the cheapest in price,

becomes a public service by making them available during the season of scarcity of fresh eggs. There are two approved processes for storage; the first is the water-glass method, and the second is the lime-water method.

Water-glass Method: For 30 dozen eggs, use two 5-gallon crocks (capacity, 15 dozen eggs each.) Take 18 quarts of water that has been boiled and cooled. Mix it with 2 quarts of sodium silicate. Place eggs as collected, fresh and clean, in crocks, keeping covered to a depth of at least 2 inches with water glass solution. Keep in a cool, dry place. Eggs preserved in this way remain perfectly wholesome, maintain full food value and are perfectly edible for from six to nine months.

Lime-water Method: Place 3 pounds of unslacked lime in 5 gallons of water and let it stand until the lime settles and the liquid is clear. Use same as water-glass. This method is recommended when water-glass cannot be obtained; it is good, though not quite as reliable as the other.

The above was published in the Extension News Service by State College of Washington.

Every egg raiser should know when is the time eggs will bring the best price and save them until that time.

Following the above simple suggestion alone would make the egg a profit-maker.

PLAN No. 708. MONEY IN POULTRY

It is strange that the people generally do not avail themselves of the great opportunity the United States Government gives them in poultry. Write the Department of Agriculture at Washington, D. C., and

tell them you want a catalog of all publications they have which will help you to raise chickens in town, city or country and you will be surprised at the great amount of information at once available to you. This information will save you several years' unsuccessful experimenting and bring you to your goal—a successful chicken-raiser—at a much earlier date. The following are samples of what can be done by those who make poultry raising a study.

PLAN No. 709. WHAT ONE WOMAN DOES

To prove that there is profit in poultry raising, let me cite the case of Mrs. George L. Russell, of Missouri, whose husband had maintained all along that her hens were an expense instead of a profit. He was giving all his attention to some brood-mares in which he had invested $2,000.

In defense of her hens Mrs. Russell kept a set of books for a year and proved by the actual figures that the money she had invested in poultry was paying a better dividend than the money her husband had invested in brood mares.

Last year she had a flock of 365 Brown Leghorn hens and cleared $1,782.91, besides adding $200 worth of extra stock to her flock. Her husband isn't complaining anymore.

To his wife Mr. Russell gives all credit for the success of their poultry business. "It has been a life-saver for me," he said.

PLAN No. 710. ANOTHER CHICKEN RAISER

Mrs. H. A. Hume, of Tecumseh, Kansas, turned

$150 worth of feed into $427.16 worth of chickens, at market prices, this year, besides the eggs she produced from 140 hens. She has demonstrated what can be done on a general farm with poultry as a side line. She breeds a good laying strain of White Leghorns.

PLAN No. 711. MAKES GOOD PROFIT

A California woman states in a letter the following: "Last month I turned $275 worth of feed into $667 worth of eggs."

If it is possible for these people to do this, it is possible for you, or any other poultryman, to make good money out of your poultry if they are properly handled.

PLAN No. 712. ARTICLES YOU CAN MAKE AND SELL

The following articles could be made by you and sold. They are necessary to the household and will appeal to the housewife.

Each article is easily made up. Give a name to your article so that you may have the advantage of repeat orders. To commence with you will have to solicit your work. You will find that a neat pamphlet telling of the value of your article distributed two or three days before you call will be a great assistance to you.

PLAN No. 713. SHOWER BATH

A very simple, convenient and cheap arrangement

for a home-made shower bath has been built by a woman. Take a 2-gallon tin bucket, punch a hole in the bottom of it, and solder in the opening a piece of metal piping 2 inches long. Attach to the pipe a 4-foot length of rubber tube, with a sprayer from a garden watering-pot on the end. Tie to the handle of the bucket a piece of rope and run the latter through a staple driven into a wall at a suitable height, thus making a pulley by which the bucket can be raised or lowered to meet the convenience of the person using the shower. Drive a hook below the staple so that the rope can be fastened to it to hold the bucket in place. A good-size wash tub placed beneath the bucket will serve for the person to stand in. To cut off the water a clothespin pinched on to the rubber tube will do. The cost of the shower bath will be as follows:

2-gallon tin bucket	.50
12 feet of rope	.07
Rubber tube and connections	1.50
Piping	.10
Stock	.10
Staple	.10
	1.87

PLAN No. 714. DUSTLESS MOP

Another of the conveniences showing a woman's ingenuity is a dustless mop for painted or polished floors. The mop is made from old stocking legs cut into 12-inch lengths and slashed into strips an inch wide up to within 4 inches of the tops. For a handle cut the straw from a worn out broom. Take a large wooden button and cover it with several thicknesses

of stocking, then fold the tops of the stockings so that they radiate from a common center and screw them to the end of the broom handle through the button. Tie twine several times around it just below the button. The mop is then dipped into a solution of one-half cup of paraffin and one cup of coal oil (kerosene) and allowed to dry. Keep moist by rolling tightly and pressing into a paper bag.

PLAN No. 715. SCRUBBING CHARIOT

Another woman's invention is the scrubbing chariot, and it is one of the cleverest of labor-savers. This consists of a comfortable, padded frame on rollers, which enables the housewife, in wiping floors, to roll herself about and do her scrubbing with ease and comfort and save a great many steps. An ordinary soap box can be used for this by cutting down the sides to about five inches high and knocking out one side. Padding made of burlap will make it comfortable when kneeling, and the whole thing is placed on four rollers and stands just the height of the rollers off the floor. On one side of it should be screwed a dish for soap and on the other a rack for the scrubbing brush.

PLAN No. 716. ICELESS REFRIGERATOR

This iceless refrigerator was made by a woman, and its cost was practically nothing. It stands in a tub of water and on the top shelf is a pan of water. A canton flannel covering should be made and hung smooth side outward, tied closely at the bottom, buttoned securely down one side, and the top laid in

the pan of water with a weight to hold it. Of course, with this arrangement the cloth keeps itself continually wet with water supplied from the pan on top and from the tub in which it stands.

The central post should be substantial, with a large heavy base so that it will not tip. Two shelves 12 inches apart will hold the milk, butter, etc., and a third shelf at the top is necessary to hold the can of water. Keep the refrigerator in a shady place where air will circulate around it freely. On dry, hot days a temperature of 50 degrees can be obtained in this refrigerator if plenty of water is kept in the pan and in the tub.

PLAN No. 717. FOLDING IRONING-BOARD

This ironing-board is a step-saver. Being hinged to the wall, it is always ready and in place. It may be hooked up against the wall when not in use. The leg (braced) is hinged to the board and falls flat when the board is lifted. With it down and in use the leg is not in the way and skirts may be ironed without lifting or changing. The directions for making are as follows: The ironing-board is 57 inches long and rounded at the free end and should be made of thoroughly seasoned wood, $1^1/_2$ inches in thickness.

Its width at its attached end is 15 inches, at the free end $10^1/_2$ inches. The leg (brace) is $56^1/_2$ inches if the board is attached to the wall at 33 inches from the floor. If the board is higher the leg is longer. Attach the leg to the board 11 inches from its free end, by hinges.

The board should be padded with any heavy material such as cotton flannel or a blanket, and brought to the under side of the board and tacked

smoothly in place. The ironing-sheet should be 4 inches wider than the board with tapes on opposite sides about 10 inches apart to tie it in place.

PLAN No. 718. SOLDERING KIT

An outfit for repair work by women in their homes is useful and will save considerable time and expense. The equipment includes a soldering iron, a small brush, a file, sandpaper or a brick to rub the iron clean and to clean the surfaces to be repaired, a porcelain or stoneware cup, and from the hardware store get 10 cents worth of muriatic acid, some zinc points, such as glaziers use, and some solder. Soldering flux is a solution of zinc in crude muriatic acid. To make it put half a teaspoonful of muriatic acid in the cup and add one zinc point. Be sure not to spill any on your clothes. It is used to tin the soldering iron and also for brushing the tin and soldering surfaces so that the solder will adhere to the tin.

While iron is heating, thoroughly clean the vessel to be mended, by scraping down to the bare metal, then brush over it with the flux. When your iron is heated, clean it free from soot or dirt with sandpaper or other means, then dip it into the flux in the cup and at the same time hold the solder to it, and the end of the iron will become covered with the solder, which is called “tinning” it. For small holes this is all the solder needed. Just touch the tinned iron to the hole and it is filled. For larger holes more solder is needed. For a still larger hole a zinc point can be laid on the hole and fluxed, then solder applied. A hot iron and clean surface will insure good work.

PLAN No. 719. WOMEN MAKE GOOD COW-TESTERS

The twenty-seven women now employed as cow-testers by some of the 353 cow-testing associations in this country have not only done satisfactory work, but have achieved results above the average, according to dairy specialists of the United States Department of Agriculture.

The main reason why women have begun to do this work is the scarcity of cow-testers. Most of the testers at work when the war began were young men, and many of them are now in military service. Because of the shortage of workers the past year has seen the number of cow-testing associations (organizations of farmers who want to keep records of their herds) decrease for 472 to 353, although there has been an increased demand for such associations, and it is believed the number could easily be doubled if enough testers were available. The work does not require great physical strength. It does demand some training, but this is easily acquired by women.

The first woman cow-tester in the United States, Miss Bessie Lipsitz, began work less than three years ago, with a cow-testing association in Grant County, Wisconsin. Wisconsin now has eighteen women cow-testers, Iowa six and three other states have one each.

Considering that the testers get free board and lodging, the pay is thought to be satisfactory. The women cow-testers are paid the same as men and receive from $50 to $75 a month, besides board and lodging. Conveyance to the next farm is furnished in some associations, while in others the tester provides her own conveyance and the farmers furnish free stable room and feed for her horse.

The employment of women as cow-testers came as a war measure. To keep the work on a satisfactory basis, women must continue to receive the same pay as the men for the same work. Occasionally there may be an association in which it would not be advisable for a woman to work, but if such is the case, the fault is with the association and not with the woman cow-tester.

How to obtain more testers is a serious problem. Partially disabled soldiers, in some cases, may be induced to take the necessary training and enlist for the work. In some sections young men below the draft age have been employed, and the results have been satisfactory. The most radical step, however, and the one that promises the most far-reaching and immediate results, is the employment of women as cow-testers.

PLAN No. 720. SUPPORTS FAMILY BY HOME CANNING

The sale of her canned fruits and vegetables has enabled a woman in Albemarle County, Virginia, to feed and clothe her eight children the last two years. When war was declared her eldest son enlisted in the navy. In a few months the second son went into the army, and the mother was left to wrestle with the problem of providing three meals a day for the eight younger brothers and sisters. About this time the home-demonstration agent of the United States Agricultural College was teaching the women in that locality how to can. With a garden that could raise plenty of fruit and vegetables, and with wild fruit to be had for the picking, the mother of ten decided that therein lay the solution of her problem. Results

have proved that her judgment was right. Thousands of cans of fruit and vegetables have been put up and sold from this country home. One lot, which the home demonstration agent helped her sell, brought $125. This plan made a living for a mother and eight children.

PLAN No. 721. GIRL MAKES $98 FROM NINE HATCHES

Little girls who have to help themselves to go through high school can often accomplish it by raising chickens.

A little girl in Orange County, Virginia, borrowed money to buy nine settings of eggs. On this venture her first year's work netted a profit of $98, and she has three roosters left.

There is no reason why your little girl should not have a few chickens and help swell the family income.

PLAN No. 722. MOUNTAINEER WOMAN CANS TO KEEP TEN CHILDREN IN SCHOOL

Knowledge of how to can products that will command a ready sale is enabling a mother in the hills of Virginia, to keep her ten children in school. Schoolbooks and clothes cost money, but this ambitious mother was determined that her children were to have schooling if it were possible.

Late in the fall, with a 2-horse wagon loaded with her canned fruit and vegetables, this woman of the hills drove 20 miles to the home-demonstration agent's headquarters. She brought 30 gallons of

apple butter, 376 quarts canned tomatoes, 8 quarts ripe tomato catsup, 8 quarts green tomato catsup, 12 quarts succotash, 36 quarts soup mixture, 12 quarts okra, 12 quarts fox grape preserves, 48 No. 2 cans string beans, 36 cans (No. 2) corn, 48 quarts peaches, 48 quarts blackberries, 12 quarts butterbeans, 12 quarts squash, 2 quarts damson preserves, and 8 quarts green tomato and mince meat to be sold.

Through the co-operation of the home-demonstration agent, the wagon was emptied in a short time in the university town, and the little boys and girls up in the hills will have shoes and schoolbooks this winter as a result.

PLAN No. 723. SUCCESS IN POULTRY WORK

All poultry raisers, especially girls should receive encouragement and inspiration from the record made by this girl. Her experience demonstrates the wide possibilities for poultry paying a girl's way through school, making worth-while trips, purchasing their clothes, and having spending money for other purposes. With an original investment of $17.50 for a pen of Barred Plymouth Rocks, this girl in one season—her first year in poultry work—made a net profit of $370.50.

According to her own story, she bought her original stock just a few days before Christmas, in 1917, giving the local bank a note for $17.50. Her birds began to lay a month later. From January 25 to October 17 the original pen of pullets laid 650 eggs.

The first nine eggs she received from the flock were used as a setting, from which were hatched and raised seven chicks. From these she selected her chickens, which later took prizes at the tri-state and

county fairs. From her first 100 eggs set she hatched 92 chickens. From the next 125 eggs set, 110 chickens were hatched. During the season she raised 170 chickens.

According to her account these results were not obtained without work and some hard luck. For example, a mink visited the flock on the night of the 4th of July and killed twelve of the biggest chickens. Hawks in the neighborhood seemed to have a fondness for her chicks, and carried off their share.

Last September she sent two pens of her chickens to the tri-state fair, where they won first and second prizes. The following month she exhibited them at the county fair, and won first prize, which was $20. She now has a flock of fifty selected pullets and eight cockerels, in addition to her original pen.

In spite of the losses from the mink and all charges, she made a good profit. All the grain fed came from her father's farm, but was charged at market prices, the total cost of feed amounting to $40. The cost of the original chickens, interest and express, brought the expenses of the season to $59.50. From the sale of settings of eggs, chickens sold, prizes, and value of stock on hand, a total of $430 is credited to her work. When expenses are deducted, there is a total net profit for one year of $370.50.

PLAN No. 724. BUSY BEES WITH BUSY BOYS OR GIRLS MEAN MUCH HONEY

Bee raising by boys or girls received special encouragement during the past year from the Department of Agriculture and the state agricultural colleges because the honey produced aided

materially in relieving the sugar shortage. Plenty of cane sugar is now in sight, but the young people seem to have no intention of ceasing in their efforts to produce honey. They and their families have acquired a taste for the delicacy, and hot biscuits minus honey don't taste the same any more. Then, too, there is a ready sale at a good price for all the surplus honey one can produce.

The parents co-operated with the young people in the study of modern methods and plans for bee raising. Comb-honey only had been produced heretofore, as little had been known of extracted honey or how to manage colonies producing it. The parents were willing to secure modern equipment for the children, and to move the bees from old crooked combs in poor boxes and hives to modern 10-frame hives. When the colonies began to produce well, the children united in the purchase of a complete extracting outfit.

With honey selling 20 to 30 cents a pound in some markets, keeping bees is a business by which boys or girls can make fair incomes without the expenditure of much work or time.

Two of the largest producers in Lyon County were boys of 17. One boy with seven colonies produced over 500 pounds in the 1918 season. The other, with fifteen colonies, took from his hives 858 pounds. With an initial investment of $15, one of the smallest boys in the club, working in the country at extracting time, found 100 pounds in his contest hive and sixty pounds in the other. A third member cleared $40 from the season's work, besides supplying the family table.

PLAN No. 725. LOST—A COMMON FACTORY-

HAND; FOUND—A GOOD FOOD PRODUCER

Four years ago a boy in Massachusetts faced what would have seemed even to an adult a hard problem. Born in Italy, but thoroughly inoculated with American ideas of the necessity of education, James was told by his father while in the 8th grade that he could no longer be kept in school. His future path was to lie toward the near-by factory.

Believing, because of his garden-club experience under the auspices of the local leader of the United States Department of Agriculture, that he could earn as much by potato raising outside of school hours as he could in a factory by devoting his whole time, he finally obtained permission from his father to try it. So successful was he that summer that his father was willing that he should enter the 9th grade in the fall.

The next spring the superintendent let him have land to use for a large garden. To ten boys he had selected from the upper grammar grades he made the proposition to pay so much an hour and to give each a garden plot. The following excellent advice he offered to them in addition: “If you are going to quit, quit now while it is cool and not when it is hot next August.”

By fall he had decided that enough could be earned in the summer to enable him to attend high school and the agricultural college later. Now a junior in high school, he has a good-size hot-house under lease, where he raises cabbages, cauliflower, and tomato plants; he owns an auto truck to handle his produce, and he has a bank account and pays his bills by check.

With all the school and business cares, he still has time to look after the school welfare of his younger brothers and sisters, visiting their teachers and watching their progress.

A factory hand, probably only a mediocre one, has been lost, but a good food producer has been gained through the vision given James by his experience in raising a garden. If you are in a factory this example will give you hope.

PLAN No. 726. A BOY'S BIG PROFIT ON ONE PIG

From Blackwell, Texas, comes the report of the worth-while achievement of a 15-year-old boy, Kenneth Campbell. This little live-wire pig-raiser sent his pig to the Fort Worth Fat Stock Show. It turned out to be the grand champion barrow of the whole exhibit. It won $105 in prizes and sold for $115. The initial cost of this prize-winner was $5 and $34.60 was spent for feed; leaving a net profit of $180.40.

It is a fine thing to teach your boy to-day, while you are with him, how to support himself in an independent way. Would your boy know how to do something himself, if you were gone? A knowledge of how to make his way is worth more to him than your money when you are gone.

PLAN No. 727. WHAT A UTAH GIRL DID

"I am going to take the first prize in gardening away from the boys at the Utah State Fair in 1919," is the challenge of a 15-year-old girl member of a boys' and girls' club in Salt Lake County, Utah, conducted under the direction of the United States Department of Agriculture and the state agricultural college. It looks as if her prediction may come true, for already this industrious girl has made a rather remarkable record. She began at the age of 11, and

in the first year her exhibits took first prize at the grade school, first prize at the high school, and second prize at the state fair. When she finishes her course at the high school she is going to enter the Utah agricultural college.

In addition to plowing, harrowing, and leveling sixty acres of land and helping her father with other farm operations—doing for him all that a boy of her age could do and much more than many boys would be willing to do—this young food producer this year raised and sold an abundance of garden produce; put up 600 quarts of fruit and vegetables, besides drying a quantity of them; raised 100 chickens, knitted socks for soldier relatives overseas, and bought Liberty Bonds to back them up. But let her tell her own story:

Helped Plant 1,500 Fruit Trees

"I was born and raised in Salt Lake City. When I was eight years old my father moved to his farm in Pleasant Green near Utah Copper Mills and Garfield Smelter, Salt Lake County, Utah. It was covered with sage brush and rock, which had to me removed.

"The following spring we cleared a part of the land and planted 1,500 fruit trees. We also engaged in truck farming that season. I, the oldest girl of a very large family, assisted my father in every way I could. He always enjoyed instructing me, and he explained every little question I asked him. He taught me how to plant small seeds by mixing them with sand, scattering it along the trench and covering with a hoe. Also he taught me how to plant vegetables and how to cultivate. We raised an abundance of tomatoes, cabbages, cauliflower, peppers, egg plant, and also 1,600 bushels of carrots and 200 bushels of potatoes.

"The next year I assisted again, and the following year—I was then eleven years old—he gave me a small space of my own, which he plowed for me. He made me plant everything myself, also do the weeding and hoeing. I raised an amount of garden truck and took it to town and sold it. The next year—at the age of twelve—I was attending school in Hunter when they started a boys' and girls' club. When I joined, my father said I would have to learn to plow, so he bought me an 8-inch plow. I plowed about half an acre; then he allowed me to drive three horses with a sulky plow. I plowed twenty acres for him that year and mowed thirty-three acres of alfalfa hay. My sister raked it, and we all bunched it and I helped stack it. I raised nine different kinds of tomatoes, six different kinds of peppers, cauliflower, cabbages, and peanuts, and seventy-two different kinds of flowers. I took first prize at the grade school and first prize at the high school and second prize at the state fair."

Plowed Sixty Acres Herself

"Last year I plowed, leveled and harrowed thirty acres and cut all father's hay, put up 300 quarts of fruit and vegetables and had a war garden. This year I plowed sixty acres all myself, harrowed and leveled it—wheat, alfalfa and beets—and helped father plant and cut and irrigate. I have put up fruit and vegetables—600 quarts—besides drying fruit and vegetables, and have baked the bread, and on Saturday and after school I have to plow until the ground freezes up, and finish in the spring, 1919. I am going to take the first prize away from the boys in gardening, in the Utah state fair.

"I attend the Cypress High School. When I finish there I am going to go to the Utah Agricultural

College."

Raised One Hundred Chickens

"I also raised 100 chickens this year. I joined the Soldiers of the Soil, and with $15 I borrowed in June I bought 105 baby chickens and raised 100 of them. In June, 1919, I will pay off my note. I am going to market all my roosters and keep the pullets. I could pay the note now, but I am going to lend it to Uncle Sam on the Fourth Liberty Bond for our boys over there. I have found time to knit socks for some of my cousins over on the firing line."

PLAN No. 728. 33 ACRES, 23 PIGS, GIVE BOYS $2,255.64

Twenty-three boys under 16 years of age, in a Haywood County, Tennessee, pig club, each bought a pig. The average weight of the pigs was 78 pounds. Most of them were registered. In 180 days they attained a weight of 266 pounds each, at a cost for feed of $10^1/_2$ cents a pound. These pigs at the time of the local pig club show were worth 15 cents a pound, at market prices, making a profit of $4^1/_2$ cents a pound, averaging a net return to each boy of $11.97 over cost of all feed—a total gain for the club of $275.31.

Now see what the corn club in the same community has done: Thirty-three boys, 16 and under, each cultivated one acre in corn, according to instructions furnished by the county agent, produced an average of 53.1 bushels to the acre at $1.40 a bushel selling price—$74.48—making a total production for all of $2,457. Cost of raising the corn was $27^1/_2$ cents a bushel, or a total cost of $477.51,

leaving a clear profit of $1,980.33

Now add to this the pig club profits of $275.31 and you have a grand profit for the boys of $2,255.64 from thirty-three acres of land and twenty-three small pigs.

If boys can do this well what can a man thoroughly trained in farming do? The government will supply you with unlimited literature on farming if you write to them, and will give you much other assistance if you call on them.

PLAN No. 729. TEXAS BOYS MAKE MONEY FROM CALVES

"I have bought a $50 Liberty Bond and intend to use the balance to help in paying my expenses at the A. and M. College the coming term," was the answer of a boy in Nolan County, Texas, when asked what he would do with the profit from the sale of his two prize-winning calves.

This boy, a member of an agriculture club conducted by the United States Department of Agriculture and the Texas A. and M. College, exhibited two calves at the Fort Worth Fat Stock Show. His steer calf, a little over a year old, and weighing 950 pounds, brought $149.62, besides winning $25 in prizes. The cost of feed and other expenses was $85 for each calf, leaving a profit of $103.14 on the two, besides the $50 in prize money.

Another entry at the Fort Worth show was that of a 15-year-old club member from Sweetwater, whose calf, fourteen months old and weighing, after shrinkage, 1,060 pounds, sold for $169, after winning $20 in prizes. This young exhibitor believes in good stock, and has bought a registered Hereford

calf with the proceeds.

PLAN No. 730. COW PROVIDES MUSIC LESSONS

In Pottawatomie County, Oklahoma, lives a little girl who won in 1916 many prizes for farm club-work; enough in fact, to buy a calf. She sold the calf, which had grown into a cow, for $80. She plans to use the money for music lessons this winter while she is attending high school. She is proud that she is able to pay for the lessons by her own work.



Plan No. 730. The Country Gi

PLAN No. 731. REAL ESTATE MAN BUYS SNAP

This man was engaged in real estate for years and stated that his best profit was made from special propositions that he discovered during the year.

Probably during the year he would find five or six different places that were exceptional purchases. He put but very little money in these investments as a rule, and would prepare them for early sale. He

would paint the dwellings, arrange the yards, and put in trees, if needed, and if it was a farm he would wholly renovate the farm from one end to the other, painting the buildings and re-arranging the entire place. Some times it would take a year to get the farm into shape. He states that by this method, he earned as high as $2,000 to $3,000 a year.

His wife has been a very valuable assistant to him in this work, as she arranges the shrubbery and the general decoration of the house and yard for him.

PLAN No. 732. HE BOUGHT AND SOLD MERCHANDISE STORES IN THE COUNTRY TOWNS

When this man was in the university he took a literary course, but after finishing his college work, he took to business and enjoyed it thoroughly. He found quite an opportunity in the small country towns surrounding a northwestern city. He said the electric railway and railroads and automobile highways were becoming such a factor within a hundred miles of this city, and the advertising in the daily paper was practically putting out of existence the small town merchants. He said this was so manifest that many merchants were compelled to go out of business. Where he made his profits, was to buy the merchandise of these local merchants. He knew the value of their stock without making an inventory of the goods. He told them he would buy on his own judgment. Oftentimes on the purchase of the stock itself he would make more than $2,000. He would then start in, fixing up the store, rearranging everything about the place, putting in more new stock, and, as a result he made a few sales. He

conducts the business for about a year and having obtained all the advantages and profits that a new store would enjoy, he gradually sells out and closes up the business.

Often while holding these stores he is enabled to make an exchange and thereby realize a nice profit. He has secured three or four stores, far removed from the paved road, railroads and electric lines, and these pay well. One plan he has adopted is when he goes into a new community to start a weekly newspaper. Through this he carries all of his advertising and the news of the community.

I saw him about six months ago, and he has made in six years more than $30,000 in this work. His farm lands and four stores insure him a good income. This is a good business in the surroundings of any large city.

PLAN No. 733. GIRL FROM SMALL COUNTRY TOWN EARNS HER WAY THROUGH HIGH SCHOOL

She earned her way through high school by placing an ad. in the Sunday Newspaper, stating that she would be glad to exchange, for her work, room and board, as she desired to attend school and wanted to be with a respectable family. This method is followed by hundreds of girls from the country and when the summer vacation comes, she does certain farm work, whereby she is enabled to make some extra money, and in this way, makes enough money to pay her expenses while she is at high school.

Families that have a couple of small children are glad to avail themselves of such an opportunity, and often a girl finds a good home.

PLAN No. 734. GRAIN SUPERVISOR. SEE PLAN No. 217

PLAN No. 735. ATTORNEY USES INFORMATION BUREAU IN HIS CITY

This attorney made up his mind when entering practice that he would use as much care as possible in bringing his suits, so when a case was brought to him, he always had a complete report concerning the party against whom the suit was brought. He made it a point to know the party's standing in the community, whether he was good or poor pay, what property he had, if he had property, what incumbrances were against it,—in fact, he knew everything about his man before he started his suit and knew very well what per cent of the judgment he would receive if he obtained same. This was business-like and it made him much money and saved him a great deal of time in useless litigation.

At the court house usually there is an information bureau, conducted by some member of the reporting company of the city which can give him a complete statement of the people's credit. A Clipping Bureau in the city can also give additional information. The information bureau of the abstract office can tell all about the property that the party concerned owns, the obligations against it and so forth. The assessor's office, county treasurer's office and the clerk's office are all able to give information. He claimed that these various avenues of information which he uses, have made him more than $1,000 to $1,200 a year.

He also runs in a few lawyer's-directory services, holding himself ready to give reports concerning people who live in the community. For these reports

he charges $2.00 or more and if the report is very long, he makes a charge of $5.00. These reports, he says, run into a considerable sum each week, which, alone, would defray all of his office expenses.

PLAN No. 736. DIVORCED WOMAN FARMS

This woman was left alone by the desertion of her husband and had two small children to take care of. She endeavored to secure a position in the city, but was unsuccessful, so she made arrangements to rent a farm two or three miles from the city, and near the electric line. It was an irrigated tract, and she went on the farm in the early spring and remained there until late in the fall.

She had had very little farming experience prior to this time, but found that she could not only make a living, but put up many preserves besides, and soon she had four or five hundred dollars to carry her through the winter.

PLAN No. 737. YOUNG LADY ON THE FARM BECAME AMBITIOUS

She became convinced that by making good cottage cheese there would be a ready sale for it, so she prepared to learn all that she could about cottage cheese making. She asked questions of all of those who made it, and she attended every meeting where she could make inquiries about making the cheese. She wrote to the Department of Agriculture for a bulletin of how to make cottage cheese on the farm. From these sources she gained much information and started making the cheese. She put it up in very

pretty packages and labeled them, “Cottage Cheese from the Farm Direct to You.”

Those who ate her cottage cheese wanted more. She made a price high enough to net her a very good profit. She placed an ad. in one of the daily papers of the city and secured a good deal of business through it. She delivered her sales by parcel post.

In the beginning prior to advertising, she solicited among her friends by telephone, selecting in this manner people with whom she could get in direct touch from the farm. She secured regular customers through her friends who lived in the city in this manner, and in five or six months she had a steady demand for all the cottage cheese she could manufacture. She claims to make seven or eight hundred dollars a year in this way.

PLAN No. 738. BLUE PRINTS OF FURNITURE BECAME VERY POPULAR

This man made a specialty of making blue prints of different kinds of furniture that could be made at home. He exploited the fact that the ordinary farm conveniences could be made by the man on the farm and much money saved.

If it was a kitchen cabinet, he drew the plan and made a blue print of it, which showed how to put it together. He also wrote a letter of instructions on “What to Do and How to Do It,” and approximately the cost of making the article. He had these blue prints and letters prepared and when inquiry was made for these plans, for which he charged $1.00 each, he forwarded them at once.

There was scarcely an article of utility in the house that he did not have a blue print of, and instructions

for making it, and the exact cost of materials and tools necessary to do the work. These grew very popular, and in a year's time, by running an ad. in several of the local, country, weekly and farm papers, he was enabled to make a net profit of approximately $2,000. In the beginning he did this work on the side, but later it took up his entire time.

PLAN No. 739. RETIRED MAN GOES INTO POLITICS

This man had sold his farm and had been residing in the city for about two years without anything special to do. He became possessed of the idea that he could serve his country, city or state in some manner, so he saw one of the leading politicians of the town who gave him the following advice:

That he go to one of the local attorneys and pay him a fee of, say, $25.00 and get a complete list of all of the various offices that were open to people in that county seat, giving the names of the township offices that he might be able to fill, the requirements of each office and the salary to be derived therefrom, and the time that these offices would come up for appointment or election, also the same information relative to the county, the city, and the other towns in the county; also what offices were open in the state, with their respective salaries and the requirements of each, and a further statement from the attorney as to what appointments were open, or were available from the various congressmen and other governmental agencies. This report was submitted to him and he went over the entire field and ascertained which one aroused his interest. After making his selection, he went to the office of the

county auditor and obtained leave to look over the votes that had been cast for the last few years and found that the Republicans had dominated the county for years back; so from this he determined that it was a question of getting the nomination on the Republican ticket, and this he set about to do.

First, he became familiar with the strong men of his party and also found out in what way he could be of real service to the party. In this way he ascertained what offices were short and what kind of competition he could expect. While he did not get the office that he thought he was best qualified to fill, yet there was another in which he did not encounter any competition and was nominated and elected.

The $25.00 he paid the attorney for this outline was money well invested, and he made the suggestion that any young man who desires to follow public work for a livelihood would do well to follow the advice which was so profitable to him.

Politics is like any business—one must build slowly and carefully. After he has rendered his party service for a period of years, and even though unsuccessful at the polls, there are always opportunities for him to secure appointments on certain commissions or obtain good positions through the influence of friends in the party. And receiving the above report, which has been given as a suggestion, you will be very much surprised to know how many political offices there are in your city, county, state, and nation.

PLAN No. 740. DOUGHNUTS EARN HER A HOME

She lived in a city of about 50,000 population and

was absolutely dependent upon her own efforts. She chose, rather than go out to work, to earn her money from her own kitchen, if possible. She had always been complimented on the kind of doughnuts she made, and she thought that if people were as appreciative as those who had eaten her doughnuts, she would be able to make a very good income from making them. So she started making "Home-made Doughnuts;" real home-made doughnuts—no make-believe about them. She labeled them, "Mrs. Blanche's Doughnuts." Soon she established a reputation for them, as people began to talk about the quality of her doughnuts. They called for them at the store, and the store people wanted to buy from her, so they could fill her orders. The result was that in a few years she had bought and paid for a home in one of the best districts of the city, as well as making a good living besides.

To a woman who has a home and children, one wonders why she should prefer to go out to work when there are so many plans that she can execute in her own kitchen, and be with her family and be her own boss.

PLAN No. 741. HIDDEN COIN IN WINDOW

This is an old plan, but to those who have never seen it worked it might be suggestive of some idea.

The merchant increased the value of his store windows by means of concealing a coin or some other object and awarding the person who finds the article, a certain prize. You would be surprised at the amount of interest this attracts to a display window, and it often brings many sales. At least, it has the effect of making the windows far better advertising

mediums.

PLAN No. 742. HE DREW PICTURES

If you wanted to illustrate certain subject matter in your book, this man would with his camera take an exact picture, so as to give you an idea of what his art work would be like. After taking these pictures, he would send them to a Chicago company which would put them through a process of enlarging to the desired size, leaving only the dim lines on the print, so from these he could make his drawing. This man understood art work and could lay in the lines with pen and ink in an excellent manner and was sure to meet with the satisfaction of the man with whom he was dealing. From this plan alone he was able to make a living.

PLAN No. 743. THE WAY A YOUNG BOY PAID HIS EXPENSES WHILE GOING THROUGH THE GRADE AND HIGH SCHOOL

This young man lived in the Northwest country about twenty miles from a large city. At a very early age his mother died, leaving his father with seven or eight children. His father was very cruel, and he can remember how each child, when they became old enough to think for themselves, ran away. He had three sisters, and because of the cruel treatment they had to leave. His father refused to use any farm implements other than was made by his own hands. When it came to putting the wood up in the winter, he would make all of the children go out and work with large saws until they almost dropped from

exhaustion. He made a wagon to which he hitched these children and compelled them to draw the wood to the house. This kind of work continued until he was unable to stand it any longer, and he left for the city, not knowing where he was going to make his home.

He got a job working in a home, doing odd chores. He had a desire to go to school, and this privilege was allowed him, and for his keep he rendered service to the family. He was an exceptionally good boy and did his best to please the people for whom he was working, with the result that this was spoken of to others in the neighborhood. Finally a doctor's wife became interested in him and made it possible for him to continue and devote his spare time to his school work. He realized this advantage and worked hard and made a good showing in his grade school work.

When it came to the high school, he was doubtful as to whether or not he could continue, but the good woman encouraged him further, and believing in his fidelity to his work and the great interest he manifested in his education, she decided to assist him through a high school course, in which he won an enviable reputation. He was made the president of his class and won unusual honors through his ability as a debater.

This is a good illustration of what a boy, alone in the world, can do for himself. This young man made it a point to please the persons for whom he was working, and always had in mind the giving of more service than was asked of him, and in this way he won their appreciation and their good will, and naturally made them ambitious for his future welfare.

PLAN No. 744. ELEVATOR BOY BECOMES ENGINEER

When I was in high school I knew a boy there who was engaged in the elevator work. His dress was very ordinary; he had no parents and had to look out for himself.

One day he had a conversation with one boy in the class who was planning on becoming an engineer. This boy made it clear to him how important it was to know all about algebra, geometry, etc., and do his daily work in the best possible manner. He was much impressed with this conversation and made up his mind that he would become an engineer. He continued his work at the elevator, and in this way defrayed his entire high school expenses. He was allowed the privilege of sleeping in one of the rooms in the large building, which was his only home, and his elevator work paid for his board and gave him a little extra money.

High school was not enough. He must go to college, and he felt that he must go to one of the best engineering schools, which he did. He found employment during the summer, worked in the various mines, where he followed the mining engineer's work and in this way not only made a good salary but gained beneficial experience as well.

Not many years ago I met him and learned he was engaged in railroad work in Alaska, held a very responsible position.

PLAN No. 745. HE DEVELOPED AN AMUSEMENT PLACE AT THE LAKE

This lake lay about seventeen miles outside of a city of some 125,000 population. About three years

prior to the time to which I refer, a real estate campaign was put on and a car line was built to this place, and advertisements were displayed showing the advantage of this lake as a future summer resort. After the real estate boom subsided the place did not materialize as a summer resort.

One day a young fellow from an eastern city came to this place and noticed the great opportunity for an amusement resort during the summer months. He made a lease for a number of years and began to build up a summer resort. He took the old restaurant building and turned it into an up-to-date place. All people who took lunches at this restaurant, paid a good price, but those who brought their lunches and desired to use the hall, paid 25 cents for the privilege. He opened bathing houses and made the usual charges, and pointed out to the people of the city the great opportunity of visiting this lake Friday afternoon or Saturday night and remaining until Monday. He made arrangements to supply them with tents. He arranged with large stores to have picnics at this lake, and he offered special inducements to the people to visit his resort. He was very successful, and after a couple of years of this kind of work he had made this one of the most popular places of amusement.

PLAN No. 746. RIDING TO COLLEGE ON BROOMS —HOME WORKERS IN SOUTH DOING IT

Broom-making in some of the southern states is being encouraged by home demonstration agents of the United States Department of Agriculture and the state colleges. The home clubs in Alabama rank first in this work, and the past year some especially good

records have been made in the state. The crowd which attends one of these broom-making demonstrations is such as to make the passer-by think an auction is being held.

Tuscaloosa County, Alabama, grows broomcorn, and brush and broom-making has become so popular in that section that all the members of clubs who didn't grow a patch last year are planning to do so the coming season. A broom-making machine has been bought by one community in the county, and other localities have ordered machines for use next summer. With a machine, twenty-five brooms can be made in one day. Each member makes her own brooms and gives one-fourth of her output for use of the machine.

The cost of making a broom in that part of the state is estimated to be 20 cents, with the wire, thread, tacks, and handle costing about $12^1/_2$ cents. Good hickory handles cost 8 cents apiece, while those of other woods cost 6 cents. Tuscaloosa County plans soon to manufacture the broom handles instead of buying them.

The community that possesses a broom-making machine has a source of steady income. While the broom work is planned primarily for the young people, the older members of the family, on cold rainy days and in winter, find making these necessary household articles an easy way to add to the family income. At the present price of brooms, fair wages can be made.

When a pupil learns to make perfect brooms, if she wishes to put them on the market, she is permitted to label them as "Tuscaloosa Grown" and "Home-Demonstration-Club Brooms." Some of the girls in the clubs are planning to earn money for normal school and college by broom work. Will they be

termed witches if they ride to school on a broom?

The boys as well as the girls in the broom-corn sections are interested in the industry. One boy in Cherokee County, Alabama, has been enabled to enter high school by the money he earned in making brooms. He has sold sixty at $1 each and has 200 more to make.

PLAN No. 747. GIRLS RAISING MORE CHICKENS THAN BOYS IN FLORIDA CLUBS

Thousands of chickens were added to Florida's supply of fowls last year by the efforts of the boys and girls under the supervision of the home-demonstration agents of the United States Department of Agriculture and the state colleges. The bronze medal for the best individual record made by a girl went to one in St. Johns County. She set 179 eggs and raised 152 chickens, valued at $264.24. The expenses for raising the flock were $56.95, leaving a net profit of $207.29. A boy in Baker County, won the state bronze medal given for the boy who made the best individual report in the state. He raised eighty-three chickens, valued at $116.15, at a cost of $47.64. His net profit was $68.51. The girls in Florida apparently are outstripping the boys in the poultry-club work.

PLAN No. 748. POULTRY YIELDS $1.14 AN HOUR

A side line for the farmer's wife which yields $1.14 for every hour she puts into it is worth the consideration of every farm woman. A Wabash County, Indiana, woman has demonstrated that this

amount can be made by keeping chickens. Last year the local county agent interested this woman in keeping a farm poultry flock, and as a result she produced a net profit of $172.24. She kept an accurate account of her work and found at the end of the season that she had received $1.14 an hour for the time she actually devoted to caring for her flock.

PLAN No. 749. GIRLS HERD THEIR OWN SHEEP

"After paying all expenses, I cleared $1,240 from my sheep last year," reports a girl member of a sheep club organized in Fremont County, Wyoming. Several years ago she bought the first of a flock and she has handled her sheep so successfully that they number 108 ewes. In 1918 her flock produced seventy-nine lambs, seventy-six of which she raised. These, with seven orphan lambs abandoned by sheep herders, constituted the year's increase. All the care the sheep require is given them by their girl owner. She next plans with part of her profits to buy twenty-five pure-bred Cotswold ewes in Nebraska and to use them to start a pure-bred flock.

A girl in Sheridan County, Wyoming, in 1918 cleared $928 with a flock of forty-eight ewes. During the coming season these two girls plan to throw their sheep together and to herd them themselves over the Big Horn Mountains. Orphan lambs discarded by other camps are also to be collected and cared for by the youthful herders. Members of the boys' and girls' sheep clubs in some of the western states find the salvaging of "bum" or stray lambs an economical way of obtaining a start in the sheep-club work.

PLAN No. 750. CHAMPION DRAWS 80 CENTS AN HOUR FOR GARDEN WORK

Eighty cents an hour for working in his garden is what a man of Fillmore County, Minnesota, earned in his one-tenth-acre plot. He was awarded the state championship in garden work in Minnesota last year, and in his report to the state club leader of the boys' and girls' club work, he says:

"For several seasons I had grown a garden with some success, and in 1919 I determined to secure even better results. I started my garden on three plots (all together comprising one-tenth-acre) differing widely in soil, slope and surroundings. Two had been, until the year before, waste land, and sprouted a healthy crop of bones and rusty cans in the wake of the plow. I made my plans according to conditions and adhered to them throughout the season to save time and confusion when there was real work to do. Desk-farming is one of the most interesting features of the work.

"Tomatoes, cabbages, eggplant, and everything that needed an early start were planted about the first of April in four hotbeds of ordinary size. All surplus plants were easily sold.

"In May, twelve dozen tomato plants were transplanted, and were coming along splendidly until one day I found a thrifty plant nearly cut off. This rather pleased me, as I had never seen a cutworm outside of a picture, and I was glad to make his acquaintance. When the seedlings fell, one by one, however, I decided I had seen enough of the pest. Happily, their depredations were stopped in time and there were plenty of plants to fill in.

"I raised about two-dozen kinds of vegetables to provide a variety for the table, and for marketing, large crops of tomatoes, peas, cucumbers and celery

were planted.

"Canning was a big factor in making the garden a success. What we couldn't eat I sold, what I couldn't sell we canned; and what we couldn't can, I fed to the chickens, so none were wasted. Our summer kitchen was our cannery and the wash boiler our canner. For nearly everything we used the one-period, cold-pack method and followed the directions sent out by the government, with excellent results. We put up 221 quarts of tomatoes, beans, peas, carrots, beets, chard, sweet pickles, kohlrabi, tomato jelly and sauce, carrot conserve, dill pickles, limes, cabbages, tomato jam, mincemeat, eggplant, celery and others. Since we desired a pleasing variety we canned thirty-seven kinds from our garden and purchased some others.

"In all my work with the plants I kept this in mind —that the earliness, quality and quantity of the product is dependent on the seed, environment (including weather, fertility, and shade) and the care given them. So I purchased the best seed obtainable, planted it when natural conditions were best, and cared for each kind as its peculiarity required. Where there is a deficiency in any of these requirements, it can in part be made up in the others.

"The total receipts from the one-tenth acre were $150.48; subtracting $35.42 for expenses, a profit of $115.06 was left, or the equivalent of 80 cents per hour net for every hour spent working in the garden. Home-gardeners will not have to strike for higher wages for some time yet. In addition, I had the good fortune to win a $45 prize for an exhibit of canned goods at the state fair. So I feel well repaid financially for my efforts."

PLAN No. 751. BOY BELIEVES IT'S WISE TO LEARN BY EXPERIENCE

Experience pays—that's the belief of a boy of Montgomery County, Indiana, state champion in the sow-and-litter project in 1918. And because he wished to learn by doing from the start, this club member himself selected and bought the sow he entered in the contest.

The hog was an immune, registered, big-type Poland China gilt, and at the time of purchase, in January, she weighed 279 pounds. In April, nine pigs were farrowed, all of which lived. The litter averaged forty-four pounds apiece at nine weeks, when the leader in the boys' and girls' club work weighed them. Four were sold in the fall for $50 apiece, one was fattened, killed and sold for $34, and four sow pigs which are being kept are worth at least $200.

All the care of the pigs has been taken by their boy-owner. His father, in the meantime, has become interested and from now on father and son plan to make the raising of the big type Poland China pigs a main line in their farming.

PLAN No. 752. SUCCESS INSPIRES

Here are the achievements of a Tennessee boy: Fifteen months ago he purchased a Duroc Jersey gilt, giving his note for twelve months to the local bank. This pig has farrowed twenty-seven pigs and has raised twenty-one of them. The boy sold three of the first litter at $25 each. Four of them now weigh 420 pounds and are worth $320. The seven pigs of the second litter are worth $175, and the seven of the third are worth $105, while the mother—the pig purchased when the boy entered the club—is valued

at $75. This means a profit of $750 in fifteen months.

PLAN No. 753. GIRL WINS POULTRY RECORD

The poultry record for the past year for West Virginia was made by a girl of the Harrison County Poultry Club. Her record for the year shows a profit of $111. She now has thirty-three year-old hens and twenty-seven pullets in her flock, and has been getting a dozen eggs a day, for which she has received 60 cents and more.

PLAN No. 754. CLUB STARTS BOY ON ROAD TO SUCCESS AS POULTRYMAN

That organized agricultural club-work among boys and girls is something more than a contest which ends with the season, but a continuous, constructive piece of work that eventually leads the club members into the business of farming and home making is illustrated by the accomplishments of a poultry club member in Vermont.

In 1912 a boy joined the Vermont Poultry Club, in spite of the opposition of the members of his own family, and, in a number of instances, discouraging words from friends and neighbors who did not understand what club-work meant to the American boy. He started with only a few settings of eggs, but two years later he was well on the road to success, for he had become the champion in his county in poultry club-work, having produced the best grade of birds and the most profit from his investment. In 1914 he exhibited some of his birds at the county

fair, the poultry show, and the state fair, and succeeded in winning a number of ribbons and first prizes. The following year he became the champion poultry-club member of his state and was sent to New York City to the National Education Association to tell how he did his work and what he thought of it. The following year he again won the state championship.

By that time his reputation in the poultry industry had spread to other states and he was selling settings of eggs throughout New England direct to consumers, and had built up a trade in the sale of birds for breeding purposes.

One year later, in 1917, he started out with a business of his own, using his own business cards, his own business stationery, and expanding his poultry plant two-fold. He became manager not only of his own poultry plant, which he developed rapidly, but found time to take a position as superintendent of the poultry farm at one of the State institutions.

PLAN No. 755. CLUB CALF BRINGS $1 A POUND AT MINNESOTA BABY BEEF SHOW

Sixteen counties in Minnesota were entitled to send forty-eight boy and girl club members, with their calves which had won prizes in their county, to the first baby-beef show held in that state. Owing to the influenza epidemic only twenty-nine were able to go to St. Paul in December and exhibit the baby beeves they had raised; but the crowd made up in enthusiasm what it lacked in numbers. The calves were sold at auction and brought an average of 20 cents a pound.

The champion, owned by Irwin McKay, was sold

for 35 cents a pound, and with the prizes won, netted his young owner $447. Later the calf was resold for $930, or for a little more than $1 a pound. A boy on the farm can easily pay for his education by raising stock as did the boys above.

PLAN No. 756. ONE EWE GIVES BOY PROFIT OF ALMOST FIFTY DOLLARS

Late in the fall of 1917, a boy of Henry County, Indiana, and nine other boys in his neighborhood, organized a sheep club. A few interested stockmen and the local bank made it possible for each club boy to secure one breed ewe. Each boy gave his note to the bank for the purchase price of his sheep.

In the summer of 1918, a boy presented the following statement of his work and investments:

Disbursements	
Cost of one ewe	$18.00
Feed	6.25
Interest on note	.72
Total cost	$24.97
Receipts	
1 ewe (inventory)	$18.00
1 lamb (sold)	25.00
1 lamb (sold)	22.50
Wool (sold)	6.50
Total receipts	$72.00
Total cost	$24.97
Profit	$49.03

Investments paying 200 per cent were worth looking into, the farmers who lived in the locality of

this club thought and interest in sheep raising increased.

Another boy in the Henry County club has developed a flock of thirty ewes, and plans to have more. His father has become so interested in his work that, although the boy is rather young, he is allowed to go to sales and do his own bidding on prospects for his flock. Practically all the boys engaged in the sheep-club work are keeping their foundation animals and at the same time are adding to their stock.

Previous to 1918, there were but few boys and girls organized into sheep clubs under the supervision of the Department of Agriculture and the state agricultural colleges. With the high price of wool and mutton, the sheep project, however, has become increasingly popular. Last year 257 such clubs were organized, with an enrollment of 3,613 members. During the year 8,005 lambs were raised by these young people, and 2,006 pounds of wool were marketed. The total value of the flocks at the end of the year was $131,173.40; the initial cost of the sheep, together with the expense of feeding them, was $37,082.82; the total profit made by the boys and girls who were members of the sheep clubs, and who continued the work throughout the year, was $94,090.58. The results the boys have been getting have opened the eyes of their fathers. The boys and girls in the sheep clubs are demonstrating in every state that sheep are profitable if well handled.

PLAN No. 757. BOYS' YOUNG SOW MAKES NET PROFIT OF $385 IN LESS THAN 12 MONTHS

Three hundred and eighty-five dollars in less than a year—that's the clear profit a young sow gave two boys who live in Harris County, Texas. Theorists in farm management and the like might figure up a pretty big bill of costs against the sow, to be deducted from the profit she has made, but the boys know that such figures would not tell the truth, because they've got the money in their pockets—or they did have it.

The sow and her progeny did eat sixteen bushels of corn, worth $24, and they did range over five acres of pasture, considered worth $25. These two items—a total of $49—have already been charged to the sow, and deducted from her gross revenue of $434. The remaining $385 is clear profit, because the rest of the feed consisted of slop and surplus milk that would have been thrown away had there been no pigs, and peanuts and sweet potatoes gleaned by rooting the patches after the crops had been harvested as carefully as possible. She farrowed her first litter of pigs April 4, 1918. One died and two were given in payment for the sow. The other four were grown, fattened, and killed to furnish the family supply of lard and pork. Another litter of six pigs came later in the year and are now on the farm—good-sized shotes in first-class condition. The sow will farrow a third litter of pigs before long. The account now stands this way:

The original sow, $60; six shotes, $60; 800 pounds of pork, $224; twenty five gallons of lard, $90. These four items make a total of $434 from which a deduction of $49 is to be made for corn and pasture. Those figures prove that hog raising on the farms of Harris County, Texas, is profitable. But the caution to be written at the bottom of this story is: do not carry figures too far. Making figures in arithmetic fashion,

you would have this: If one sow makes a profit of $385, 100 sows would make a profit of $38,500. That is perfectly good arithmetic but it is not good farming.

The big profit in hog raising on southern farms, the specialists of the United States Department of Agriculture point out, is made where the farm family keeps enough hogs to consume all the waste products, to convert into money the things that would otherwise be lost, and that can be kept on a minimum of bought or stored feed. Every dollar got out of that number of hogs is practically clear profit. Beyond that point the profit dwindles.

The number of hogs that can be profitably kept is, of course, a matter that each farm family must determine for itself. In some cases it may be one sow. In others it may be six or a dozen or any number of sows. On every farm there is some waste that pigs could convert into money. On most farms it probably amounts to at least as much as on one farm, where, in one year, a boy made one sow produce enough revenue to buy a whole set of new furniture for mother or to keep sister in college for a year.

PLAN No. 758. MONEY MADE IN PRESERVING EGGS

Two methods of preserving eggs are recommended by specialists of the United States Department of Agriculture, they follow:

Water-Glass Method:—Use 1 quart of sodium silicate to 9 quarts of water that has been boiled and cooled. Place the mixture in a 5-gallon crock or jar. This will be sufficient to preserve 15 dozen eggs; and the quantity needed to preserve a larger number of

eggs will be in proportion.

First, select a 5-gallon crock or jar, and clean it thoroughly, after which it should be scalded and allowed to dry.

Second, heat a quantity of water to the boiling point and allow it to cool.

Third, when cool, measure out 9 quarts of water, place it in the crock, and add 1 quart of sodium silicate, stirring the mixture thoroughly.

Fourth, place the eggs in the solution. Be very careful to allow at least two inches of the solution to cover the eggs.

Fifth, place the crock containing the preserved eggs in a cool, dry place, well covered to prevent evaporation. Waxed paper covered over and tied around the top of the crock will answer this purpose.

Lime method:—When water glass cannot be obtained the following method may be used in its stead. Many consider this method entirely satisfactory, though instances are known in which eggs so preserved have tasted slightly of lime.

Dissolve 2 or 3 pounds of unslaked lime in 5 gallons of water, that has previously been boiled and allowed to cool, and allow the mixture to stand until the lime settles and the liquid is clear. Place clean, fresh eggs in a clean earthenware jug or keg and pour the clear limewater into the vessel until the eggs are covered. At least 2 inches of the solution should cover the top layer of eggs.

Sometimes a pound of salt is used with the lime, but experience has shown that in general the lime without the salt is more satisfactory.

Hold your eggs when the price is low by the above methods and sell when the price is good.

PLAN No. 759. PROTECTION AGAINST FRAUDULENT COURT ACTIONS

How often it happens after one has applied years of honest endeavor that worthless persons will compel him to go to court to defend his character and property against a charge of fraud. After the case has gone to the jury he still believes that it is impossible for such efforts against you to succeed—that the charges and statements cannot be believed. The jury goes to its room and decides the case. The members are tired and want to get home, so they compromise, which means that the defendant loses perhaps $5,000. He thought it impossible to be robbed in daylight before a court and jury, by perjuries, but this is what has happened. The lying combination has been successful. The court is not to blame and sometimes the jury is not at fault. Doubtless the next few years actions of this kind will be very numerous, as the people who traded property during the war will hatch up all kinds of schemes to regain it.

I have listened for days at a time to men in fraud actions lie before court and jury, and they knew they were perjurying themselves and knew its penalty, but that did not deter them. They were wolves in sheeps clothing, and possibility of money meant more to them, than honesty.

The most effective protection against men of this character is as follows: When one has business transactions he should be sure to obtain a signed letter similar to the following. If the parties to the transaction are honest, they will not take exception to it. If it is a trade give them the same kind of a letter:

..... 19....

To.....

Name

.....
Address

Dear
Sir:—

I have directed this letter to you for the purpose of stating our transaction of
.....
19....
with reference to
.....
which is as follows:

(Here give legal description of property and a short and condensed statement of transaction.)

I wish you to understand that I have in no way depended or relied on any statement made by you or your agent in above referred to transaction but have made careful investigation for myself upon which I have relied.

I have had this letter prepared for the purpose of assuring you on behalf of myself and representatives that I am forever barred from complaining in any manner about the above deal.

I remain,
Very truly,

.....
Name

Especially is such letter of value to a lawyer, as without it he may some day be confronted with a former client who is willing to lie about some transactions they have had.

This plan alone may save one his all some day, if he will follow it. As a matter of fact, an attorney should insist on such a letter to protect his client. If a

person refuses to sign a letter similar to above it is better to lose a deal, as such refusal warrants suspicions.

PLAN No. 760. IMPROVED MILKING STOOL

It does not seem that a milking stool could need any improvements. Nevertheless, a party recently designed and made a very handy one for the farmer.

The stool is strapped to the body of the milker, and when he rises from the task of milking one cow to go to the next, the stool, of course, goes with him, leaving his hands free. When the weight of the person is placed on the seat, the spring in the rod supporting the seat is compressed, and the rising of the occupant releases the weight, which assists in lifting the stool from the ground.

When many cows have to be milked the work of carrying the stool becomes labor which adds to the worker's fatigue.

You can manufacture these yourself and market them.

The farmer owning stock can obtain a list of large and small stock farmers from clipping bureaus in any large city. When advertising, begin with a well-written classified ad. in a reputable farm paper.

PLAN No. 761. TRY TO FEED ALL THEY GROW

A farmer who lives in northern Idaho, says:

"I came here five years ago from Montana, buying an 80-acre stump farm, with a small house and barn on it, and with a few acres of it cleaned up along Sand Creek. I paid $2,600 for this place, and it took

all the money I had, except a little to buy a couple of cows and a team of horses. For the last five years my wife and I have made a living on this ranch, supporting five children, and have cleaned up the land, so that to-day we have thirty-five acres under cultivation. We made it a point to try to feed everything we grow on the place and selling it as a manufactured product.

"Last year we produced seventy-five tons of choice clover and timothy hay. The surplus timothy we sold at our barn door at about $16.00 per ton. We raised some 150 sacks of potatoes on an acre of newly cleared land and we have sold them at an average of about $1.50 per 100. We have raised about one ton of carrots, three tons of rutabagas, and about one ton of mangels, and red garden beets. The root crops we find very profitable here, and they give us a fairly well balanced ration for our milk cows, with clover hay. Our books show that our cows have averaged, summer and winter, about $18 per month each. We have milked six cows the past year. During that time we raised seventeen hogs, marketed them at a fair price, and have fed our one team of horses.

"We have a nice trout stream running through our yard, as well as a railway station a quarter of a mile away. We have refused an offer of $8,000 for our place, stock and improvements, so that we feel justified in feeling that we have done fairly well in the five years that we have lived on the stump ranch."

PLAN No. 762. FARMER IN THE WEST

This farmer tells of his success and satisfaction in Idaho, as follows:

"I got very tired of the long severe winters of North Dakota and Minnesota, so I sold my stock and started west hunting for a better climate. My wife liked it in northern Idaho, and her health was a great deal better. So we purchased 160 acres of land. This land had been cut-over about fifteen years ago and the stock from the adjoining town had grazed over it and scattered clover and timothy seed so that the stumps were almost covered up with hay.

"I made my first payment about the 10th of July, and in the next thirty days I got in and with scythes and hand rakes put up some twenty-five tons of fine clover and timothy hay. I bought five Holstein cows that the Commercial Club had shipped in, paying $470 for the five cows. I bought a cream separator and began work within thirty days after making my initial payment. I found that 160 acres of stump land was too much for one man to undertake with my limited capital, so I had a chance of selling off ninety acres of it at an advance of $10.00 over the purchase price, so that I sold that much and have about sixty acres left. We had a lot of snow here the past winter, but the cold was not severe, there only being six nights of zero weather during the entire winter.

"I now have a good barn, a small house, seventeen head of cattle, three good horses, and have cleaned up fifteen acres of land. I expect to cut fifty tons of good hay this coming season, and I do all the work myself, with the exception of one boy. Our five cows have averaged us about $10 per month in cream checks."

If a man wants to make a success of his life and has the will to do it nothing can stop him.

PLAN No. 763. A GOOD COUNTRY TO LIVE IN

This man came to northern Idaho, from Minnesota, regarding which he says: “Because we decided this was a good country to live in, I bought 120 acres of land from one of the lumber companies, cut-over land, and began preparations in October, 1914. By hard work I was able to get in a few acres for the crop the first spring, which cut me enough clover and wheat, hay and grain to feed a team of horses, two cows, some pigs and chickens. I have contracted clearing here at about $15 per acre. Off of the three and a half acres of clover that I sowed down the first October and November that I was here, I cut ten tons last season. This spring I have sown down one-half acre of alfalfa, three acres of wheat, twenty-five acres of extra fine clover, one acre in my garden and orchard, and about five acres of new clover. I have twenty-one hogs that I have raised on the clover stubble, two cows and two horses. Clover makes a wonderful crop here, producing from two to three tons in two cuttings every year. My wife and children are very much pleased and we expect to pass our remaining days in this valley.”

PLAN No. 764. IRRIGATED FRUIT LAND NEAR SPOKANE, WASHINGTON

He bought his land at Opportunity nine years ago at a cost of $350 an acre. He now has five and a half acres in bearing orchard, with 450 trees eight and nine years old. In 1913 they yielded an average of four packed boxes of apples to the tree, for which he received an average price of $1.31 a box, or a total return of $2,856.

The story of the production of these trees from the beginning is interesting. The first year they yielded

nothing; the second year, one box; the third year, 125 boxes; the fourth year, 500 boxes; the fifth year, 1,200 boxes; the sixth year, 1,800 boxes; the seventh year, 2,300 boxes and the eighth year, 2,300 boxes that he sold at $1.20 per box. The lowest price that he received during this time has approximately been $1 per box and he says that the farmer can make money marketing fancy apples at 75 cents a box.

But more can be done on a 10-acre tract than grow apples. For the first five or six years most of the land can be utilized by planting tomatoes, cucumbers, cantaloupes, potatoes, squash, pumpkins and all sorts of garden truck between the rows of trees. Most of the tracts are farmed this way, in addition to setting aside a part of the land to be permanently used for these crops, berry patches, etc. This inter-planting makes the land pay operating expenses and a profit while the trees are coming into bearing. After the trees attain size, the only other crop that can be raised is clover or some legume that will put nitrogen into the soil.

$300 an Acre From Dewberries

The following figures are quoted from this Opportunity farmer and is from his own experience with these crops: “Tomatoes will yield from ten to twenty-five tons to the acre. Grapes do well and sold for the table market. Have paid at the rate of $700 to the acre. Green corn for the market pays well.” He has taken from $150 to $200 worth of hubbard squashes off an acre. One acre of dewberries after the third year brought in an average of $300 a year. He has realized about the same from strawberries.

The first year he was on the land he took $525 worth of tomatoes off an acre; $235 worth of cantaloupes off two-thirds of an acre; $175 worth of

watermelons from an acre. He has half an acre of cherry trees that are paying him well.



Plan No. 764. When the Well is Dry They K

In his poultry yard he raises Rhode Island Reds, because he says they do best in the winter when he has more time to give them and the price of eggs is higher. During December, January and February, his 175 hens laid enough eggs to bring in an average of $56 a month at a total expense for feed, etc., of about $10.00 a month.

Discussing the cost of living and maintenance he

says:

"It cost me $24 a year for domestic water and electric lights—a cheaper rate than almost any city. The water for irrigation is $7 a year per acre. My net income from my land last year averaged over $300 per acre. My land nine years ago cost me $350 an acre; it is now worth $1,500 an acre."

The above is a remarkable record. Facts are more wonderful than exaggerated statements. The above district is perhaps one of the most beautiful home districts in the world.

PLAN No. 765. WEALTH PROM A GARDEN PATCH

Strawberries, raspberries, cabbage, cucumbers, currants, rhubarb, beans, cantaloupes, gooseberries, grapes, hubbard squash, summer squash, corn, green peppers, hot peppers, ground-cherries, watermelons, citron, egg plant, tomatoes, are some of the things grown on the irrigated farm of this man living near Spokane, Washington.

And these are the side lines: The entire place of twenty-five acres is planted to fruit trees—apples and pears—now five and six years old. Their 1915 gross returns were above $5,500, practically all from garden produce. In 1914 their sales were $5,400.

This farm is an inspiration and an education. Every available square foot seems to be growing something. Grapes are growing along the low stone wall that separates him from his neighbor. Between trees are long rows of vegetables and in the tree rows themselves are cucumbers, squash and similar products.

One of the 1915 yields was $1,600 from three acres of strawberries. Six rows of raspberries 160 feet

long brought a return of $75. Five acres of cantaloupes sold at an average price of $1.25 a crate and brought a gross return that averaged $250 per acre. Sales of green corn ran $60 an acre, and some of the corn and all of the fodder was left. An acre of peppers brought in about $400. Currants proved very profitable, yielding 40 to 50 cents a bush, with about 1,000 bushes to the acre. Eggplant has been made to pay over $300 per acre. From about an acre of tomatoes he sold 1,200 crates at an average price of 35 cents a crate.

This produce was not peddled or even hauled to Spokane for sale among the grocers. It was sold at wholesale and loaded on the cars at the nearby stations. Much of it went to Spokane, but the greater part went to outside markets.

PLAN No. 766. PROFIT FROM IRRIGATED LANDS

It is just a little difficult to tell the story of irrigated lands and not seem to be painting the picture too bright. The enormous crops that can be produced by intelligent use of the water are so large that it is hard to believe that so much value can be taken off an acre of ground. Alfalfa is perhaps the lowest in value per acre per year, and yet this same hay fed to cows and pigs and marketed as milk and hogs can be made to pay an annual return of from $125 to $250.

The well-conducted apple orchards produce from 250 to 500 boxes of apples per acre per year. The average of the good orchards is somewhere in between. These will run from 60 to 80 or 85 per cent fancy and extra fancy and that means a sale price at the orchard around $1 a box.

PLAN No. 767. WHAT TEN ACRES DID

This farmer and his wife, living near Spokane, Washington, tell of the comfort and profit they get from their ten acres as follows:

"From November 1, 1914, to November 1, 1915, we sold $300.00 worth of eggs and $60 worth of old hens, besides raising 350 chickens. We think that what we eat of eggs and chickens pays for their keep. From January 1 to September 1, 1915, I sold $90 worth of butter and sold a calf for $15, besides what butter, cream and milk we used. We raised a thoroughbred Jersey cow that began giving milk September 1, 1915, and she made forty pounds of butter before she was two years old. We raised two hogs and sold them for $32.50 and raised one for our own use. We raised beans, sweet corn, carrots, and vegetables between our young apple trees, and sold from our ten acres $600 worth of produce, besides the eggs, poultry, butter and pork."

PLAN No. 768. BEEF CATTLE PROFITABLE

A farmer of Davenport, Washington, says:

"I am satisfied that I can make the beef cattle business pay me a nice profit. Starting with three head of beef cows worth $225 and buying $721 worth of cattle in two years, which I kept on cheap pasture most of the year and fed only a small amount of hay for three months in the winter, I sold $827 worth of butter and cattle in the two years and had stock remaining worth $1,360. My net profit in the two years, exclusive of labor and feed, was $1,241."

In the West everything is being done to encourage diversified farming. Many farmers buy their own butter, etc., which to Eastern farmers seems strange,

but wheat has been so profitable in the West that these farmers were content.

PLAN No. 769. HOGS AS SIDE LINE

This farmer living near Ritzville, Washington, says:

"My net profit, exclusive of labor, for handling hogs as a side line one year was $532.33."

This is a good illustration of what opportunities the average farmer has of developing more profit on his farm. It would take a pretty good business in the city to handle side lines that would produce such a profit on the first trial.

PLAN No. 770. NORTHWEST FARMER BELIEVES IN DIVERSIFIED FARMING

In the Northwest much of the land is summer-fallowed every other year, and when the land can be put to profitable use those years it means much to the profit end of farming. Here is what a man did near Colfax, Washington. His statement is as follows:

"Four years ago I fenced my ranch with hog-tight woven wire fence and purchased a bunch of hogs. The first year I sold $1,400 worth of hogs and have averaged $2,000 per year ever since. I also purchased some sheep and found that by running them between harvest and summer-fallow I was able to keep down the weeds. I made a profit on my sheep in both wool and mutton. I believe that if diversified farming is followed, sixty to eighty acres is enough for one family in this locality."

PLAN No. 771. WHAT A FARMER DID FOR HIS LAND

Here is his statement:

"It is my intention to abandon the practice of summer-fallow altogether here by growing peas and other crops that can be grown to advantage on the land. To-day, May 23rd, we are cultivating our peas, and after one more cultivation they will be ready to lay by until harvesting. A piece of wheat planted on ground cultivated to peas and hogged-off last fall, stands four inches higher than any other wheat on the place. I believe in alfalfa, clover and peas and the stock to consume them, in order to return the manure to the soil."

Thousands of acres of land in the past few years have been put to peas and a good profit has been obtained.

PLAN No. 772. WESTERN FARMER'S EXPERIENCE

He lives in the Palouse farming district in the State of Washington and makes the following statement:

"In 1915, fifty acres of wheat planted on corn land gave me $1,000 after all expenses were paid. This was more than double the returns from fifty acres of land that had grown wheat continuously or been summer-fallowed. The same year fifty acres of corn brought me $600; that is, from corn, potatoes, beans, etc. I sold seed corn to neighbors, to poultry raisers and sold corn-fat hogs, and had left all my feed for two cows and five horses for a year. My fifty acres of wheat on stalk land, the neighbors will tell you, is the finest field to be found in this section of the country."

PLAN No. 773. COWS RETURN $200 A YEAR

One of the best examples of what can be done with dairy cows in the Palouse country, State of Washington, is this farmer who started with $300:

He built up a herd of Jerseys and mixed Holsteins and Jerseys, after paying for his land, a few years ago. After three years, an inventory of the stock, equipment and improvements showed a total gain of $13,425, which has accrued to him over and above his living expenses. One year's crops from 140 acres of Palouse land were 200 tons of hay, 550 sacks of oats and barley, 100 tons of ensilage, 400 sacks of potatoes, and about $250 worth of fruit. Most of the crops were turned into milk, of which 44,700 gallons were shipped, and brought back a return of $8,940, an average of over $200 for each cow milked.

PLAN No. 774. COWS HELPED HIM

This farmer left North Dakota and located in the State of Washington. He states:

"I bought sixty acres of white pine and cedar stump land adjoining the station of Matchwood, about six miles from Sandpoint, on a 10-year payment plan, and in February, 1915, we moved up and began work on our place. We bought two Jersey cows. The first year, with a few days work on the outside, we were able to make a living from our two cows and about 35 laying hens. We were able to put up about twelve tons of good clover and timothy hay that we got with a hand scythe around the old logging roads, where it was growing wild.

"The year 1916 will be my first year with any crop to amount to anything. I have cleaned up in the past year about twenty acres, have thirteen acres sown in

grain and clover, about seven acres to grain and root crops, and have thirty acres seeded among the waste timber and stumps for pasturage. My place is fenced and cross fenced, and I have running water on the place. In the past year we have sold over 500 pounds of butter, at an average of 30 cents per pound."

PLAN No. 775. WOOL CLIP $1.00 PER HEAD

This man, living at Odessa, Washington, kept 1,200 sheep out nearly all winter at strawstacks and grazing, the only expense for feeding being thirty-five tons of alfalfa at $10.00 per ton. He clipped about a dollar's worth of wool per head and sold 300 head at $4.75 to $5.25 per hundred weight. He says:

"I made a very nice profit and believe that nearly all farmers should keep a band of sheep."

The dry atmosphere, combined with the absence of heavy dews, and the generally favorable climate, make the Big Bend a natural poultry country. Disease is kept down to a minimum and the fowls themselves thrive. The high price for eggs in this market makes the returns unusually attractive. Turkeys, always difficult of successful raising, seem to be in their natural climate in the Big Bend, and those who are now in the business claim that the country will become famous for its annual shipments of the great American bird.

Figure out the amount for yourself, and, if you live in the city, figure what net profits your business paid last year, then deduct from that the cost of food and clothes, rents, pleasure trips, amusements, etc., and you will be surprised at what you have left. But remember Mr. Farmer's net profit is above his living, which is the very best.

PLAN No. 776. FARMER LIVES NEAR COLLEGE

Many farmers in the West will not trouble themselves with stock, but this man shows how expensive an idea this is.

This farmer living near Pullman, Washington, has demonstrated that dairying pays in the Palouse country. He owns 240 acres of land two and one half miles from town that he values, with improvements, at $100 an acre. Because of the size of his farm he raises quantities of wheat and other products for the market, but his main income is from butter. He makes this on the farm and sells it to the consumers at an average price the year around between 35 and 40 cents a pound.

"Much of my land is in grass and alfalfa," he says. "We market two nice bunches of hogs each year, raised on the skimmed milk from the dairy. Half as many heifers as we have cows are matured every year and added to the herd to take the place of the cows sold. Veal and poultry and eggs all bring in money. I raise thirty acres of corn a year for the silos. This land is then sown to fall wheat. Rearing the family, near the splendid schools of Pullman, and with the state college in sight, has a lot to do with the satisfaction we get out of life."

PLAN No. 777. CUT-OVER LAND FARMER

This farmer purchased a farm ten years ago near Newport, the county seat of Pend Oreille County, Washington. He bought 268 acres at $23 an acre.

The farm is on the bench land where the soil is a sandy loam, particularly suited for growing vegetables and grass crops.

Here is what he says:

"After the cordwood has been removed, the slashing and burning of the rubbish and brush, leaving the ground free of everything except standing stumps, should not cost over $10.00 an acre. It is my own experience that it has not cost that much. Most of it I contracted at $7.50 an acre and on two different tracts the contractor made over $3 a day. The slashing should be burned in the fall whenever possible and a mixed pasture grass sown in the ashes before the heavy fall rains. No cultivation is necessary, as the light ashes make an ideal seed-bed and a heavy, rich pasture is assured the following season."

PLAN No. 778. TAUGHT HIS WAY THROUGH COLLEGE

This young man was a school teacher, but became convinced that he would study law and wished to make it his profession. He had no money, was an excellent speaker, and enrolled in the university for one year to complete this course. At the end of the year his money was gone, and the next year he taught, and he continued in this way until he finished his university course.

While this is a hard method, every other year leaving the college and spending it teaching, yet he made his goal, and many a teacher can do the same.

PLAN No. 779. SOLD LAW BOOKS AND THUS PAID HIS UNIVERSITY EXPENSES

In every large university there is a good opportunity of purchasing books at a small price

from the out-going classes, or the class at the end of each semester, and selling the books again to new students entering for the following semester.

This young man started to make his expenses in that manner. He bought books at a very small price and sold them at a very large price, and thus was able to build up a large book business at the university. He now has several rooms filled with books for incoming classes, and is in a position to give good advice as to the class of questions that may be asked from the various examinations in the different departments, as he keeps a carefully collected list of questions when the term starts. He has some of these typewritten and made into pamphlet form for sale. He also has a stenographer, who takes the lectures in the different classes so has them for sale to the students who are unable to take them down during their class work, or for those who have been inattentive.

PLAN No. 780. THE WAY HE MADE GOOD IN THE ASSESSOR'S OFFICE

It is generally conceded that one of the hardest offices to fill, is the office of county assessor.

No matter how hard you may try to please the public generally, on assessment of their property, you will find delegation after delegation appealing to you to make change in their assessment, and you will find many of your dear friends who really insist on being treated in a special manner and different than the rest of the other people, they want you to discriminate as to them.

This young man had trained himself for the law and had practiced a few years. He decided before

going into politics to try-out serving in this office for a time. After rendering his service for a number of years he was announced by his friends for this office and won. He made up his mind that when elected he would handle this office in a way that it would reflect credit in after years. He had noticed many people, when directing these offices, had failed, largely on account of their lack of will power to stand by what they absolutely knew was right. If an assessment was made on property and a delegation appeared before him, he would take all the blame, if there was any, and would go into the matter and have it settled once-for-all. After a short time people began to find out that the assessor had a mind of his own; that he knew what was right, and when any matter was taken before him they understood clearly if their contention was right he would do all he could to assist them.

He followed this policy throughout his term of office. Another thing he did after election was to call together all his assistants and made it clear to them that they were to serve the public in the best possible manner, and to be courteous at all times; and that the public was a final judge as to their ability to serve them and that he was only an instrument through which the public could give its approval or disapproval.

After a service along the lines which has just been suggested, he was re-elected to several other offices in the county, which is a remarkable record.

As to building up any political machine, he did not do this, but of course his friends and those who supported him were given preference in his appointments, and they were loyal to him.

PLAN No. 781. THIS MAN BECAME COUNTY CLERK

He was a very likable man and had served in public office for a number of years at the court house, and he in this way became generally acquainted throughout the county. He decided to run for the office of county clerk, and was successful.

As soon as he was elected he called together his assistants and made it clear to them that in this office application was one of the important parts of the service; that he wanted them to serve full time; that they were serving the public, and that nobody should be impertinent or short in their answers and should be most courteous in every way. In fact, he made it clear to them that if they were unable to render service in this way that they had better leave and, that they would be removed at any time when the time came they could not treat the public right, because, he stated, the public was their final judge.

The clerk himself was not a man given to very much talk, but he made it a point, when the attorneys called to speak to them kindly and give the greatest consideration regarding any matter they desired information. This was granted to all attorneys, irrespective of age or qualifications. The attorney handling the smallest business would receive the same consideration that the most wealthy among them—they were all equal in his office.

He also knew that if he was to be re-elected, or desired to win further political preference, that he must start his campaign when he first opened up the office, and this was his campaign: rendering the best kind of service that lay within his power.

PLAN No. 782. ATTORNEY VISITS BROTHER-ATTORNEYS

After graduating from his college he called on attorneys, in the town where he was reared, and obtained the best possible advice from them. He inquired as far as he dared into what they did to make their practice a success. Oftentimes attorneys do not know the plan they have followed, but upon visiting with them you will soon discover that they have followed some general plan of action. If the plan is productive of good profits put it down as a lesson for yourself.

This attorney continued this practice for years. He always made it a point to know all of his fellow attorneys and keep in touch with their advancement from time to time. At least once a year he would lay aside a certain amount of time to call on all the attorneys, and especially find out, if possible, what kind of business they were doing and what new ideas they had in that particular community for the advancement of their profession. He states that each year he obtained points which meant a great deal to his practice, as well as winning the friendship and good will of his fellow attorneys. He states that there was hardly a year that he did not receive something which meant five or six hundred dollars to his practice. Some suggestions as to keeping up the business that came into his office, or that his charges were not sufficient, or he failed to use business methods in this or that.

PLAN No. 783. GIRL MAKES LIVING BY MAKING TABLE FAVORS AND DECORATIONS OF PAPER

She purchased several rolls of crêpe paper of

different colors at 15 or 20 cents per roll, and this she experimented with until she became very proficient in the making of various table favors. And, as a matter of fact, she became expert in making all kinds of decorations for tables. The next thing for her to do was to get the business which would enable her to make profits and keep her busy week in and week out. She watched the papers very carefully, noting all of those who were giving parties at their homes; she made a catalog of all the socially-inclined people, and then made it a point to call upon them personally and arrange to make them decorations for their next party.

She also called upon the restaurants and stood ready to make any special design they desired on certain occasions. She solicited this work a month ahead so that it would not all come at one time and make it impossible for her to give them what they desired. For example, Halloween, Saint Valentine's Day and other days when the restaurants desired many of such decorations, she took these orders in advance and was prepared to deliver them when the occasion came.



Plan No. 783. She is Content Because He

From this work she averaged more than $25 a week. This is a good business for any girl in any city of 50,000 and over, and much money can be made in this work in towns of smaller size.

PLAN No. 784. ARE YOU COMPETENT TO BE A PATENT ENGINEER, DRAFTSMAN, ETC?

At the present time, in the city in which I reside, there is a great opportunity for men skilled in this profession of patent engineering and drafting. They

obtain all the way from $.75 to $1.00 an hour for their services. Men capable in this work should get in touch with patent attorneys.

PLAN No. 785. A GOOD WAY TO START THE PRACTICE OF LAW

This attorney was educated in an eastern university, and after completing his course decided to start in a small town in the State of Vermont. This town was a county seat and had some 2,500 inhabitants. The first year he netted more than $2,000. He started in with a partner, and during his twenty-five years of practice always had a partner. He believes this is the best way, as a great deal of law is learned by such association. He says an attorney can obtain a start in a small town much earlier than in a large city. He has an opportunity from the very beginning to show his ability. It is up to the attorney who goes to a small town to make sure that he knows as much about the law as possible, and should devote himself to careful study. His efforts will be noted by the Court and if the Court and the Bar generally of a small community, see that he is in earnest and has the material in him, he will find that he will get good support from all, especially by the judges in his community, as they like to help the young lawyer make a success.

In the large city, he says it is different. If he cannot stand he must fall; nobody takes any particular interest in him. He has no opportunity of displaying the qualifications he possesses. He may live and die in a large city and be a Daniel Webster and nobody know it. He found after this association with the court of this county seat and the supreme court of

the state that he obtained a class of business that was the very best, and he found that he knew the law better than his brothers in the city as every lawyer realizes that all the law is not in books, and the association with lawyers of high ability is the best instruction a lawyer can have.

In this little town, all of his cases were in the superior court and he had many cases that were heard in the federal court, and from this practice he derived a good income. He found in the city that most of his fellow attorneys of the same age never had the opportunity of going to the federal court. Most of their practice was in the justice court or police court.

PLAN No. 786. WHY NOT BECOME A PATENT ATTORNEY

I have known this attorney for years, and my acquaintance and conversation with him has enabled me to learn much from the experience that he enjoyed as a patent attorney. It is a profitable field as well as an extremely interesting one.

People generally realize that it is very difficult to get a patent through in the Department of Patents, but usually the examiner has many departments under him, and the various departmental heads go into all kinds of matters which would seem to the average person as unnecessary, and, in some cases, that is really the case. It is here that the patent attorney comes in.

There are people who are patent assistants, which is different from patent attorneys. They advertise and obtain much business. They are not lawyers, are not educated as lawyers and have clerks who work under

them who are less qualified than they, but the attorney has a great advantage over these people, for he himself has been trained as an attorney and is familiar with the rulings of the court and has many advantages when it comes to drawing up the petition for the person desiring the patent.

Oftentimes before patent papers reach the examiner the owner becomes discouraged and withdraws, and the examiner is not troubled further.

Another thing is the drawing-up of the petition, which contains a drawing and specifications, claim, etc. The drawing of a patent claim is a science, and is entirely governed by court rules. It is probably the most difficult legal paper to draw that is known.

A great deal is required of a patent attorney. He should know something about mechanics and chemistry and even electricity. A very important thing to a person desiring a patent is, that the inventor must by all means understand the device upon which he is trying to obtain a patent. His information must be sufficient to assist the attorney. The attorney who desires to be a patent attorney realizes that the universities and colleges of our country do not give much which would be of assistance to one in that field, so the attorney mentioned in the foregoing account found that there were certain correspondence schools' lectures put out which went into detail and were effective. These lectures will cost in the neighborhood of $30.00, and are entitled Correspondence Schools for Patent Law and Practice, put out by a Company at Washington, D. C.

Every examiner, you will find, has on his desk a book which contains 507 mechanic movements. The knowledge of this go to test whether or not your patent will be accepted. It will be further necessary

for you to have a Correspondent at Washington, D. C., and this you can secure by writing. This man will make a search for you and obtain the classification number of the patent and will forward you a half-dozen or more printed copies along the same line as your patent covers, and this will be an index to you as how to proceed in your own particular case, and will serve a great opportunity for you to give real assistance to your client by showing him how far other men have progressed in the same field as his invention and often he will be able to see the various mistakes they made and where he has improved it. He sometimes may also obtain a new idea which will determine the success of his own proposition.

Now to get the business it is not understood as very good practice to advertise for this work. However, if you give that work your earnest attention in a city you will find your fellow-lawyers will send business to you, and soon, with the service you are able to render, you will develop a business.

PLAN No. 787. REAL ESTATE PUT THEM THROUGH COLLEGE

The university was close to a large city and these boys determined to get a legal education, so they went into the real estate business and developed a small business which would pay their expenses. One was in the office, while the other did the outside work. They finally made arrangements for a stenographer. Their business continued to grow until in a short time they both enrolled in the university and took up the study of law. They did not miss a class, and maintained a high standing throughout their college course. During their university course,

their real estate business grew to great proportions, and before they had graduated they were very well to do.

PLAN No. 788. FARMER WINS SUCCESS

This farmer, who lives in eastern Washington, tells an interesting story of making a profitable place of his twenty acres of logged-off land:

"When I bought my land six years ago, I only had $15 to pay down, no team or anything to commence with, but I had faith in the land and I commenced to work.

"The first year I did not do anything on the land except to build a house, and I had to work out to support my family. The next winter I slashed and cleared some land in addition to cutting wood for a neighbor. The next year I broke up 8 acres with one horse and set out 375 apple and other trees, raised potatoes and other garden truck and bought a cow. The next year I raised garden truck and my wife and I ran a restaurant in the Y. M. C. A. in Spokane. The next year I broke up three acres more and planted this with the other land to potatoes, turnips, grain etc., working out as much as possible. Last year I sold $100 worth of crops from my eleven to twelve acres, raised grain enough for my two horses and two cows, and vegetables enough for my family; sold butter amounting to $100, and broke three acres more and sowed it to winter wheat.

"I have my land about paid for and have a good frame house of four rooms, a shed, barn, plenty of farm machinery, and about fourteen acres under cultivation. The stumps are not all out yet, but I hope to burn them this year, and get a few more acres

cleared up sufficiently to break. I find, after burning the brush, that timothy and clover will do well by sowing in the fall in the ashes in time for them to get a start, and the following year the same grows sufficiently for good pasture. In a year or two the stumps are rotted, so that the cost of clearing is very much reduced and at the same time the pasture is making good food for my cows; and if a small patch is cleared to furnish feed for the winter months, two or more cows will help very much in solving the problem. Of course, chickens have helped us, my wife doing the work with the chickens and milking the cows when I was away earning money. With the large amount of work to be obtained in this country, a man need not be idle any part of the year."

This is a good illustration of what a man with practically no money can accomplish.

PLAN No. 789. CURING A FARM OF THE CRAMPS

It seems a hopeless piece of work to try to bring back a farm when from over use its ability to produce is gone. The party in this article lived for years in the city and knew but little concerning soil until a real estate man sold him a farm of 42 acres.

After his house was up and about one-half of his farm implements purchased he found that his land would not produce very much. His 20 acres of corn made about 8 bushel to the acre. His peas did fairly well. He had just enough to winter his stock.

However he made up his mind to stick.

Government bulletins were secured, farmers institutes were attended, he asked the neighbors questions. He made his land his special study.

That year his wife taught school and he put in the

winter hauling. After the cowpeas he put in wheat which 10 acres produced 100 bushels for which he received $100.

He started in to enrich his land. Catch crops were raised and turned under to put humus into the soil and fertilizer was freely used. He had sandy loam which he claimed needed a great deal of petting. For six years he sowed rye and crimson clover in every acre of corn planted and plows this under in the spring for late potatoes, and follows that with wheat. After the wheat was harvested he sowed cowpeas or soy beans and plowed them under in early winter.

He uses some of his wheat straw for bedding which he mixes with manure and later is used as fertilizer. The balance of the straw is scattered in the wheat field during the winter.

Here is what the over used soil now produces:

50 to 60 bushels of corn to the acre.
20 to 25 bushels of wheat to the acre.
150 to 200 bushels of potatoes to the acre.

This farmer now owns 100 acres and rents another 100 on which he has an option to purchase.

He summarizes his success as follows:

Hard study
Some hard work
Vegetable matter put in soil
Potato crop
Other products made to pay farm expenses.

PLAN No. 790. BACK LOT MONEY

Millions of dollars are lost by people in cities not using their back yards for poultry. There are thousands of acres of idle land that could be made to

return a dividend. The thrifty Japs make every foot of soil produce. They farm mountains and hills that Americans would not touch. The Americans are wasteful, but since food has become so high they see that the land is the source of the bread of life, and we find many using their back yards for gardens or poultry.

Many raise a garden, and when fall comes buy pullets and keep them for winter eggs, selling the pullets in the spring, thus raising two crops off the same ground. By right methods, poultry and eggs are easily produced in back yards at a good profit. The day is coming when not only vacant town lots, but all back yards will be producing something of value. In some cities many have a few chickens on the roof.

Candy and Chickens

A man who conducts a candy kitchen in a large city has 400 hens in a building back of his store. These hens are kept in this building on both the first and second floors. He devotes two hours daily to this flock and they bring him in an income of $1,000 a year. The egg yield is due to comfortable quarters and a special system of feeding. He gets much feed at a low cost in this large city. He buys stale bread and skim-milk from creameries at reduced prices. He buys lawn clippings from the town boys at 5 cents per bushel. When the days are short he turns the electric lights on. He says the hens have to have a long day in which to work to turn out a good egg yield. He gets his highest prices for eggs during the winter, and it is at this time that he makes the most money from his hens. He has the White Leghorns. No roosters are kept among the flock to annoy the people by their early crowing.

Opportunity knocked at this man's door and he

heard. Opportunity is where you find it. Axiom has it that once, at least, opportunity knocks at every door, but for every time it knocks to make itself known, a hundred times it lies unobserved, while you pass unknowing. I wonder if any of you have heard Russel Conwell's great lecture, "Acres of Diamonds." If you have, you will always be the better for it, for therein he shows how we overlook our present opportunities for the things just a little farther off.

Get a Hobby

We need to open our ears for the jingle of coin which is in our back yards. Every man and every woman should have a hobby as a kind of recreation, occupation, something to enthuse over. Anyone with time hanging heavy on his hands is a misery to himself and a nuisance to other folks, and the best medicine for the disorder is a hobby. A hobby lends itself to the means of all, for just a few dollars invested by the humble amateur or as many hundreds by the wealthy man. You may not have an "acre of diamonds" as per Russel Conwell, but you have a small gold mine which you may work, right in your own back yards, if you want to.

PLAN No. 791. BECOME WIREMAN FOR U. S. SEE PLAN No. 217

PLAN No. 792. BECOME VETERINARIAN FOR U. S. SEE PLAN No. 217

PLAN No. 793. BECOME WEIGHT AND MEASURE ASS'T. FOR U. S. SEE PLAN No. 217

PLAN No. 794. ONE DOLLAR A DAY

During a recent vacation I saw a little girl seven years old sitting on a bench at the farthermost end of a golf course. By her side was a pail of water and a basket of red-cheeked apples. As the men playing golf passed this child, nearly all of them took an apple and a drink of water and placed upon the bench a nickel or sometimes a dime. I was told that the child often takes in a dollar a day for this service. How many families there are situated like this little girl who have not thought of making money through their proximity to a golf course or some other park or playground. How would a basket of ripe peaches, grapes, apricots, pears or plums be to a thirsty or hungry person, with even a few cookies tucked into a corner of the basket? These purchasers would not be likely to haggle about the prices they paid. If there are no particular gatherings of people near your farm, as was the case of the golf club, you have overlooked the opportunity of putting up a placard or sign near your house, stating that you have ripe peaches, apples, pears, plums, fresh eggs, or other farm products for sale in small or large amounts, and letting one of the children take charge of this place.

PLAN No. 795. HOW TO GET CUSTOMERS

This is a question that is most important to the farmer. All his profits depend on his ability to secure customers. The following experience will save much

time as well as money to the farmer. Here is a successful method which has been followed by a group of farmers who joined forces to market their crops. The same plan can be used by the individual farmer as well.

This group of farmers named one of their members to act as the Secretary Treasurer. This man attended to all soliciting by mail and distributed the first orders and all following orders were filled by the member who shipped the first order.

The first question was how to get the names of prospective customers. A rate and telephone book were secured. The classes they thought would be most easily interested were written to. Their reason for using the phone book was that a person should be so connected in a business and social way with the city as to have a phone before they be given consideration. This list others trusted and such people they too could afford to trust. With this list there was practically no loss.

To such, a general letter was sent outlining their service—what they had to sell and what they would have for future delivery each month in the year. These letters in about 10 days were followed up with other letters giving a special group of products.

The different seasons of the year are considered. It may be canning time or near Thanksgiving or Xmas. If it is near Thanksgiving, then a list of dressed turkey, an assortment of fancy vegetables, hams, honey, nuts and pecans. And the prices are such as to interest the consumer. The farmer has not the overhead expense of the middle man—hence they can give a much better price.

A card file was kept which gave complete information as well as prospects and customers. Card gave names, address, business connection, salary and

rating of each person. When a customer is made out of the prospect a red slip is attached to the top of the card, and a number is given, it corresponding to a page in order book where shipment record is kept.

This office is conducted by the Secretary Treasurer.

When orders come in for which they cannot themselves fill, they hustle out to other farmers and purchase the product and thus fill their customers orders. In connection with this article read over the parcel post service and apply same to your shipments.

PLAN No. 796. SHEEP PROFITABLE

A Kansas farmer made money in 1917 when the corn crop was unprofitable and here is how he succeeded.

Four years before he visited a fair where there were sheep and these were the first sheep he had ever seen so he bought three. A few days later he traded one shote for another sheep and in a few more days he gave up his Jersey cow for seven five-year old ewes and eight lambs. Soon he had gathered a flock of 59 sheep, including ewes and lambs of all ages, sizes and shapes. His interest grew until he had collected about 1000 head of sheep which averaged 30 lbs. to the head.

He allowed them to graze in a pasture of alfalfa and when this was gone he fed them at the rate of 2 lbs. of feed per head. In 100 days he nearly doubled his money. He took out the scrub ewes and wether lambs and fed them 55 days. Those he fed on corn weighed 72 lbs. per head and brought seven cents per lb.

The spring of 1917 he purchased 500 head. When

the grass became too short he turned them into the corn to take care of themselves until November.

His investment of $8,000 through these sheep grew to $17,600. He has about 1,000 sheep and when the ewes have a good milk flow and do well he does not feed, otherwise he gives them oats. He says:

"I believe it is best to use self-feeders, feeding alfalfa-meal, corn chop, corn and kafir, or corn and barley mixed. I tried such a mixture with 100 head and for two days fed alfalfa-meal and corn mixture in the proportion of 2 lbs. of alfalfa for one pound of mixture. The next three or four days I fed half and half. The fifth day there was less meal, and on the sixth day I was feeding two-thirds corn chops and one-third alfalfa-meal. It took fifty-five days to feed them out. I did not keep track of the gains they made, but they did exceedingly well."

This Kansas man is of the opinion that 1,000 head is all one man should handle since the lambing season takes all his time.

PLAN No. 797. BECOME WEIGHT CLERK FOR U. S. SEE PLAN No. 217

PLAN No. 798. WAREHOUSE INVESTIGATORS FOR U. S. SEE PLAN No. 217

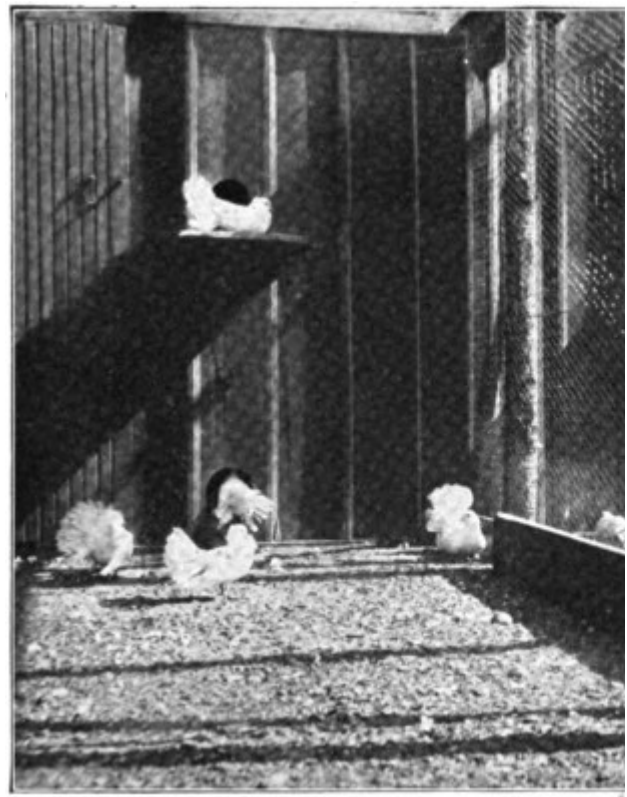
PLAN No. 799. BECOME WATCHMAN FOR U. S. SEE PLAN No. 217

PLAN No. 800. WHAT SHE DID WITH CHICKENS

This lady in Spokane, Washington, kept an accurate account of the cost of her poultry and reports the following average results per year:

Number of eggs per hen	105
Price received for eggs	$0.37
Cost of feed per hen	$1.74
Profit per hen from eggs	$1.60
Total profit per hen, including eggs, fries and poultry sold	$2.13

This is what you can do if out of employment or want to make your back yard and shed produce profit. The above figures are reliable. The example of what other people have done is the best argument in the world that you can do as well. These people do not bear charmed lives, but they are people who do not take a little discouragement as a barrier. The government stands ready to help you with excellent literature on this subject. Write to the Department of Agriculture, Washington, D. C.



Plan No. 801. Profitable

PLAN No. 801. SQUABS

Do you wish to raise squabs for a living? If so the first thing to do before you waste a cent is to gather all the information possible about this. Drop a letter to the United States Government and they will give all the information they possess about squabs. Read all you can find on this subject; also visit someone already in the business.

When you begin it is best to start small, say 5, 10, or 20 pair which you should purchase from a reliable

brooder who will guarantee that the pigeons are perfectly mated, and that he will take them back in 3 months if not satisfactory. The age of your pigeons should be 2 to 3 years old.

If you have 10 pair of brooding pigeons you should give them a rat-proof room, 6 to 7 ft. by 5 ft. and about 6 ft. high. If larger it would be better. Breeding quarters should have access to a wired flying cage the same width and 16 ft. long by 8 ft. high. Cover cage with one inch mesh galvanized wire netting so that the sparrows will not give trouble.

The breeding quarters should have at least 20 nesting boxes for 10 pair of pigeons. Store boxes will do—not less than 10 to 12 inches square, with a 4 to 6 inch strip fastened on front to keep the little ones from falling out also to give privacy during incubation. Or if you wish, earthenware or wood fiber nest-bowls may be used, with partitions one ft. square.

The outside cage or flight should have a shelf running the length of the cage where the birds may exercise and parade. Put in bottom of flight about 2 inches of ashes or gravel so it will be dry.

Feed the birds in the breeding place and keep the grain dry. Also provide water in the breeding house so that birds will not soil the water. Bath pans must be outside in the flight.

Have pigeon loft face south, with plenty of light and air but free from drafts. Windows should all be on the south side. Pigeon house should be one ft. to 18 inches above ground to avoid trouble from rats.

To protect against cold in the winter have floor made double, bottom of rough board and top of matched flooring. This is much warmer than concrete.

Ten pair of pigeons in 6 months will produce

about 30 to 40 squabs. If you wish squabs for breeders remove them from parents when 6 weeks old. Put in pen $1^1/_2$ ft. square and twice as much space outside.

It will cost about $2.25 to feed a pair of pigeons and 6 pair of squabs until they are 4 weeks old—which is the age to market them. If the sale price of the 6 pair is $3.00 you would realize a profit of 75 cents per breeding pair.

PLAN No. 802. 52-ACRE MICHIGAN ORCHARD

Fourteen years ago the first of March, I purchased twenty-five acres one-half mile south of Bangor, Michigan, and two weeks later moved onto it from Illinois.

Two years after moving onto this farm I set out an orchard of 500 trees, planting them twenty feet each way. This orchard was set to Duchess, Yellow Transparent, Wealthy, Grimes Golden, Snow and Jonathan. This orchard was cultivated each year until the first of August, then a cover crop was planted and turned under the following spring, until it was six years old. Then it was left to go into a natural seed, which is blue grass and red top.

These trees had made such a wonderful growth that they were large enough to bear a good crop at six years old. This orchard has been mowed each year since going into sod, and at harvesting time when the trees were six years old we took $340 worth of apples from the orchard, or $68 per acre. From that time on this orchard has been doing better each year, and when nine years old we made $90 per acre from it; at ten years $100 per acre, and the past season, at eleven years old, we sold $1,200 worth of

apples, a return of $240 per acre.

This orchard is protected by timber on the west and north sides. It is sandy loam soil. The first trimming these trees received was when they were six years old, and from that time on they got an annual moderate trimming and received thorough spraying. Our spray has been lime sulphur and arsenate of lead. We found that we could not grow wood and fruit spurs at the same time, hence no trimming was done until the trees were large enough to bear.

PLAN No. 803. BECOME WAREHOUSEMAN FOR U. S. SEE PLAN No. 217

PLAN No. 804. BECOME TRANSPORTATION ASSISTANT FOR U. S. SEE PLAN No. 217



Plan No. 805. Climbing with

PLAN No. 805. CLIMBING WITH THE GOATS

Two men, both traders of rare ability, one had land located in the Ozark Mountains, Douglas County, Missouri, and the other owned level but dry land in the West. Each thought his land so poor that he could not lose in the trade.

The party whom we are most interested in took the Missouri land.

When his taxes were due he visited his land and

found he had received in this trade some very beautiful scenery. In places it was so rough that he had to hold on to the trees to keep on his land.

The party showing him the land told him that this was good land for goat raising. This gave him an idea—goats would clean the land, build the soil and they required but little attention. And the goats would thrive in such a country. One advantage the land possessed was a good supply of water.

Thirty days after receiving this idea he put over fifty goats on the land and fenced his several hundred acres.

In five years his herd of fifty goats had grown to four hundred, he now owns 1300 acres. The goats cleaned all under brush and kept all sprouts down and deadened the timber. The goats had prepared this land so that orchard grass, native blue grass and clover was planted and grew in such abundance that the owner was able to take care of 100 head of cattle in addition to the goats.

The owner went into partnership with a party who receives one-half of the increase of the goats and cattle.

He states that no man will find land that flows with milk and honey now, but that cheap land with a good supply of water offers a great opportunity to a young man with a herd of goats and a little money to run him for a couple of years. In his 1300 acres he had some good land in the valleys where he raises alfalfa and clover.

PLAN No. 806. NEGLECTED ORCHARD PAYS PROFIT

C. F. Mason, of Hickman Mills, Missouri, has made

a fortune from a forty acre apple orchard that the neighbors swore could not be made to pay. Up until the time Mr. Mason took hold of its management, this forty acres had never been known to pay more than $200 per year. His profits the first season totaled $2,000; the next year, $2,500; the third season, $8,100, and in the eight seasons he has rented this tract he has banked more than $40,000, in spite of the fact that he had gone up against two pretty disappointing seasons.



Plan No. 806. Plow Deep While S

It was 1910 that Mr. Mason quit the trail of the grip to rent this forty-acre orchard. When he went to the owner and asked if he could rent it, they were delighted, for they thought they had discovered a new brand of fool who was willing to part with his time and money. Mr. Mason made his own terms the first year; since then he has made so much profit with the orchard that the owners have been very fair in their terms, since he had converted a millstone into a bank.

The second day after the contract was signed the renter with a force of men went into the orchard, consisting of fifteen-year-old trees, and the battle for a crop started. The trees were then in bloom and the work had to be done in quick order. It was. The first year the profit of $2,000 permitted the back-to-the-lander to purchase equipment needed to handle the orchard along practical lines.

The topnotch production was reached in 1912, when more than 15,000 bushels were harvested, selling for $8,100. More apples were sold from the orchard in 1918. In 1914, due to drought, the crop was reduced to about 9,500 bushels, which sold for $6,000.

Record of Sprays

Mr. Mason says that 10 per cent of the orchards in Missouri and Kansas produce 90 per cent of the apples of a marketable type. His aim from the start was to have as near a 100 per cent producing orchard as possible. “I sprayed first in the spring at cluster bud time,” he says, “when the first leaves were about the size of a mouse’s ear. That was primarily for scab. I used one-gallon of lime-sulphur solution to twenty-five gallons of water.

“I sprayed the second time just as the blossoms

were dropping. That was for the codling moth. I used one gallon of lime-sulphur to forty gallons of water, with two pounds of paste arsenate of lead, or one pound of dry arsenate. The third spraying was the same as the second, and was applied two weeks later to control the curculio. The fourth spraying was done about the first week of July, using the same formula as in the second and third applications, to control the second brood of codling moths and side worms. If cankerworms are prevalent I use three pounds of paste arsenate of lead, or half in dry form, to fifty gallons of water.

"That is the spring spraying. If the San José scale is present, the trees must be treated in winter, after the leaves drop and before they make their appearance in the spring, spraying once with a strong solution of lime-sulphur in proportion of one part of lime to ten parts water. This application is very good."

Cultivation and Pruning

Mr. Mason believes in cultivation for apple profits, since he has demonstrated that his section of the country demands this treatment. "Cultivation of an orchard is just as necessary as cultivating corn and other crops," he says. "Moisture must be present in the ground and the weeds must be kept down to prevent drinking up the moisture and fertility the trees need. The surface must be thoroughly tilled, too, to permit the moisture to enter the ground. Fall plowing of orchards has many great advantages.

"Another very important thing is the pruning. Remove the surplus wood and clear the tree out so that the sunlight and air strike it. Never cut out so much the sun will strike the big limbs. Don't do all the pruning at once. Pruning should extend over a period of years. All cross limbs and limbs that are in

the tree's way should be removed, not all that are in your way.

"Pruning is an art. I advise all orchardists who want to engage in the business, as a business, to take a course in horticulture, either in some recognized agricultural school, or take a broad course at home. Watch the trees and their needs—study them closely. Each tree might require different treatment. In one tree we pruned properly in our orchard, the size of the apples was doubled over former years. The value of the apples was increased, as was the color and flavor."

Mr. Mason starts spraying young orchards early, especially the first year. He says to do so prevents fungus from getting a start. He sprays the young trees in the winter also. "It is not advisable to set young trees out in an old orchard," continued Mr. Mason. "We tried it and failed. The trees either died or just simply refused to live. I put new trees on fresh soil that has been rotated in various crops for at least five years."

PLAN No. 807. BECOME TESTING ENGINEER FOR U. S. SEE PLAN No. 217

PLAN No. 808. A SYSTEM OF FARM RENTAL

Many farms are ruined because their owners have not understood the drawing up of a proper agreement and thereby including proper safeguards.

Many retired farm owners are located in the various small towns and cities with nothing to do who have rented their farms for cash and they have nothing to do but worry about the way the farm is

going back. Many tenants follow a soil mining plan—get out of the farm all that is possible today and let tomorrow take care of itself as tomorrow the owner will have it back.

The following kind of a rental system has been followed with good results: This owner rented his 400 acre dairy and stock farm and it paid him in 1917—7.89% on a $25,000 investment, after all expenses had been deducted. At the same time his land has improved in production and value. Under this plan the tenant's share amounted to $2,838.60 while the net earnings of the owner was $1,974.12 which was exclusive of his personal, managerial labor.

The lease contained the following conditions as to owner:

Active management of farm rests with the owner.
Financial and business operations are handled by owner.
Owner furnishes all seed and one-half of fertilizer.
All horse power, machinery and equipment.
All feed except one-half ensilage which tenant furnishes.
Twenty-five to thirty dairy cows and one registered bull.
Tenant receives one-third of gross income and owner two-thirds of gross income.
Which includes one-third share in all young stock.

TENANT

Provides all labor which consists of own service and two hired men by the year and labor necessary for harvesting and housing crop.
Bears one-third of stock loss.

Pays 6% interest on one-third of value of cows.
Keeps machinery and equipment in good condition and pays for necessary repairs.
All buildings to be kept in good repair.
Holds in check all weeds and filth along fence rows and in field.
Pays one-third of cost of delivery of milk to city distributers.
Furnishes one-third of fertilizer.
Furnishes one-third of thrashing and silo filling bills.

LEASE COVERS

Apportionment of undivided property or improvement if at any time contract should be terminated.
Runs for 10 years but may be terminated at the end of the year.
If tenant does not live up to agreement, farm automatically returns to owners complete control.

Owner can then hire such labor as is necessary to carry on business to end of year at which time lease will expire and tenant's heirs or assignees would be paid their net share of the income due after expenses are paid.

The renter likes the plan for the following reasons:

It gives tenant residence for 10 years. No expense for frequent moves.
Live stock as dairy cows gives tenant income each month.
Tenant capitalizes his labor.
Tenant on farm long enough to gain the advantage of added benefits from live stock farming and the application of stable manure to fields.

The owner likes it for the following reasons:

The land is improved constantly.

Allows him to engage in other business and follow farming evenings and Saturdays.
Plan urges tenant to do his best to make grain and milk crops as large as possible.
Plan assures the owner that the live stock and farm equipment is well cared for.

The best tenant is a young married man experienced, competent and who likes the farm and wants to own a farm himself some day.

PLAN No. 810. BUILD AND SELL FARM HOME CONVENIENCES

The Agricultural Department of the United States put out a booklet in which are given the following ways of making Farm Home Conveniences. The farmer can by building these home articles save much money, but city people can also profit by doing the same.

There is no reason why men who are handy at making such articles cannot follow these plans set forth and manufacture one or several of same and thereby derive a comfortable living by selling them. Large fortunes have been made from most of the articles herein set forth by individuals or companies in the country. Along with each article a form letter should be prepared concerning the article made.

PLAN No. 811. THE KITCHEN CABINET

For plans 811 to 828 inclusive we are indebted to the U. S. Dept. of Agriculture

Contribution from the States Relations Service
A. C. TRUE, Director

A carpenter without his bench loses much time in getting the right tools and in putting them away. A

chemist cannot do systematic laboratory work without a well-arranged desk. A kitchen cabinet is just as important to the housekeeper as the bench to the workman or the laboratory desk to the chemist. With it the housekeeper can sit comfortably down with her whole kitchen workshop within easy reach. It saves walking to and fro to gather up this thing and that, to prepare the food. Every kitchen should have a stool of the right height to enable the worker to sit at her work at the cabinet. The cabinet must be made of good wood, well seasoned. This is the most important consideration. Poorly seasoned wood warps and swells and is a constant annoyance in opening and closing drawers and doors.

A convenient sized cabinet is 6 feet 3 inches high to the top of the closet, 31 inches high to the top of the table. It is 21 inches deep and 48 inches wide. The part of the cabinet below the table should contain flour bin, large drawer, rack, and dough or pastry board. The bin is fastened to the frame with loose-pin hinges. By removing the pins the entire bin can be removed, cleaned, and replaced. The bin can be lined with tin to make it moist, insect, and mouse proof. The dough board should be made of wood that is tasteless and odorless and should be fitted well in the opening just below the table. A batten is tongued and grooved on each side of the board to prevent it from warping. The roomy board can be used for small utensils. The open space below the drawer can be occupied by the kitchen stool or the home-made fireless cooker when they are not in use.



A time and labor saver.

Pie pans, lids, and covers have a most convenient place in the rack below the drawer. A drop table 21 inches wide and 19 inches long increases the table surface. This table is supported by inexpensive folding brackets.

The upper part of the cabinet consists of a closed

compartment, three drawers, three open shelves, knife rack, and a row of screw hooks for hanging utensils. The closed compartment is for package goods and large utensils. The drawers are for kitchen linen and other things needed in daily use. The lower shelf is 5 inches in depth, while the upper shelves are $7^1/_2$ inches. On these shelves are kept coffee, tea, sugar, and spice jars. Three inches below the lower shelf there is a strip $1^1/_2$ inches wide which holds the screw hooks. The knife rack is made by sawing slashes 1 inch deep in a piece of material 2 inches wide.

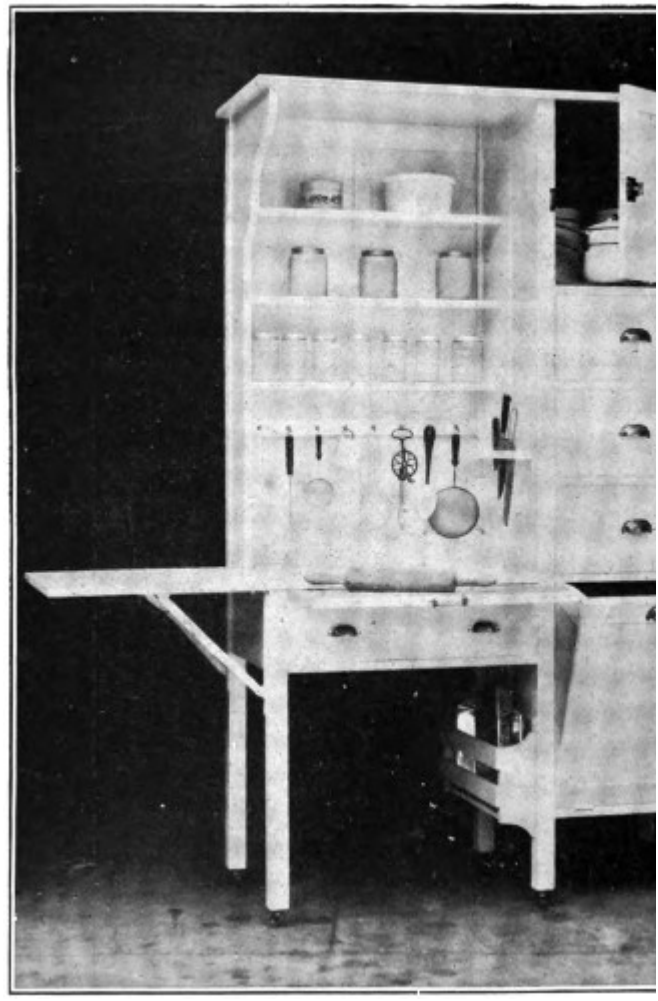


Fig. 1.—Kitchen cabinet.

PLAN No. 812. THE FIRELESS COOKER

Fireless cookers are now being made and used in hundreds of country homes. What is more pleasing to the farm woman than to put her dinner in the fireless

cooker before she drives to town to market her products, and upon returning find it ready for serving?

The fireless cooker offers several advantages. The first economy of time, as the housekeeper may leave the food cooking without worrying about the results while she is engaged in other household duties or visiting her friends.

Some foods are improved by long cooking at relatively low temperature. The texture and flavor of tougher cuts of meat, old, tough fowl, and ham are improved by slow cooking. Cereals, dried legumes, and dried fruits are more palatable and wholesome when cooked for a long time. Soups and stews are delicious when cooked in the cooker. Baking, however, can not be done very conveniently nor satisfactorily in the ordinary homemade fireless cooker.



Fig. 2.—Materials assembled for makir

In some sections of the country economy of fuel must be an important consideration. The food for the cooker may be started on the wood or coal range when the morning meal is being prepared. In warm weather the use of the fireless cooker and a kerosene stove means not only economy of fuel, but also comfort.

The food to be cooked is first heated to boiling point on the stove in the cooking vessel and then this vessel, covered with a tight lid, is quickly placed in the cooker, where the cooking continues. The cooker is so constructed that the heat does not escape. For

long cooking it is necessary to place in the cooker under the vessel a hot radiator. A soapstone is the best radiator and can be purchased at most hardware stores for 50 cents. A stove lid, a brick or disc made of concrete, heated and placed in the cooker, may serve as the radiator.

Directions: A tightly built box, an old trunk, a galvanized-iron ash can, a candy bucket, a tin lard can, and a butter firkin are among the containers that have been successfully used in the construction of fireless cookers.

The inside container or nest which holds the vessel of hot food may be a bucket of agate, galvanized iron, or tin. This nest must be deep enough to hold the radiator and the vessel of food but not large enough to leave much space, as the air space will cool the food. The inside container must have a tight-fitting cover, and straight sides are desirable.

The packing or insulation must be of some material which is a poor conductor of heat. The following materials may be used and they should be dry: Lint cotton, cotton-seed hulls, wool, shredded newspaper, Spanish moss, ground cork, hay, straw and excelsior.

Sheet asbestos $^{1}/_{8}$ inch thick and heavy cardboard have proved to be the best lining for the outer container and the wrapping for the nest. Heavy wrapping paper or several sheets of newspaper may be used for the lining of the outer container, but the nest should be wrapped with asbestos or heavy cardboard to prevent the hot stone from scorching or burning the packing.



Fig. 3.—The completed firele

1. It is well to have the outside container large enough to permit four inches of packing below and around the sides of the nest. If a cooker is being made with two nests, six inches of packing should be allowed between the nests. Pack into the bottom of the lined outer container four inches of the packing. Place the nest or inside container wrapped with asbestos or heavy cardboard and hold steady while the packing is put around tightly and firmly until it reaches the top of the nest.

2. Make a collar, as shown in the illustration, of cardboard, sheet asbestos, or wood to cover the exposed surface of the insulating material. This collar should fit tightly.

3. Make a cushion which when filled with packing will be at least four inches thick and will completely fill the space between the top of the nest and the lid of the outside container. It should fit against the top

tightly enough to cause pressure when the lid is closed.

4. The outside of the fireless cooker can be made more attractive by staining or painting it. The lid may be held in place by screen-door hooks and eyes. The cooker may be placed on castors so that it can be easily moved.

Selected recipes for preparing food to be cooked in the fireless cooker may be found in Farmer's Bulletin 771, Homemade Fireless Cookers and Their Use. Write the Department of Agriculture, Washington, D. C.

PLAN No. 813. SPONGE BOX OR BREAD RAISER

In making bread the housekeeper often finds it difficult to hold her sponge or dough at the right temperature so that it will rise in a shorter period of time. She will find a sponge box or bread raiser a great help in keeping the right temperature. Such a box can be made from an ordinary dry-goods packing box.

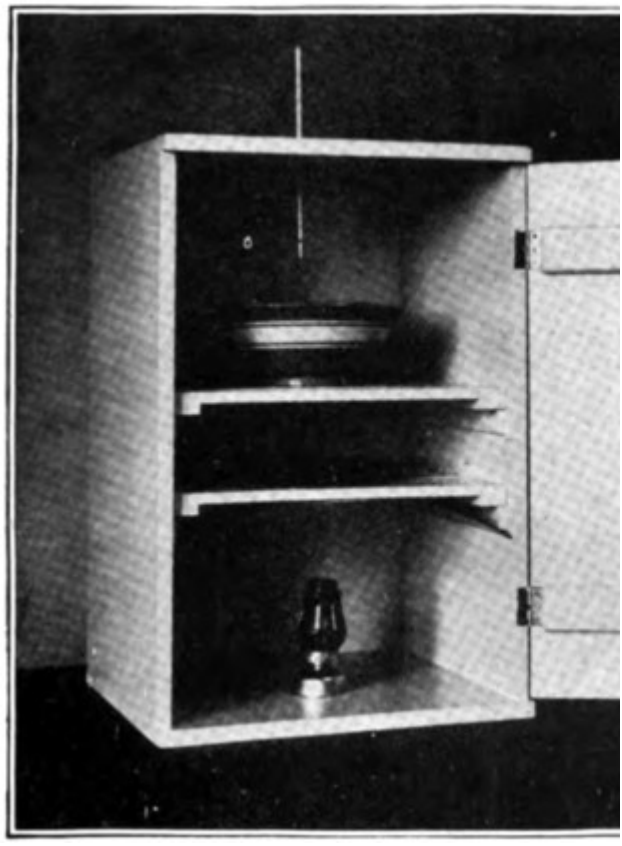


Fig. 4.—Sponge box

A box 20x20 inches is a convenient size. About ten inches from the bottom of the box a shelf made of slats or strips of wood rests on cleats fastened to the sides of the box. A second shelf is placed four inches above the lower one. The shelves can be removed when cleaning the box. Below the lower shelf a sheet of galvanized iron slightly wider than the shelf is inserted. It is curved in order to make it slip in and stay in place securely. This prevents scorching the lower shelf when a lamp is placed below and also

helps to distribute the heat more evenly. The door is hinged and fastened with a thumb-latch or hook and staple.

Several small holes are bored in the lower and upper parts of the sides and in the top of the box to promote circulation of air. A cork which has been bored through the center to admit a straight thermometer is inserted in one of the holes in the top of the box. A Fahrenheit chemical thermometer that registers as high as 100 degrees can be used. Such a thermometer may be ordered through a hardware dealer or directly from an instrument dealer.

To avoid all danger of fire, the box should be lined with asbestos or tin when a kerosene lamp is used for heating the box. If an electric light is used, the lining is not needed. A 16-candlepower light will heat the box nicely. A small and inexpensive night lamp is placed in the bottom of the box and a shallow pan of water is placed on the lower shelf so that the air in the box will be kept moist.

The bowl of sponge or pans of dough are placed on the upper shelf. The temperature of the box should be kept as near 86° F. as possible (80° to 88° F.) when bread is being made in the quick way. If a sponge is set overnight 65° to 70° F. is the better temperature until the dough is made in the morning, after which the temperature may be increased to 86° F. The temperature in the box may be varied by raising or lowering the flame of the lamp or by using warm or cold water in the shallow pan.

PLAN No. 814. DISH DRAINER

Perhaps no time spent in housework is more begrudged by the housekeeper than that spent in washing and wiping dishes. A dish drainer not only

saves time and labor but it does away with the too often insanitary dish towel.

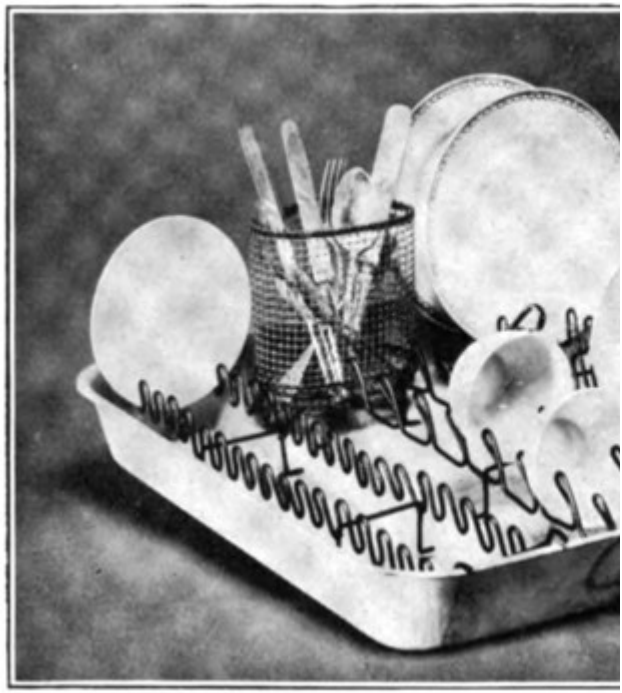


Fig. 5.—Dish drainer

A most satisfactory dish drainer can be made by using an ordinary bread or biscuit pan and racks made of soft No. 12 or 14 wire. By using a pair of pliers the wire can be bent into the proper shape for forming the racks. The racks fit into the pan and hold the dishes out of the water. The compartment for silver is made of poultry netting. This compartment could be made of screen wire or a tin can with holes in the bottom might be used.

After the dishes are washed they are stacked in the racks and scalded with hot rinsing water. The pan

catches the drip, and the dishes upon standing dry clean and lintless. If the drainer be used on the drain board of a sink a small hole can be made in the pan and the drip drained immediately into the sink. The wire racks can easily be removed so that the pan can be used for other purposes.

PLAN No. 815. HEIGHTS OF WORKING SURFACES

Kitchen tables and the bottom of sinks are usually too low for working surfaces when the housekeeper is standing. Low working surfaces are often responsible for tired backs and rounded shoulders because of the undue stooping and the strain on the arms and shoulders. The following figures show the proper level of working surfaces for the height of the housekeeper:

Height of woman.	Proper height of working surface. Inches.
4 feet 10 inches	27
5 feet	28
5 feet 2 inches	29
5 feet 4 inches	30
5 feet 6 inches	31

The kitchen table should be raised to the proper height by the use of blocks of wood. Different types of blocks for raising the height of tables can easily be made by you and sold:

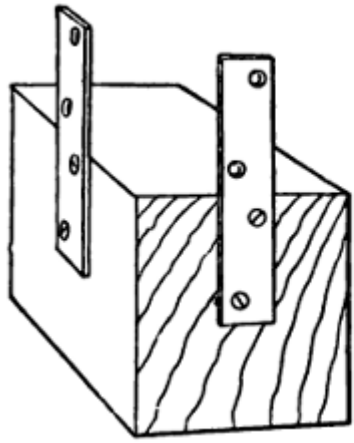


Fig. 6.—Blocks for raising

(a) A block of wood with a socket in which the table fits securely.

(b) A block of wood with metal strips and screws or nails for fastening the table legs, or the cabinet table.

PLAN No. 816. SERVING TRAY

The serving tray is a strength and time saver. The tray saves many trips between the dining room and kitchen, both in serving and clearing away meals, especially in a large household where many dishes must be handled. The top and shelf spaces are sufficient to remove all dishes to or from the table in one trip. It saves steps in serving refreshments at social occasions. It is invaluable to use as a bedside tray in the sick room. The tray when well made is attractive as well as useful and may serve as a reading table or flower stand.

The upper part of the serving tray is box shaped, 16 inches wide and 26 inches long. This is supported

by four legs $1^{5}/_{8}$ by $1^{5}/_{8}$ inches which measure 31 inches from the floor to the top of the tray. The top of the tray or the lid of the china compartment is edged by a $1^{1}/_{4}$ inch molding. The china compartment is $4^{1}/_{2}$ inches deep and is painted white within. On the sides of this compartment are little screw hooks on which cups may be hung. There is a space in the compartment for serving dishes for six.

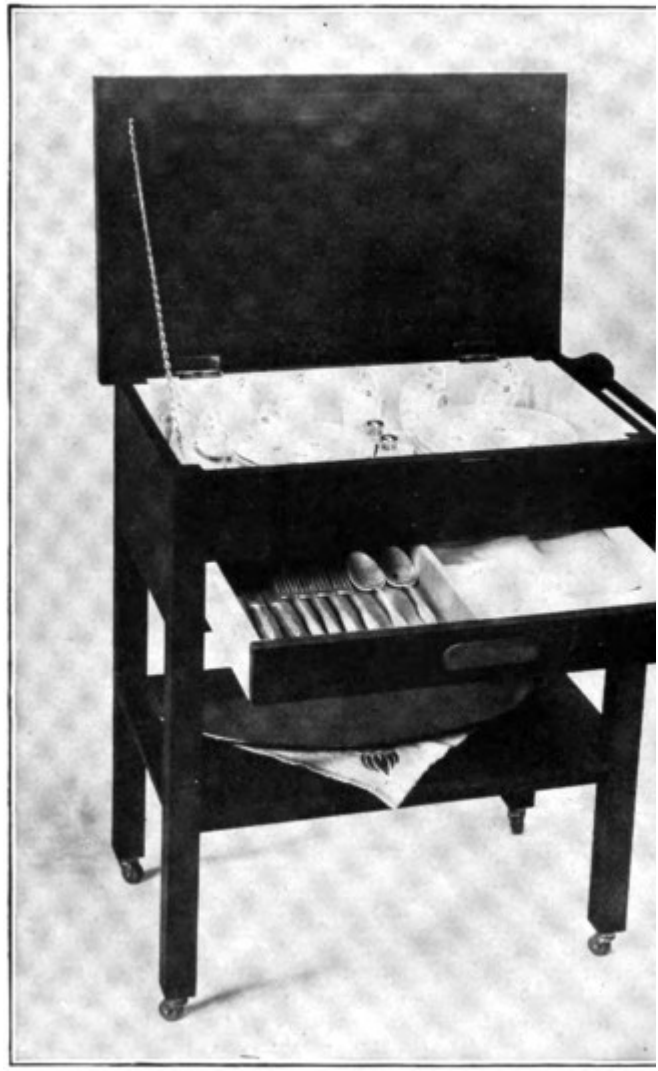


Fig. 7.—Serving tray, opened.

Below this serving compartment is a drawer 2 inches deep, which is divided in two parts. One side is used for linen and one side for silver. The side used for silver is lined with dark-colored felt or

outing flannel.



Fig. 8.—Serving tray, closed.

In the space below the drawer a large undershelf is placed. The serving tray is put on noiseless swivel castors, thus allowing the table to turn completely around, which is a great convenience. Instead of castors, small swivel wheels or the small wheels of a baby carriage or toy wagon may be used. A tray made by the dimensions given above is a convenient

size and one that will go through doorways without danger of bumping.

PLAN No. 817. FOLDING IRONING BOARD

The ironing board can be fastened up against the wall and be put out of the way when not in use. It should be made of well-seasoned 1 or $1^1/_4$ inch material. A board of convenient size can be made by the following dimensions: 4 feet 8 inches long, 15 inches wide at the attached end, and 8 inches at the free end. About two inches from the attached end the board begins to taper gradually. The free end is rounded.

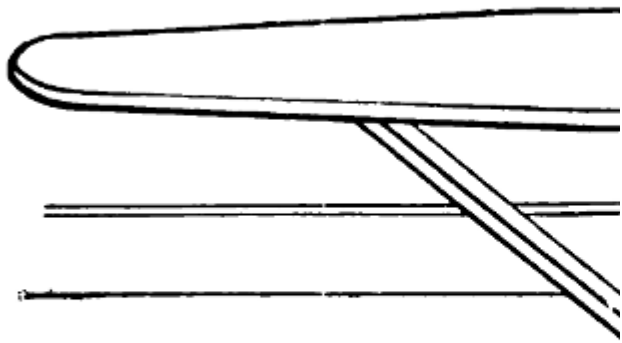


Fig. 9.—Folding ironing l

A strip $1^1/_4$ by 4 inches by 15 inches is securely fastened by screws to the wall at a convenient height. The height at which the board is placed varies with the height of the user. For a woman of average height it should be about 31 or 32 inches. The board is hinged to the wall strip with two No. 2 butt hinges.

The leg or brace, made of material 1 inch thick and 4 inches wide, is fastened with a No. 3 butt hinge to a strip of board 1 by 4 by 8 inches. The board strip is screwed to the underside of the board eleven inches from the free end. The length of the brace depends upon the height of the board, and when the board is in position the brace rests against the baseboard of the wall. Skirts may be easily ironed without changing the position of the brace. A piece of galvanized iron may be tacked to the board, on which the hot iron may rest when not being used. The board is folded up against the wall and may be held in place by using the upper part of the rack for holding the portable ironing board.

PLAN No. 818. RACK FOR THE PORTABLE IRONING BOARD

The ironing-board rack or holder may be attached to the wall or to the inside of a closet door to hold a portable ironing board when not in use. The upper part of the holder is made of $2^1/_2$ inch material and is 5 inches in depth. It is 12 inches across the top and is shaped to fit the contour of the smaller end of the ironing board. In the center is a button which holds the top of the board in place. The button is made of metal and so shaped as to give it a spring and to

provide a finger hold for easy movement. The upper part of the rack or holder is screwed to the wall or door.

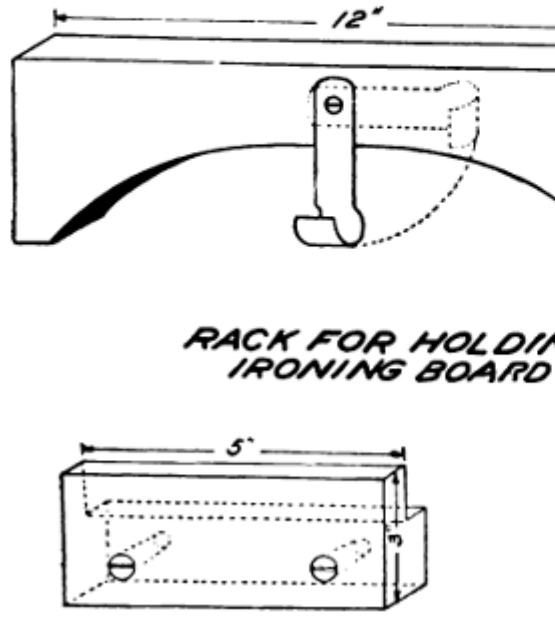


Fig. 10.—Rack for h

The bottom or lower part of the rack is 5 inches wide and 3 inches in depth, and is made of $2^1/_2$-inch material. It is rabbeted on the side next to the wall. An inch rabbet is cut into for a rest for the ironing board. This part of the rack is fastened with two screws to the wall or door.

PLAN No. 819. ICELESS REFRIGERATOR

A very useful convenience for the farmhouse, where ice is not obtainable, is the iceless refrigerator. It will keep meats, fruits, and vegetables cool, and will extend the period for keeping milk and butter. It can also serve as a cooler for drinking water. In homes where large quantities of milk and butter are to be kept, it would be well to have one refrigerator for milk and butter and another for other foods, as milk and butter readily absorb odors from other foods. It costs very little to build the refrigerator and nothing to operate it.

Construction: A wooden frame is made with dimensions 42 by 14 inches and covered with screen wire, preferably the rustless kind, which costs little more than the ordinary kind. The door is made to fit closely and is mounted on brass hinges, and can be fastened with a wooden latch. The bottom is fitted solid, but the top should be covered with screen wire. Adjustable shelves can be made of solid wood or strips, or sheets of galvanized metal. Shelves made of poultry netting on light wooden frames, are probably the most desirable. These shelves rest on side braces placed at desired intervals. A bread baking pan, 14 by 16 inches, is placed on the top and the frame rests in a 17 by 18 inch pan.

All the woodwork, the shelves, and the pans should receive two coats of white paint and two coats of white enamel. This makes a very attractive surface and one that can be easily kept clean. The screen wire may also receive the coats of enamel, which will prevent it from rusting.

A cover of canton flannel, burlap, or duck is made to fit the frame. Put the smooth side out if canton flannel is used. It will require about three yards of the material. This material is buttoned around the

top of the frame and down the side on which the door is not hinged, using buggy hooks and eyes or large-headed tacks and eyelets worked in the material. On the front side arrange the hooks on the top of the door instead of on the frame and also fasten the cover down the latch side of the door, allowing a wide hem of the material to overlap the place where the door closes. The door can then be opened without unbuttoning the cover. The bottom of the cover should extend down into the lower pan. Four double strips, which taper to 8 or 10 inches in width, are sewed to the upper part of the cover. These strips form wicks that dip over into the upper pan.

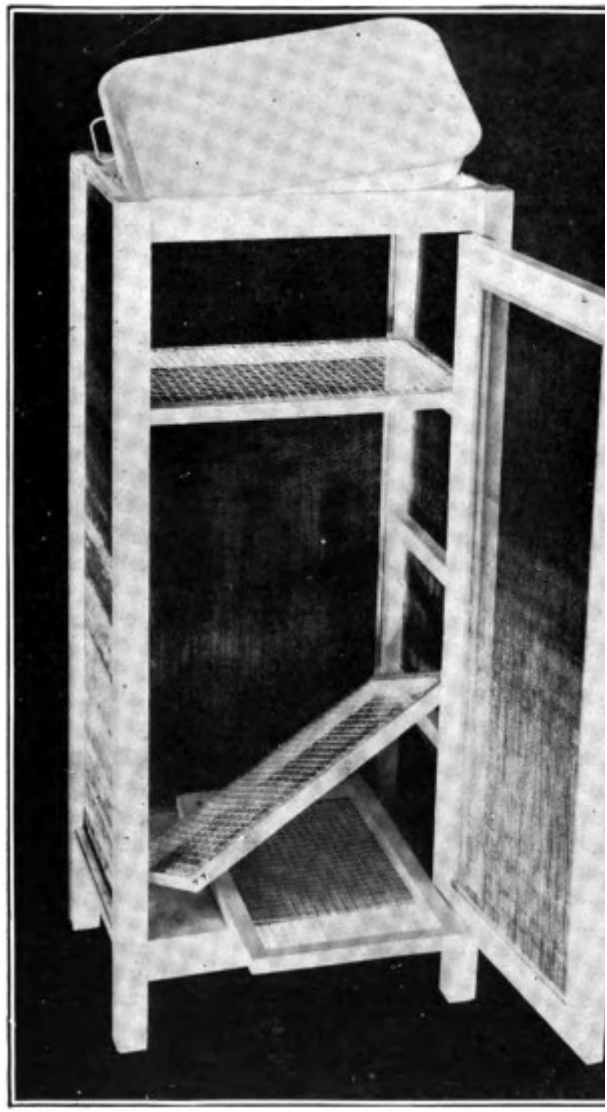


Fig. 11.—Framework of the iceless refrigera

The dimensions given make a refrigerator of very convenient size for household use and one with sufficient evaporating surface, but it is not necessary

to follow strictly these dimensions. If a larger capacity is desired, the height of the refrigerator can be increased.

Operation: The lowering of the temperature of the inside of the refrigerator depends upon the evaporation of water. To change water from liquid to a vapor, or to bring about evaporation, requires heat. As evaporation takes place heat is taken from the inside of the refrigerator, thereby lowering the temperature of the inside and the contents.

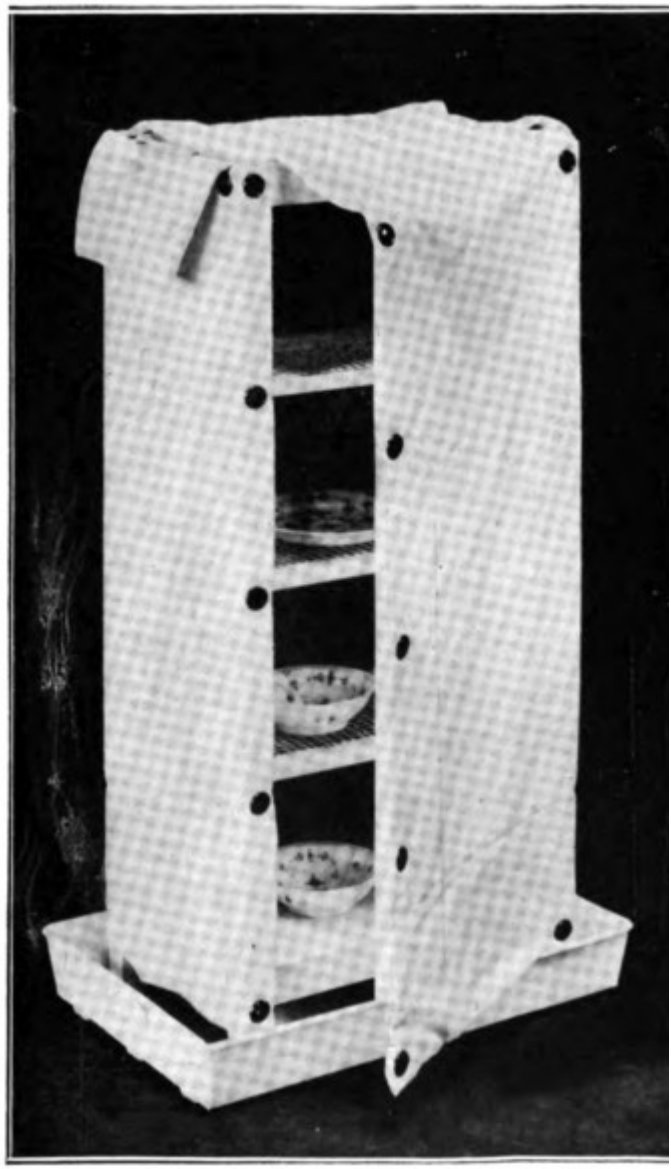


Fig. 12.—The completed iceless refrigerator.

Keep the upper pan filled with water. The water is

drawn by the capillary attraction through the wicks and saturates the cover. Capillary action starts more readily if the cover is first dampened by dipping it into water or throwing water upon it with the hand. The greater the rate of evaporation the lower the temperature which can be secured; therefore the refrigerator works better when rapid evaporation takes place. When the refrigerator is placed in a shady place in a strong breeze and the air is warm and dry, evaporation takes place continuously and rapidly and the temperature has been known to be reduced to 50° F. When it is damp, and the air is full of moisture, the refrigerator will not work as well, since there is not enough evaporation. More water will find its way to the lower pan, but it will be drawn up into the covering by capillary attraction when the air again becomes drier.

Care of Refrigerator: The refrigerator should be regularly cleaned and sunned. If the framework, shelves, and pans are white enameled they can more easily be kept in a sanitary condition. It is well to have two covers, so that a fresh one can be used each week and the soiled one washed and sunned.

PLAN No. 820. THE COLD BOX

For keeping food during cool weather, a cold box will be found very satisfactory. An ordinary light box can be used or one can be easily and cheaply made for this purpose. The box is fitted to the outside of the kitchen or pantry window. The north exposure is the coolest location. Raising the window gives access to the cold box. By this arrangement the light from the upper half of the window is still available.

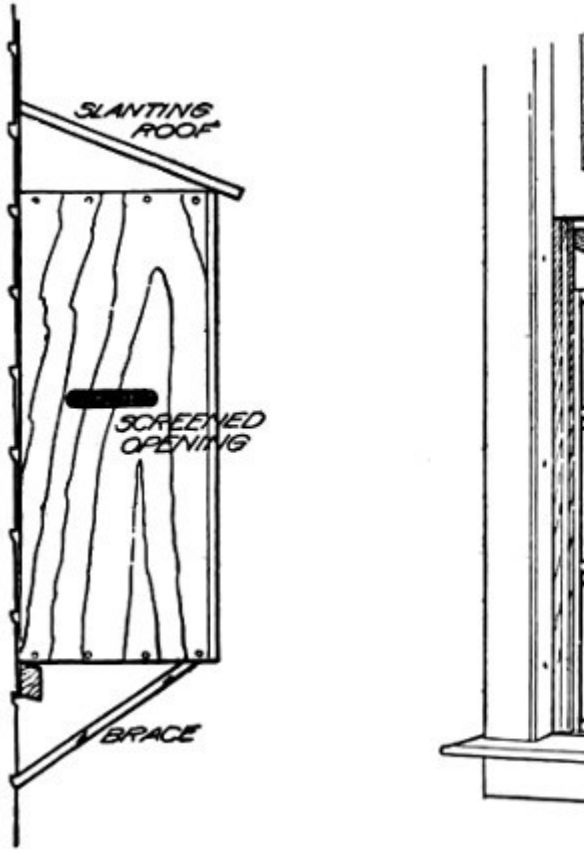


Fig. 13.–

The window sill is extended by a shelf which is supported by wooden brackets. The cold box rests on the window sill and the extended shelf, and is fastened to the window casing by screws or nails near the top and bottom of each end of the box. During warm weather, when the box is not in use, it may be removed if desired. The box should have a sloping roof to shed the rain. Holes for ventilation are made in the ends of the box and screened. Shelves in the box may be made of heavy screening

or poultry netting or of wood. They rest on cleats fastened to the sides of the box.

Food placed in this box should be covered so as to protect it from dust.

PLAN No. 821. EQUIPMENT FOR HOME BUTTER-MAKING

There is no secret in making good butter. With proper care and attention to details good butter can be made in any farm home. The quality of the butter is dependent upon the intelligent use of equipment rather than the kind, although suitable equipment is time-saving and labor-saving and can be purchased and made at a nominal cost.



Fig. 14.—Equipment for home bu

Milk vessels should be of high-grade tin with all joints and seams smoothly soldered so that there will be no crevices in which dirt may accumulate. A convenient milking can to use is the three-gallon shotgun can. It should have a smooth, heavily tinned interior, to prevent rusting and difficulty in cleaning. All butter-making equipment should be thoroughly scrubbed with a brush in hot water containing sal-soda or washing powder. Never use a dish cloth or soap. Inexpensive stiff fiber scrub brushes or vegetable brushes can be purchased at any grocery or hardware store. After equipment is washed it should be scalded or steamed. A home made sterilizer will be found most convenient and helpful. (Write for Farmer's Bulletin No. 748, Department of Agriculture, Washington, D. C.)

A medium sized dipper strainer with a fine-meshed gauze has been found to be very satisfactory. It should be smooth and free from seams. Butter should not be touched or handled with the bare hands. It injures the quality of the butter and is very insanitary. Wooden ladles can be easily whittled from maple, ash, or poplar or bought at a small cost. A thermometer is absolutely essential to successful butter-making. Controlling temperatures is second only to keeping equipment clean. A floating dairy thermometer can be ordered from any dairy supply company.

In making butter the salt should be uniformly distributed and the granules pressed together into a close-grained mass and the surplus water worked out. This can most easily be accomplished by use of a V-shaped lever butter worker made of one-inch material. This worker is made of maple, ash or poplar, the material of which all wooden butter equipment is made. Any woods from which odors or

flavors might be absorbed by the butter should not be used.

For the amount of butter made in most farm homes a butter worker 18 inches long, 16 inches at the wide end and $2^1/_2$ inches at the narrow end is a convenient size. The sides are 3 inches wide and are screwed to the bottom. The corrugated roller having six or eight sides is 24 inches long. One end of the roller is shaped to fit a small hole made in the pieces across the narrow end of the worker. This end piece is of a width that leaves a slot just above the bottom of the worker which allows the water to drain off into a pan as the roller is pressed firmly backward and forward over the butter. The worker rests on three knobs or supports. The two knobs at the wider end are $3^1/_2$ inches high, while the knob at the narrow end is $2^1/_2$ inches.

The most popular, convenient, and attractive butter mold is the brick-shaped or square-cornered shape. This mold can be made of $^5/_8$-inch material. The mold most commonly used is $4^5/_8$ by $2^1/_2$ by $2^3/_8$ inches. An inch hole is bored through the center of the top and through the center of a plunger which fits closely into the mold. Through the hole in the top of the mold is inserted the round handle which screws into the hole in the plunger. Most satisfactory molds of this type can be found on the market.

When butter is to be sold, parchment papers 8 by 11 inches should be used to wrap the pound print. Also neat and attractive paper butter cartons should be used when butter is put on the market. It will bring a better price if packed well.

To make the butter-making equipment complete, a barrel churn should be added. The barrel churn is generally recognized as the most convenient and efficient kind of churn in use. When an extra large

quantity of milk is handled it pays to use a cream separator. A separator insures more and better butter.

PLAN No. 822. CHEESE-MAKING EQUIPMENT

Cottage, Neufchatel, plain cream, and pimento cream cheese can be made in the farm home where a surplus supply of milk is available. Cheese is not only a very valuable food but if a first-class product is produced a good market can easily be found for it. The equipment for making cheese is very simple and most of it could be made at home.

The rack for draining the cheese is 16 inches deep, 12 inches wide, and 24 inches long, and is made of pine. The bottom slats which hold the pan under the draining cloth fit into notches made in the lower side strips and can easily be removed when the rack is washed. The corner posts extend $^3/_4$ inch above the strips at the top and the corner loops of muslin or cheesecloth drain cloth are looped over the posts. A similar rack, as described, could be made out of an orange or vegetable crate.

The press is made of two poplar or maple boards $1^1/_4$ inches thick and $14^1/_2$ inches square. Strips of wood $1^3/_4$ inches wide are nailed or screwed on the back of each board to prevent them from warping. The boards are planed and sandpapered until perfectly smooth. The lower board has a circular groove which has an outlet through which the whey drains as it is pressed out of the curd.

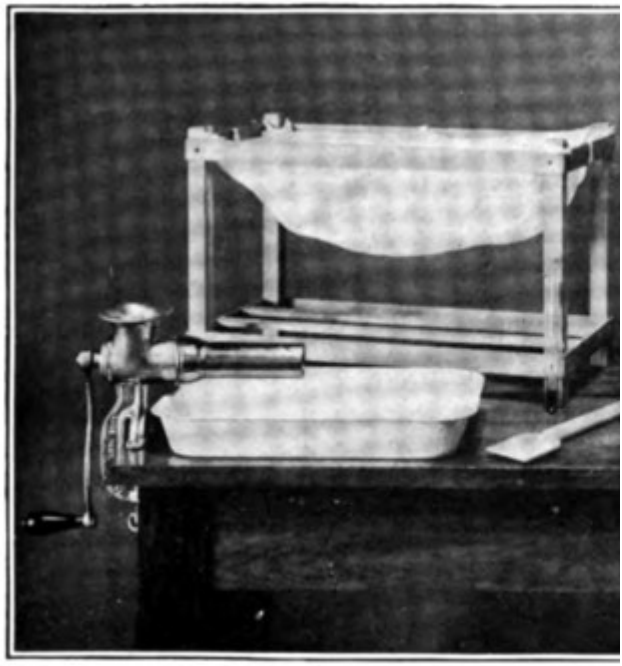


Fig. 15.—Cheese-making eq

A wooden paddle, a dairy thermometer, and a food chopper or sausage grinder with molding tube complete the necessary equipment. The molding tube or cylinder could be made by a tinsmith or can be ordered through a hardware dealer. The paddle can easily be made. The molding tube or stuffing attachment which is attached to the food chopper molds the Neufchatel and cream cheese into attractive and convenient molds for the market. The cheese can also be packed into small glass jars by placing the opening of the jar over the end of the tube through which the cheese is forced. The pimento cream cheese is always put on the market in small glass jars.

PLAN No. 823. THE SHOWER BATH

Better bathing facilities are often needed in homes where bathrooms are not found. A cheap and convenient shower bath can be easily made and used in the kitchen or on the back porch. The shower bath is especially useful in homes where there are children.

A hole is cut in the bottom of a four gallon bucket and a piece of pipe 2 inches long soldered in the opening. Rubber tubing 4 to 6 feet long is attached to the pipe and a nozzle is fitted on the end of the rubber tubing. A sprinkler from a water can may be used instead of the nozzle. The bucket can be raised or lowered to suit the convenience of the person taking the bath by a rope fastened to the handle of the bucket and run through a pulley which is fastened with a staple to a joist in the ceiling. The end of the rope is looped over a hook, which is driven securely into the window or door facing, or into the studding in the wall.

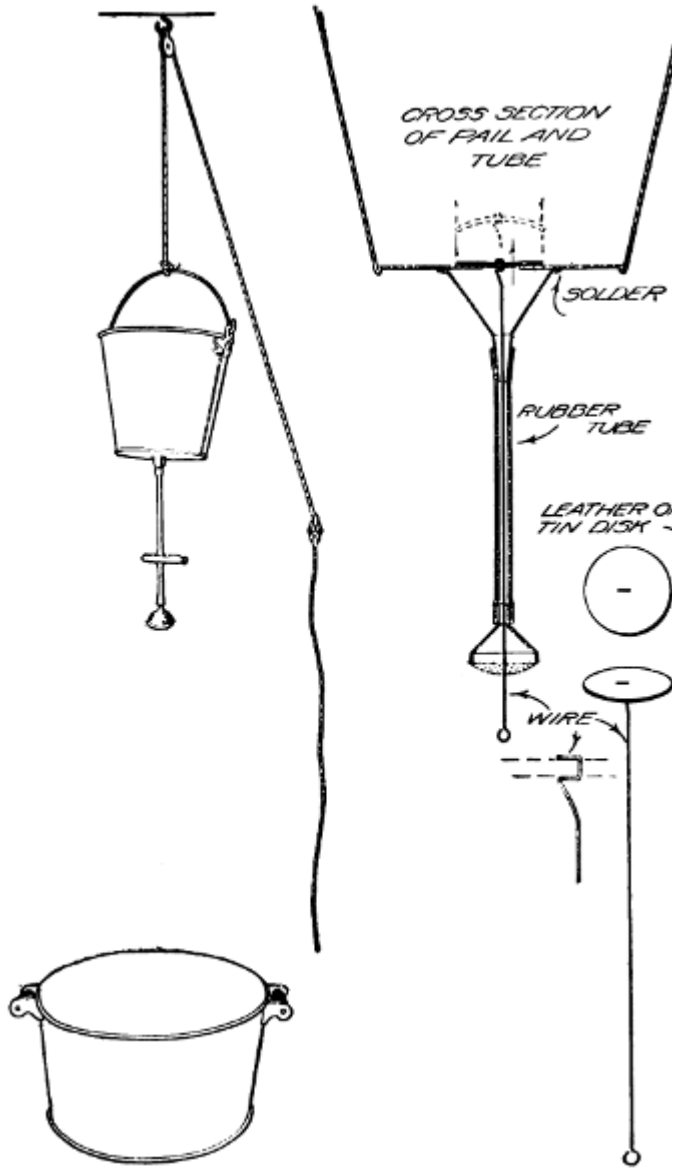


Fig. 16.—The shower bath.

A clothespin closed over the rubber tubing serves

as a stopcock to cut off the water if desired. The shower can be better regulated by using a device such as is shown in the illustration. The end of a piece of No. 12 or 14 wire is fastened to a disk of leather or tin, or a cap of a tin can, by making a hole in the material used, running the wire through and looping the end. This disk is placed over the hole in the bottom of the bucket and the attached wire extends through the rubber tubing and the nozzle. The shower can be regulated by the disk being raised and lowered by means of the wire. The weight of the water in the bucket on the disk will form a sufficient seal when no flow is desired.

A large tub is placed under the shower, in which the bather stands. The tub and bucket are more attractive when given two coats of white paint and one coat of white enamel.

PLAN No. 824. WELL PROTECTION AND INEXPENSIVE WATERWORKS FOR A FARM KITCHEN

The three important principles to consider in the subject of water supply for the farm home are: (1) It is necessary to have clean water, (2) there should be convenient and serviceable equipment to furnish running water in the house, and (3) this convenient supply of safe water should be secured with economy.

The first and most important consideration is to get a supply of clean water. By clean water is meant water which is both clear and pure. Good farm water supplies are usually obtained from wells, springs and cisterns. Water from wells on farms is frequently contaminated and contains the source of disease. Contaminated water may be the cause of outbreaks

of typhoid fever, dysentery, and other intestinal disorders among the members of the family.

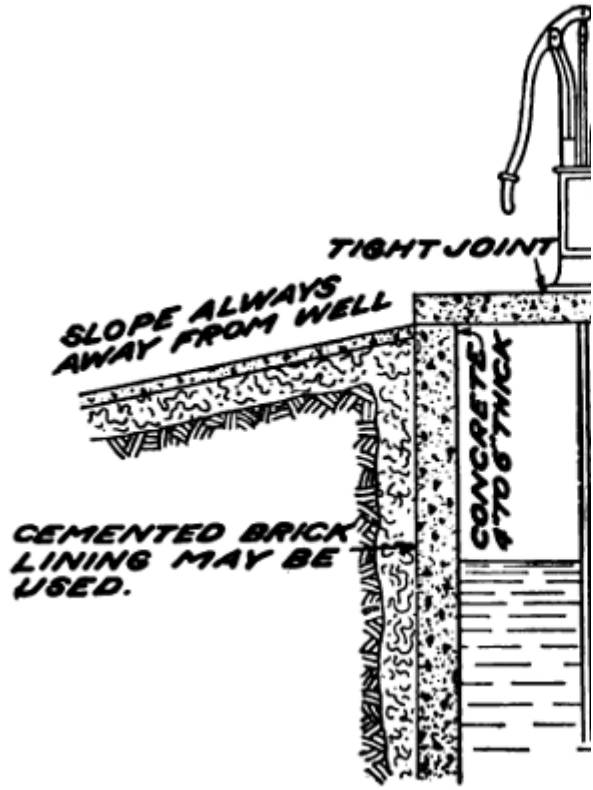


Fig. 17.—Dug well, concre

Both shallow-dug wells and deep-bored wells may be polluted by the entrance of filth, vermin, unclean water at the top and also by seepage of contaminated soil water. These are the results of poor location of wells, generally unclean surroundings, open or loose well curbs, the absence of a well lining, or the presence of a poor well lining. The first step in securing a clean water supply is to remove all sources of possible contamination. Among the worst

of these is the open privy vault, the leaching cesspool, and barnyard filth. A well in ordinary pervious soil, located lower than and within 100 feet of any of these, is almost certain to be contaminated. The well itself should be located as high as possible with regard to buildings, stock pens, and chicken yards, and as far away from all sources of contamination as convenience and local surroundings will permit. The final safeguards to a well-water supply are to provide an impervious lining of concrete, cemented bricks, cemented tile, or iron casing, and to provide a water-tight curb, not only to keep out surface wash, animals, and vermin, but to prevent the pump drip and dirt from shoes and bucket from entering the well.

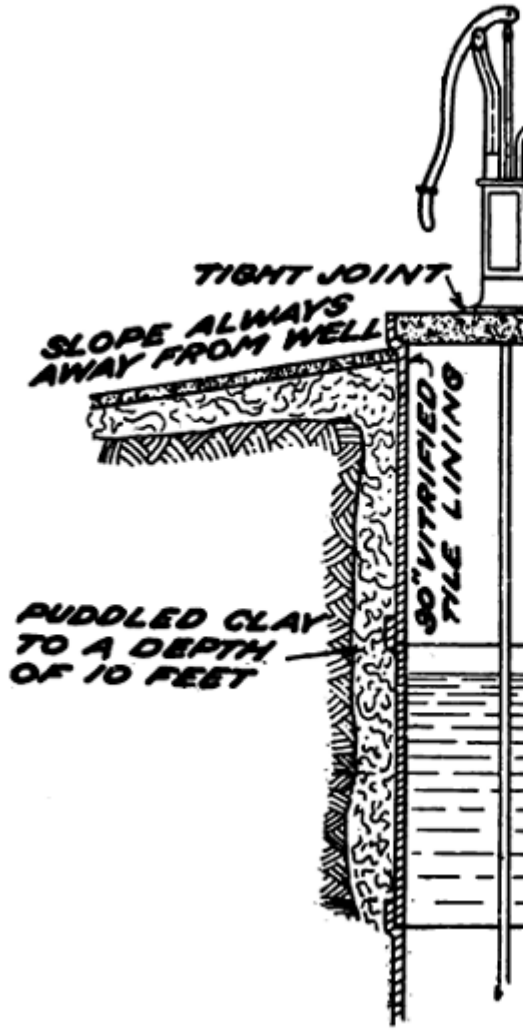


Fig. 18.—Dug well

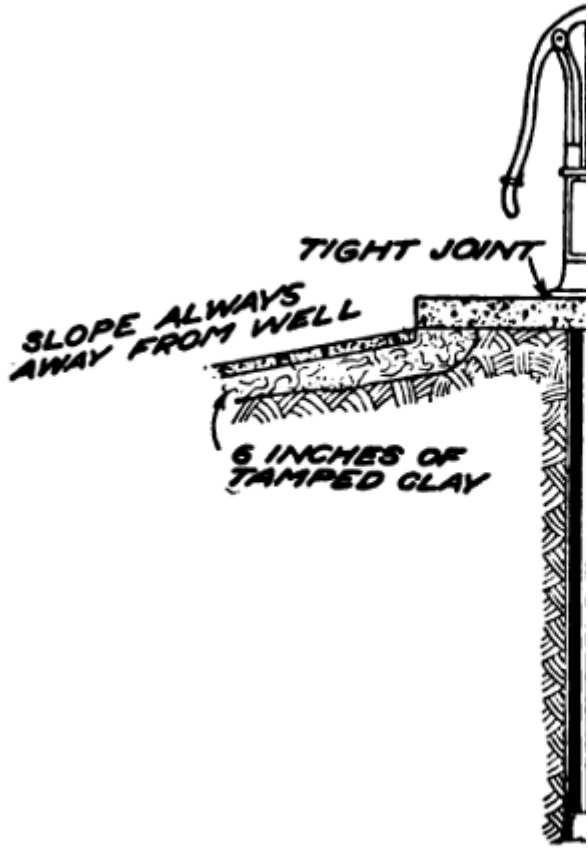

TIGHT JOINT
SLOPE ALWAYS AWAY FROM WELL
6 INCHES OF TAMPED CLAY

Fig. 19.—



Fig. 20.—

The same precaution with reference to the entrance of filth and polluted water from the surface

apply to underground cisterns.

Springs are subject to contamination by surface wash and because animals have access to them. They can be protected by fencing in from animals, walling in the spring to form a covered and water-tight reservoir, and by keeping the surroundings clean. Spring water should be kept under close observation for any signs of surface pollution, especially those springs occurring in limestone regions.

Having secured a clean water supply, the next step is to provide equipment to furnish running water in the kitchen at the turning of a faucet or by merely pumping.

If the well or cistern is located close to the house, one of the simplest and cheapest methods of obtaining running water for the kitchen in the warmer climates is to place a covered barrel or other supply tank on a shelf outside the kitchen wall in such a position that it can be filled from the pump through a hose, as desired. A pipe attached to the bottom of the barrel or tank and passing through the wall has attached to it a faucet over a sink in the kitchen. The hose is detachable and can be removed from the pump when not in use.

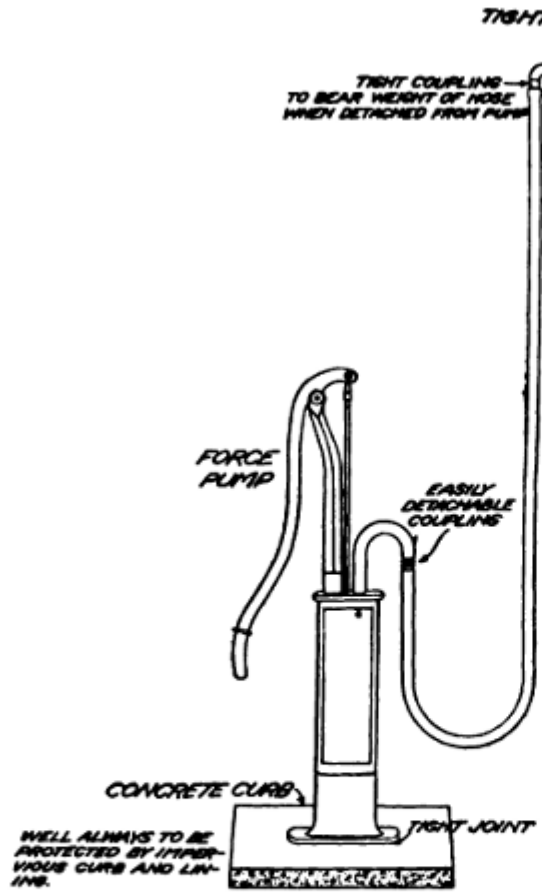




Fig. 21.—Simple water-supply s

The sink is connected by lead pipe through a trap to a drain, which should consist of cast iron soil pipe when it is used anywhere in the immediate neighborhood of the well or cistern. Do not under any consideration use cemented tile for the purpose within 30 feet of any source of water supply. When far enough away from the house or well this drain can empty into an open jointed drain tile which may be placed in the garden soil or any other pervious soil, thus disposing of the waste water by absorption. The disposal tile should have a fall not to exceed 1 inch in 50 feet, else the water will rush to the lower end and water-log the soil. In very porous or sand soils 1 foot of 3 or 4 inch tile per gallon of discharge per day is sufficient. In heavier loam or clay soils 2 feet of tile are necessary and sometimes more for every gallon. Aeration of heavy soil can be brought about by the use of coarse cinders or gravel laid in the bottom of the tile ditch.

Where there is danger of freezing or where the well is very close to the house, about the simplest and cheapest method is to place a pitcher pump or force pump over a sink in the kitchen. The suction pipe of the pump may be attached to the well or cistern and water obtained when desired merely by pumping. This is provided the vertical distance from the pump to the water in the well does not exceed 20 feet, as under ordinary circumstances a pump will lift water satisfactorily by suction only to about that height. The allowable distance from the well to the pump for this arrangement will vary with local conditions, cases having been noted where the distance was as far as 200 feet. As water meets with resistance in pipes, due to friction, elbows, and

bends, it is well to take off about 2 feet from the allowable vertical pumping lift for every 100 feet the water is drawn horizontally.

From the standpoint of economy, which is the third consideration, all local conditions which would have a bearing on obtaining clean water and putting it into the house with convenient and serviceable equipment should be determined. No matter how cheap this system, if the water is not clean or the equipment is not serviceable or convenient, the investment is a poor one. Plan first of all to do the necessary work to give absolutely clean surroundings; next secure the proper material to protect the well. By inquiry as to local prices of material and labor the cash outlay needed can be easily determined. In the majority of cases it will be found that the well or spring can be protected by the use of the material available on the farm, such as old bricks, stones, etc., with a cash outlay for little except cement, or in case of a bored well, iron casing. The same principle should be applied in planning the water equipment. All material available on the farm or in the locality should first be used and only such cash expenditure should be made as is necessary to make the system complete, serviceable, and convenient. It will be found on a great many farms that the two systems briefly outlined can be obtained for a moderate outlay of cash for the pump, sink, pipe, and fittings. In many cases the pump is already installed. Thus by the proper utilization of material and labor available on the farm and by a small cash outlay, cleanliness, convenience, comfort, and economy in the water supply can be obtained, the value of which can not be estimated.

PLAN No. 825. FLY TRAP

Fly control should begin at the breeding places. All refuse and other substances in which flies may breed should be disposed of immediately. Fly traps should be placed around the house and stable and in places frequented by flies, so as to catch them whenever they appear. It is necessary to use bait to attract the flies. After they are caught they may be destroyed by pouring hot water over the trap and then burning the flies.

Any woman, without hammer or saw, can easily make a fly trap. The dimensions will depend upon the size of trap desired. Non-rustable screen wire should be used. A straight rectangular piece of screen wire is used for the cylinder of body of the trap. This blanket is stitched with heavy thread to prevent the wire from raveling. The cone is made of a circular piece of screen wire from which a sector or V-shaped piece has been cut, and a small hole is cut at the center which permits the entrance of the flies. A binding of heavy muslin or denim is sewed around the edge of the cone. The cone is slipped up into the cylinder. It must be large enough to fit tightly. It is made secure by the bound edge being sewed to the cylinder. The top of the trap is made of a circular piece of wire which exactly fits the top of the cylinder. On the edge of this piece is sewed a piece of binding. On this edge is sewed a piece of wire 2 inches wide which forms the rim of the top of the trap. This top fits on the cylinder snugly and is held in place by pieces of tape. The legs of the trap are made of bent wire.

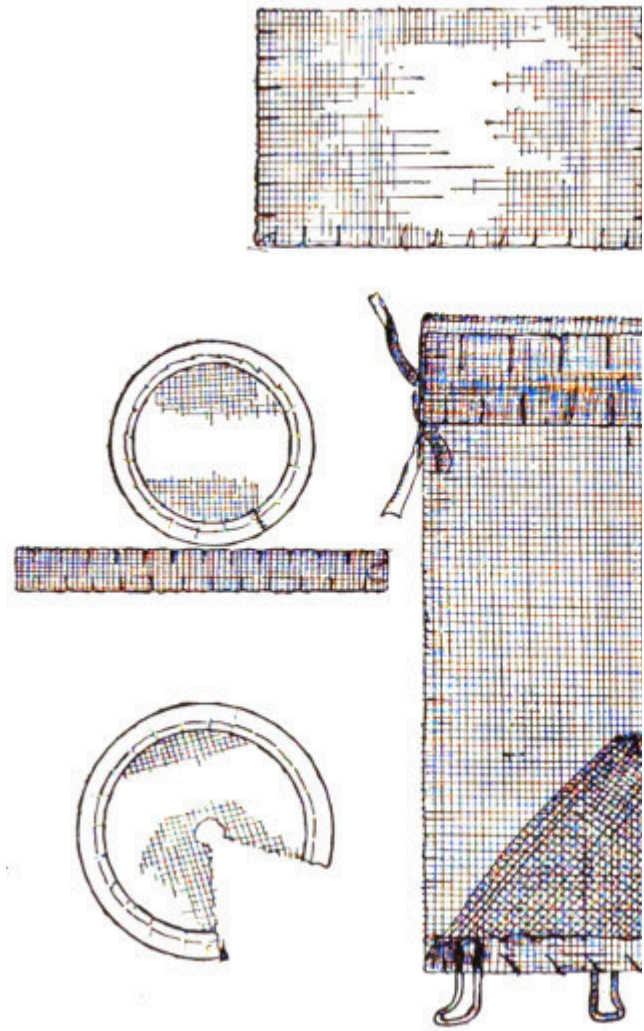


Fig. 22.—Fly trap.

The trap should be thoroughly scalded every few days. The following may be used for baits—sour or skim milk to which a little sugar has been added; meat or fish scraps; bread and milk to which sugar has been added; and sugar, vinegar, and water.

PLAN No. 826. WINDOW SCREENS

All outside doors and windows should be screened. It will be an economy to buy the screen doors. For both doors and windows use non-rustable screen wire.

A very cheap, convenient and easily made window screen is shown in Fig. 23. Any woman can make this screen fit any window. Often in old houses window frames have warped and it is hard to make screen frames fit the windows.

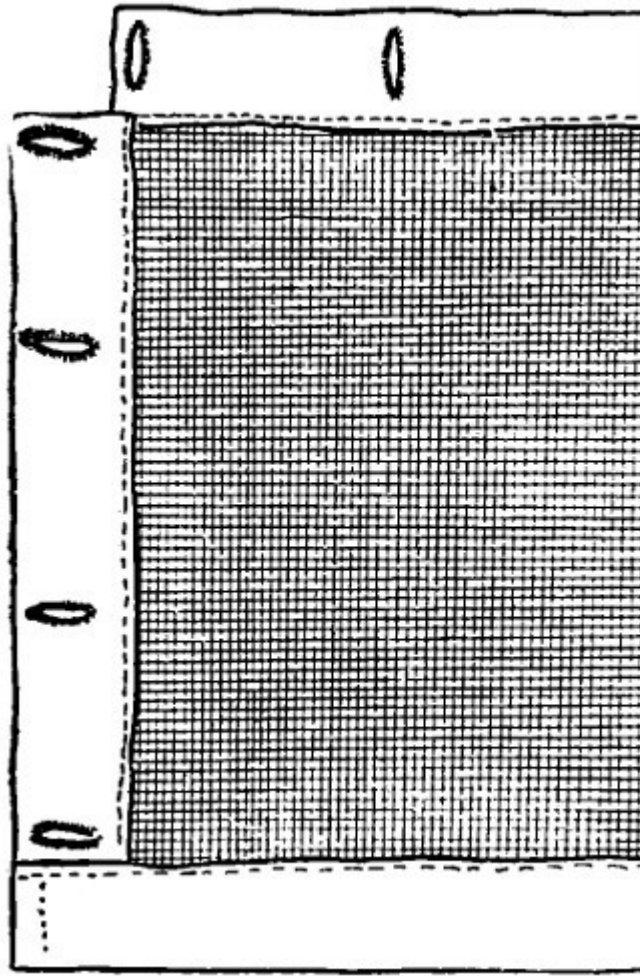


Fig. 23.—Window screen.

Heavy denim or jeans or any other heavy material, of dark color, is cut into strips 4 inches wide. This is sewed around the edge of the screen, leaving about 2 inches of the doubled material as strips for eyelets. Eyelets are worked across the top and down the side

strips. Small tacks are driven in the lower casing of the top window and down the sides of the window frames. The eyelets in the window screen are fastened over the heads of the tacks and thus the screen is held in place. This screen can only be used when the upper window cannot be lowered and it can be removed easily when not needed.

PLAN No. 827. COOKSTOVE DRIER OR EVAPORATOR

Vegetables and fruits can be dried in an oven, in trays or racks over the kitchen stove, or in a specially constructed drier. There are small driers on the market which give satisfactory results. The small cookstove driers or evaporators are small oven-like structures, usually made of galvanized sheet iron, or of wood and galvanized iron. They are of such a size that they can be placed on the top of an ordinary wood or coal range, or a kerosene stove. These driers hold a series of small trays on which fruit or vegetables are placed after being prepared for drying. Portable outdoor evaporators are especially convenient when it is desirable to dry as much as ten bushels of fruit or vegetables a day. They are usually constructed of wood except the parts in direct contact with the heater. The homemade dry kiln used in some sections of the country can be cheaply and easily made of brick and stone.

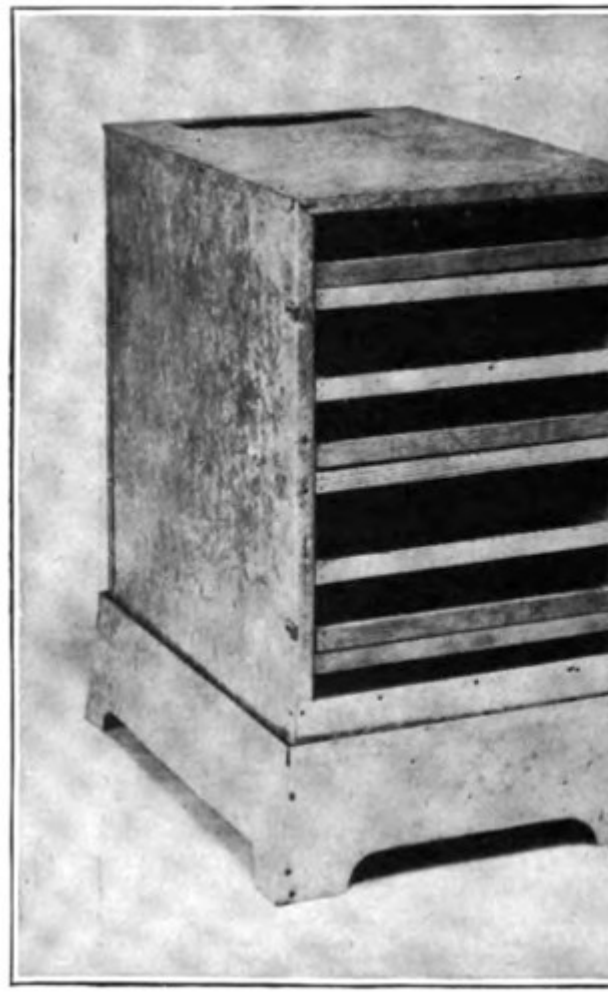


Fig. 24.—Cookstove drier or e

A drier that can be used on a wood or coal range or a kerosene stove can be easily and cheaply made. Dimensions: Base, 24 by 16 inches; height, 36 inches (including the height of the base). The drier can be made smaller if desired. A base six inches high is made of galvanized sheet iron. This base flares

slightly toward the bottom and has two small openings for ventilation in each of the four sides. On the base rests a box-like frame made of 1 or $1^1/_2$ inch strips of wood. The two sides are braced with $1^1/_4$-inch strips which serve as cleats on which the trays in the drier rest. These are placed at intervals of 3 inches. The frame is covered with tin or galvanized sheet iron, which is tacked to the wooden strips of the frame. Thin strips of wood may be used instead of tin or sheet iron. The door is fitted on small hinges and fastened with a thumb latch. It opens wide so that the trays can be easily removed. The bottom in the drier is made of a piece of perforated galvanized sheet iron. Two inches above the bottom is placed a solid sheet of galvanized iron, three inches less in length and width than the bottom. This sheet rests on two wires fastened to the sides of the drier. This prevents the direct heat from coming in contact with the product and serves as a radiator to spread the heat more evenly.

The first tray is placed three inches above the radiator. The trays rest on cleats three inches apart. A drier of the given dimensions will hold eight trays. The frame of the tray is made of 1-inch strips on which is tacked galvanized screen wire, which forms the bottom of the tray. The tray is 21 by 15 inches, making it three inches less in depth than the drier. The lowest tray when placed in the drier is pushed to the back, leaving the 3-inch space in front. The next tray is placed even with the front, leaving a 3-inch space in the back. The other trays alternate in the same way. A ventilator opening is left in the top of the drier through which the moist air may pass away.

The principle of construction is that currents of heated air pass over the product as well as up

through it, gathering the moisture and passing away. The current of air produces a more rapid and uniform drying. The upper trays can be shifted to the lower part of the drier and the lower trays to the upper part as the drying proceeds, so as to dry products uniformly throughout.

PLAN No. 828. THE CLEANING CLOSET

Entrance of dust and dirt into a house is unavoidable, and the housekeeper is compelled to spend some of her time and energy in the daily cleaning. Through the use of better equipment and more systematic planning she is able to do the cleaning more easily and quickly. It is well to have a special place where cleaning utensils may be kept in the best condition and ready for instant use. Much time and energy is spent in collecting the utensils needed for cleaning.

A closet, cupboard, or wardrobe, in the kitchen is the best place for keeping the cleaning utensils. A back-stair closet is also a good place. One end of a back porch may be inclosed and used for such a purpose. The closet should have plenty of hooks and racks for utensils and a shelf for cleaning materials.

The housekeeper should choose utensils according to her own needs and according to the requirements of her house. Those suggested below are inexpensive and will help to lighten the work of cleaning:

Bucket with wringer for mopping.

A piece of inch board 15 inches square with rollers makes a convenient platform on which to set the mop bucket, and permits it to be moved easily without lifting.

Wall mop made by tying a bag made of wool or cotton cloth over an ordinary broom.

A broom, with a hook screw in the end of the handle by which it can be hung up.

A long-handled dustpan.

Several brushes for cleaning purposes.

Cheesecloth, worn silk, and flannelette for dusters.

Dusters may be made by dipping pieces of cheesecloth in two quarts of warm water to which one-half cup of kerosene has been added. These cloths should be kept away from the stove and lighted lamps, as they are inflammable.

A blackboard eraser covered with flannelette for stove polishing.

An oiled floor mop to use on oiled or polished floors. Several makes can be found on the market, or one may be made of old stockings or any discarded woolen of flannelette material. The material is cut into one-inch strips and sewed across the middle to a foundation of heavy cloth. This is fastened to an old broom handle or used in a clamp mop handle. The mop is dipped into a solution made of one-half cup of melted paraffin and one cup kerosene and allowed to dry. To keep it moist, it is rolled tight and kept in a paper bag, away from stove or lamp.

A carpet sweeper or a vacuum cleaner should be used in the daily cleaning of carpets and rugs. A vacuum cleaner operated by hand or electric power removes practically all the dust and dirt from carpets and rugs in a dustless manner.

PLAN No. 829. BASKET BOARDERS

During the war people have been thrown upon their own resources and many methods of making a living have been attempted. Many suggestions have been given by the United States Department of

Agriculture as to plans which would be feasible for making a living.

One suggestion is a plan followed by a New York woman. She had a small income but it was not sufficient to care for herself and small child. She arranged to board and room 15 girls and boys from the farm. And this board and room was paid with baskets of provisions from the farm from each of the children's parents.

She conducted her home on a dormitory plan of a college. Each of the students took care of their own rooms and spent their week ends with their parents at which time their washing was taken along or sent to the city laundry at the expense of the student.

This idea has wonderful possibilities. There are thousands of boys and girls from the farms that cannot go to High School because of the lack of ready cash. But if a woman who can furnish the best of references will charge them $10 a month and a weekly basket of provisions from their farms it would be possible for them to have a High School or College education. With fifteen children this would mean an income of $150 a month and the lady could figure out what kind of provisions from week to week she needed and have the boys and girls regulate their baskets accordingly. If it was not practical for the boys and girls to return to the farms to bring baskets in person the baskets could easily be sent in by parcel post.

Any woman who has a family and is unable to go out to work can make a good income in this way as well as do a great favor to the boy and girl on the farm.

This is a good way for thousands of town and city families to escape the high cost of living and take from the farmer what he has to pay with—i. e., food

for the education of his children.

OPPORTUNITIES IN PUBLIC OFFICE

There are many opportunities in public office in every city, and county in the United States.

Many a man with a dark outlook, if familiar with the many opportunities in public service, might find awaiting him just the kind of work he likes best.

In this field there is work from the most ordinary labor to the professions. Activities of the city, county, state and national government each year create opportunities which should not be overlooked by those who desire employment or who already have employment and desire work more in accord with their tastes. There is, perhaps, no more ideal work one can be engaged in. In public service you work under the best conditions and the workers do not sacrifice their liberties, and the hours and pay are good. Civil Service is now used by many city governments, which insures permanency. The Government every year offers great opportunities to workers through Civil Service which is set forth in Plan No. 217.

As space in this book will not permit me to enumerate the many opportunities given by governments in all cities, counties and states, I have taken the City of Spokane, County of Spokane, State of Washington, as an illustration and from this it will be easy for you to check up the opportunities in your own locality.

This brief of public affairs will be suggestive to those people who desire to enter public service as a career, as from this they can determine what work best suits their abilities.

The City of Spokane has been for a number of years under the commission form of government. The people elect five men at $3,500 each to run the affairs of the city. These men direct the affairs of the city much like the manager of a business. The salaries encourages good business ability to contest for these offices. Each commissioner is given a department and each department has a certain number of divisions, which are as follows: Those with a star before the name are either named by the commissioner at the head of the department or by the five commissioners together. Those names before which no star appears are covered by the Civil Service Board. If the office is appointive the thing for you to do is to get in touch with the party who gives appointments. Each division in the city departments offer opportunity for various kinds of service, the nature of which is shown. Your city offers like opportunities.

DEPARTMENT OF PUBLIC AFFAIRS

PLAN No. 830. HEALTH DIVISIONS

* Health Officer, named by Health Board	$ 300.00 per month.
* Assistant Health Officer	210.00 „ „
Clerk	120.00 „ „
Associated Clerk	100.00 „ „
Office Attendant	70.00 „ „
Public Health Nurse	90.00 „ „

SANITARY INSPECTION

Sanitary Inspector (collects milk samples)	$ 100.00 per month.
Sanitary Inspector	100.00 „ „
Intelligence Officer	100.00 „ „

Emergency Inspectors, as needed	4.00 „	day.

QUARANTINE

Quarantine Officer	$ 120.00	per month.

FOOD REGULATION

Milk Inspector	$ 132.50	per month.
Bacteriologist	150.00 „	„
Food Inspector (meat)	115.00 „	„
Restaurant and Bakery Inspector	105.00 „	„
Food Inspector	115.00 „	„

ISOLATION HOSPITAL—RIVERCREST

Superintendent	$ 90.00	per month.
G. U. Nurse	70.00 „	„
Nurses, as needed	65.00 „	„
Utility Man	$ 80.00	per month.
Housekeeper	70.00 „	„
Assistant Housekeeper	50.00 „	„
[10]Steward and Assistant	135.00 „	„
Extra labor as needed	4.00 „	day.

EMERGENCY HOSPITAL

Chief Steward	$ 125.00	per month.
First Assistant Steward	115.00 „	„
Second Assistant Steward	105.00 „	„

[10] It is provided that the Health Officer may, in his discretion, apportion this monthly salary between the steward and assistant, provided the aggregate salaries of both shall not exceed $135 per month.

PLAN No. 831. CITY HALL DIVISION

Elevator Operators	$ 85.00	per month.
Utility Man, additional	25.00	„ „
Janitors	90.00	„ „
Telephone Operators	95.00	„ „

Substitutes at above rates.

PLAN No. 832. WEIGHTS AND MEASURES DIVISION

* Inspector	$ 132.50	per month.

PLAN No. 833. LABOR AGENT'S DIVISION

* Labor Agent	$ 165.00	per month.
Assistant, male	115.00	„ „
Assistant, female	85.00	„ „

Public Market

Market Master as needed	$ 85.00	per month.

Dental Clinic

School Dentist, nine and one-half months	$ 85.00	per month.

Municipal Fish Market

Salesman	$ 100.00	per month.
Salesman	90.00	„ „

PLAN No. 834. CREMATORY DIVISION

* Superintendent	$ 200.00	per month.
Assistant Superintendent	120.00	„ „
Night Foreman	110.00	„ „
Bookkeeper	110.00	„ „
Collector	95.00	„ „

Household and Trade Refuse Collection

Barnman	$ 100.00	per month.
Blacksmith	115.00	„ „

Utility Man	115.00	„	„
Night Laborers	5.00	„	day.
Day Laborers	5.00	„	„

REFUSE DISPOSAL

Engineer	$ 105.00	per	month.
Fireman	100.00	„	„
Mechanics, as needed		Going	wage.

DEPARTMENT OF PUBLIC SAFETY

PLAN No. 835. COMMISSIONER'S DIVISION

* Secretary	$ 140.00	per	month.
Stenographer-Permit Clerk	120.00	„	„

PLAN No. 836. FIRE DIVISION

* Chief	$ 225.00	per	month.
Assistant Chiefs	175.00	„	„
Electrician	175.00	„	„
Secretary	140.00	„	„
Master Mechanic	160.00	„	„
Linemen	125.00	„	„
Telephone Operators	85.00	„	„
Captains	135.00	„	„
Lieutenants	125.00	„	„
Engineers	130.00	„	„
Truckmen, Drivers and Pipemen:			
First year service	$ 100.00	„	„
Second year service	110.00	„	„
Third year service	120.00	„	„
Firemen assigned to shop work, additional	5.00	per	month.
Officers as fire inspectors downtown, additional	5.00	„	„

PLAN No. 837. POLICE DIVISION

* Chief	$ 225.00	per	month.
Secretary	140.00	„	„
Clerk	110.00	„	„
Stenographer	100.00	„	„
Captain of Detectives	160.00	„	„
Captains of Police	150.00	„	„
Sergeants	130.00	„	„
Plain Clothes Men	130.00	„	„
Bailiff	120.00	„	„
Bertillon Officer	140.00	„	„
License Officer (Inspector)	120.00	„	„
Patrol Chauffeurs	120.00	„	„
Emergency Chauffeurs	110.00	„	„
Alarm Operators	85.00	„	„
Police Woman	50.00	„	„
Patrolmen:			
First year service	100.00	„	„
Second year service	110.00	„	„
Third year service	120.00	„	„
Special Police, as needed	4.00	„	day.
Jailers	120.00	per	month.
Matrons	95.00	„	„

Building Inspection

* Building Inspector	$ 175.00	per	month.

Electrical Inspection

* Electrical Inspector	$ 160.00	per	month.
* Assistant Electrical Inspector	140.00	„	„

Plumbing Inspection

* Plumbing Inspector	$ 160.00	per	month.

Boiler and Elevator Inspection

* Boiler and Elevator Inspector	$ 160.00	per	month.

DEPARTMENT OF PUBLIC UTILITIES

PLAN No. 838. COMMISSIONER'S DIVISION.

* Superintendent and Assistant to the Commissioner	$ 200.00	per month.

CITY LABORATORY

City Chemist	$ 160.00	per month.
Assistant Chemist	125.00	„ „

WATER DIVISION

* Superintendent	$ 300.00	per month.
Chief Accountant	135.00	„ „
Bookkeeper (Class A)	135.00	„ „
Clerk to Superintendent	120.00	„ „
Bookkeeper (Class B)	120.00	„ „
Storekeeper	120.00	„ „
Civil Engineer	140.00	„ „
Draftsman and Estimator	130.00	„ „
Chief Rate Clerk	140.00	„ „
Assistant Cashier	130.00	„ „
Bookkeeper, consumers accounts	135.00	„ „
Ledger Clerks	120.00	„ „
Permit Clerk	120.00	„ „
Counter Clerk	110.00	„ „
Bill Clerk	90.00	„ „
Addressograph Clerk	80.00	„ „
Stenographer	80.00	„ „
Chief of Meter Bureau	150.00	„ „
Meter Bureau Clerk	100.00	„ „
Meter Shop Foreman	120.00	„ „
Meter Inspectors	110.00	„ „
Meter Readers	100.00	„ „
Meter Repair Men	100.00	„ „

Chief Inspector	135.00	„	„
Assistant inspector	120.00	„	„
Inspectors	105.00	„	„
Repair and Yard Foreman	130.00	„	„
Tapping Foreman	125.00	„	„
Clerk at Meter Building	105.00	„	„
Chief Engineer	150.00	„	„
Assistant Engineers	130.00	„	„
Chief Electrical Engineer	150.00	„	„
Assistant Electrical Engineers	130.00	„	„
Engineer, Lincoln Heights Station	115.00	„	„
Pump Tenders	110.00	„	„

The Superintendent of Water Division may employ the following when needed:

Foreman	$ 6.00	per	day.
Assistant Foreman	5.50	„	„
Caulkers and Tappers	4.60	„	„
Powdermen	4.60	„	„
Blacksmith Helpers	4.50	„	„
Truck Drivers	4.50	„	„
Inspectors	4.25	„	„
Laborers	4.00	„	„
Mechanics	Going wage.		

DEPARTMENT OF PUBLIC WORKS

PLAN No. 839. COMMISSIONER'S DIVISION

* Superintendent	$ 170.00	per	month.
Improvement Clerk-Stenographer	132.50	„	„
Bookkeeper	137.50	„	„
Cost and Distribution Clerk	132.50	„	„

PLAN No. 840. ENGINEERING DIVISION

* City Engineer	$ 300.00 per month.
Chief Field Engineer	167.50 „ „
Chief Office Engineer	167.50 „ „
Sewer Engineer	140.00 „ „
Instrument Man	127.50 „ „
Draftsman	137.50 „ „
Chief Clerk	140.00 „ „
Counter Clerk	120.00 „ „
Abstract Clerk	120.00 „ „
Chainmen, as needed	100.00 „ „
Improvement Inspectors, as needed	4.50 „ day.
Bridge Foreman, as needed	6.00 „ „
Bridgemen, as needed	Going Wage.

PLAN No. 841. SEWER DIVISION

Superintendent	$ 132.50 per month.
Inspector	110.00 „ „
Sewer Men, as needed	4.25 „ day.

Asphalt Plant

* Superintendent	$ 175.00 per month.
Plant Foreman, as needed	5.50 „ day.
Plant Engineer, as needed	Going wage.
Blacksmiths, as needed	5.00 per day.
Watchmen, as needed	4.00 „ „
Roller Engineer, as needed	Going wage.
Surface Heater Engineer, as needed	„ „
Rakers, as needed	5.00 per day.
Tampers, as needed	4.50 „ „
Smoothers, as needed	4.50 „ „
Utility Man, as needed	4.50 „ „
Teamsters, as needed	7.00 „ „

Laborers, as needed	4.00 „ „
Auto Truck Drivers, as needed	4.50 „ „
Mechanics, as needed	Going wage.

PLAN No. 842. GARAGE DIVISION

Foreman	$ 150.00 per month.
Mechanics, as needed	Going wage.
Apprentices, as needed	„ „
Blacksmith, as needed	5.00 per day.

PLAN No. 843. STREET DIVISION

* Superintendent	$ 160.00 per month.
Street Foreman	115.00 „ „
Utility Men, as needed	4.00 „ day.
Tractor Drivers, as needed	5.50 „ „
Roller Engineer, as needed	Going wage.
Auto Truck Drivers, as needed	4.50 per day.
Teamsters, as needed	7.00 „ „
Team Drivers, as needed	4.00 „ „
Laborers, as needed	4.00 „ „
Mechanics, as needed	Going wages.

DEPARTMENT OF FINANCE

PLAN No. 844. CITY TREASURER'S DIVISION

* City Treasurer	$ 220.00 per month.
Cashier	165.00 „ „
Tax Clerk (Class A)	130.00 „ „
Tax Clerks (Class B)	120.00 „ „
Assistant Bookkeeper	125.00 „ „
Bond and Warrant Clerk	125.00 „ „

PLAN No. 845. CITY AUDITOR'S DIVISION

* City Auditor	$ 220.00 per month.

Deputy City Auditor	155.00	„	„
Deputy and Counter Clerk	132.50	„	„
Local Improvement Deputy	120.00	„	„
Assistant Bookkeeper	135.00	„	„
General Checker	165.00	„	„
Local Improvement Checker	135.00	„	„
Cage Checker	120.00	„	„

PLAN No. 846. PURCHASING AGENT'S DIVISION

* Purchasing Agent	$ 220.00	per	month.
Stenographer-Clerk	100.00	„	„
Storekeeper	120.00	„	„

DEPARTMENTS NOT UNDER INDIVIDUAL COMMISSIONER

PLAN No. 847. LEGAL DIVISION

* Corporation Counsel	$5,000.00	per	annum.
* First Assistant	250.00	„	month.
* Second Assistant	175.00	„	„
Clerk	120.00	„	„
* Claim Agent	130.00	„	„

PLAN No. 848. CITY CLERK'S DIVISION

* City Clerk	$ 220.00	per	month.
Deputy	130.00	„	„
Deputy	120.00	„	„

PLAN No. 849. CIVIL SERVICE DIVISION

* Secretary	$ 130.00	per	month.

PLAN No. 850. JUDICIARY DIVISION—UNDER THE MAYOR

* Police Judge	$ 125.00	per	month.

Police Court Clerk	90.00	„	„
Probation Officer	75.00	„	„

County Government

In the County, Civil Service does not apply, but your selection is largely dependent upon your political standing. Become an active man in your party and if you are fortunate in supporting a winner you will have employment. The county officers run as follows:

PLAN No. 851. COUNTY COMMISSIONERS—ELECTIVE

(Three in number at $3,000 per year.)

PLAN No. 852. JUDGES OF SUPERIOR COURT

(Five in number at $4,000 per year.)

PLAN No. 853. JUSTICES OF THE PEACE

(Three in number at $1,800 each, per year, one of which is to be police judge, named by city and receives additional salary from city. Each justice names his own clerk.)

PLAN No. 854. CONSTABLES—ELECTIVE

(Three in number at $960 each per year.)

PLAN No. 855. COUNTY AGRICULTURIST

(Named by County Commissioner.)

Part Pay by Government	$ 125.00	per	month.
Part Pay by County	125.00	„	„
Counter	60.00	„	„

PLAN No. 856

Purchasing Agent (named by Commissioners)	$ 160.00 per month.
Assistant Purchasing Agent	110.00 „ „

PLAN No. 857. HEATING AND LIGHTING

Custodian of Court House (Named by Commissioners)	$ 110.00 per month
Three Engineers (work eight hours)	110.00 „ „
Four Janitors	95.00 „ „
One Watchman	90.00 „ „
Telephone Operator	85.00 „ „
Relief Operator	20.00 „ „

PLAN No. 858

Steward—Jail (named by County Commissioners) and board	$ 110.00 per month.

PLAN No. 859. TUBERCULAR HOSPITAL

Edgecliff Lady Head Nurse	$ 115.00 per month.
Bookkeeper	60.00 „ „
X-Ray (doctor)	75.00 „ „
Twelve Nurses	60.00 „ „
Four Cooks	40.00 „ „
Head Cook	85.00 „ „
Two Waitresses	45.00 „ „
Dishwasher	35.00 „ „
Waitress and Pantry Girl	16.00 „ „
Three Ward Maids	35.00 „ „
Three Hairdressers	35.00 „ „
Two Engineers	135.00 „ „
One Gardener	40.00 „ „
Two Janitors	40.00 „ „

Two Orderlies	40.00 „ „
County Carpenter	150.00 „ „

PLAN No. 860

County Auditor	$3,000.00 per year.
Twenty Employees	125.00 „ month.

PLAN No. 861

County Treasurer	$3,000.00 per year.
Twenty Employees	125.00 „ month.

PLAN No. 862

County Assessor	$3,000.00 per year.
Twenty Employees	125.00 „ month.

PLAN No. 863

County Clerk	$3,000.00 per year.
Fifteen Employees	125.00 „ month.

PLAN No. 864

County Sheriff	$3,000.00 per year.
Fifteen Employees	125.00 „ month.

PLAN No. 865

County Prosecuting Attorney	$3,000.00 per year.
Eight Employees	150.00 „ month.
County Prosecuting Attorney's Stenographer	75.00 „ „

PLAN No. 866

County Superintendent of Schools	$ 166.65 per month.
Two Employees	115.00 „ „
Department Superintendent	150.00 „ „

PLAN No. 867

Juvenile Court (named by Presiding Judge)	
Eight Employees	$100.00 per month.

PLAN No. 868

Chief Probation Officer	$ 150.00 per month.
Chief Probation Officer Assistant	125.00 „ „
Stenographer	100.00 „ „

PLAN No. 869

County Commissioner	$ 166.65 per month.
Clerk	150.00 „ „

PLAN No. 870. SPOKANE COUNTY INFIRMARY EMPLOYEES OR POOR FARM

(Named by County Commissioners)

Superintendent	$ 160.00 per month.
Physician	100.00 „ „
Steward	90.00 „ „
Nurse	50.00 „ „
Cook	100.00 „ „
Engineer	90.00 „ „
Assistant Engineer and Laundry	60.00 „ „
Farmer	75.00 „ „
Milker	60.00 „ „

PLAN No. 871

County Coroner	$ 100.00 per month.

PLAN No. 872

County Engineer	$ 200.00 per month.
Fifteen Employees	
Engineers	$ 150.00 per month.
Draftsmen	140.00 „ „
Roadman	140.00 „ „

Each of the five Superior Court judges elected names his clerk, bailiff and court stenographers.

State Government

People generally are not aware of the great number of men and women employed by the State Government. The State of Washington is comparatively a young state and yet it employs at least two thousand people in its different departments. Abilities of every description are required.

The Governor has great power, as most of the different department heads are appointed by him. In some cases the state law limits him as to a certain number of appointments, but as a rule, the Governor is allowed to make all appointments.

If you desire to learn the nature of work you can apply to the secretary of the various departments.

The following offices not marked elective are filled by appointment.

PLAN No. 873. CONGRESSIONAL OFFICE (ELECTIVE)

U. S. Senators (2)	$8,000.00 per year.
U. S. Representatives (5)	7,500.00 „ „

PLAN No. 874

Governor (elective)	$6,000.00 per year.
Secretary to the Governor	

PLAN No. 875

Lieutenant Governor (elective) — $1,200.00 per year.

PLAN No. 876

Secretary of State (elective) — $3,000.00 per year.
Assistant Secretary of State

PLAN No. 877

Auditor (elective) — $3,000.00 per year.
Assistant State Auditor
Deputy State Auditor

PLAN No. 878

Treasurer (elective) — $3,000.00 per year.
Deputy State Treasurer

PLAN No. 879

Attorney General (elective) — $3,000.00 per year.
Assistant Attorney General
Assistant Attorney General
Assistant Attorney General
Assistant Attorney General
Assistant Attorney General

PLAN No. 880

Commissioner of Public Lands (elective) — $3,000.00 per year.

PLAN No. 881

Insurance Commissioner (elective) — $3,000.00 per year.
Deputy Insurance Commissioner
Actuary Insurance Department

PLAN No. 882

Superintendent Public Instruction (elective)	$3,000.00 per year.
Assistant Superintendent Public Instruction	
Deputy Superintendent Public Instruction.	

PLAN No. 883

Adjutant General	$3,000.00 per year.
Assistant Adjutant General	

PLAN No. 884. GOVERNOR'S APPOINTMENTS

The following offices are filled by the Governor and the boards and commissions are partly, if not all, determined by him.

These different department Boards and Commissions employ many people in the state. There is hardly a type of work that is not to be found from the most ordinary labor to the professions. The number of people employed are more than 2,000.

STATE BOARDS AND COMMISSIONS

Agricultural Commissioner

Secretary Agricultural Dept

Assistant Commissioner Division of Dairy and Live Stock

Assistant Commissioner Division of Foods, Feeds, Fertilizers, Drugs and Oils (including inspection of bakeries)

Chief Deputy Oil Inspector

Assistant Commissioner of Horticulture

State Fair Secretary
Director of Farm Markets
State Labor Commissioner
State Librarian
Assistant State Librarian
Superintendent Traveling Library
State Fish Commissioner and Chief State Game Warden
Deputy State Game Warden
Coal Mine Inspector
Public Printer
Bank Examiner
Deputy Examiners
Hotel Inspectors
Fire Warden
Highway Commissioner
Assistant Highway Commissioner
State Geologist
State Chemists
State Commissioner of Health
State Fiscal Agency
State Superintendent of Weights and Measures
Deputy Superintendent of Weights and Measures
Inspector of Weights and Measures
Commissioner of Statistics
Deputy Commissioner of Statistics
Clerk of Supreme Court
Superintendent of Election Division
State Printing Expert

Hydraulic Engineer
Assistant Hydraulic Engineer
Agricultural Advisory Board
Board of Accountancy
Secretary
Board of Barber Examiners
Secretary
Board of Control
Secretary
Board of Dental Examiners
Secretary
Board of Education
Secretary
Board of Embalmers
Ex-officio Secretary
Board of Medical Examiners
Secretary
Board of Health and Vital Statistics
Secretary
Board of Optometry
Secretary
Board of Pharmacy
Secretary
Board of Chiropody
Bureau of Inspection and Supervision of Public Affairs
Secretary
State Labor Commissioner
Assistant State Labor Commissioner
Secretary
Forest Commission
Secretary

Industrial Insurance Commission
Secretary
Library Advisory Board
State Medical Aid Board
State Nautical Board
Nurses' Examining Board
State Board of Park Commissioners
State Capitol Commission
Bar Examiners
Public Service Commission
Chief Grain Inspector
Industrial Welfare Commission
Tax Commissioner
Assistant Tax Commissioner
Uniform Legislation Commission
Veterinary Examining Board
State Humane Bureau
Board of Regents University of Washington
Board of Regents State College of Washington
Trustees State Normal School, Cheney
Trustees State Normal Schools, Bellingham
Trustees State Normal School, Ellensburg
State School for Deaf
State School for Blind
State Training School
State School for Girls
State Soldiers' Home
Washington's Veteran's Home

Western Hospital for Insane
Eastern Hospital for Insane
Northern Hospital for Insane
State Penitentiary
State Institution for Feeble Minded
State Reformatory
Superintendent

U. S. GOVERNMENT

If you are out of employment it is well for you to examine carefully the activities of the Government in your city or county, or any place in the state where it may have general offices.

Any man who is out of work cannot say he has done his best to obtain employment when he has neglected looking up Government work.

Because the Civil Service applies to certain positions, do not let this stand in the way. Go to the head of the department in whatever locality it is and ascertain whether there are any possibilities of taking a Civil Service examination in the different departments; or find out whether there is not a temporary position that you can fill. This condition often exists and many times employment is obtained in this way and Civil Service Examination is given later.

Read Our Plan No. 217 in Connection with the Following Plans

In Spokane, Spokane County, State of Washington, a town of about 125,000 population, the Government employs more than 600 men. I will take up the various departments of the Government in Spokane County and give you a statement concerning these different departments, which might assist you if you

are desirous of obtaining employment which are also represented in your State.

PLAN No. 885. POSTAL DEPARTMENT

This department is headed by the postmaster, who receives a salary of $6,000 per year, and an assistant postmaster who receives $3,150. About two hundred employees work in this department. The rural route employs about ten men. The mail men in the city receive from $1,350 to $1,668 per annum. The Civil Service governs this department. The rural mail carriers receive from $1,100 to $1,600 per annum. They are also under Civil Service.

PLAN No. 886. SECRET SERVICE DEPARTMENT

There are two employed in this department. Their salaries range from $1,500 to $2,200 per year. These employees are appointed by the chief of the Secret Service, Washington, D. C., and confirmed by the Secretary of the Treasury. The title of this department is self-explanatory.

PLAN No. 887. U. S. MARSHAL IS APPOINTED BY THE PRESIDENT AND CONFIRMED BY THE SENATE

This officer has four deputies. U. S. Marshal receives a salary of $4,000 per annum, while the deputies receive from $120 to $170 per month. This department names bailiffs for the Federal Judge.

PLAN No. 888. FEDERAL ATTORNEY'S OFFICE

The attorney in charge is appointed by the President and confirmed by the senate and holds office for four years. He receives $4,500 per annum. He has one assistant, appointed by the Attorney

General under advice of the District Court, who receives $1,800 per year.

PLAN No. 889. CUSTOM HOUSE INSPECTOR

There are two employed in this department—the man in charge and his assistant. The appointment is made by the Secretary of the Treasury at Washington, D. C. The salary received is $800.00 per annum. The office is subject to the Civil Service.

PLAN No. 890. IMMIGRATION OFFICER

This department is subject to the Civil Service, the salary received being $1,380. The man in charge attends to all immigration matters and also co-operates at different times with the Secret Service office.

PLAN No. 891. INTERNAL REVENUE AGENT

This department has four in its employ, who receive about $1,800 to $3,600 per year, and are called inspectors.

The business of this department is to investigate all income tax return. Civil Service applies.

PLAN No. 892. INTERNAL REVENUE COLLECTOR

There are four employed in this office. The Civil Service does not apply. The duties of the employees of this office are to collect about six-sevenths of all government tax in a certain territory. A pamphlet put out by this department deals with the law governing collection by the government. Salaries, $1,200 to $3,000.

PLAN No. 893. THE WEATHER BUREAU

This department is under Civil Service, there being

three employed. People who know of the activities of this office and the information it furnishes concerning weather conditions realize its value to the farmers.

PLAN No. 894. CUSTODIAN OF THE FEDERAL BUILDING

This department is under Civil Service. The number of employees engaged is fifteen. Their duty is to look after the Federal Building in the city. There are six laborers who receive a salary of $800 or $840 per year. Charwomen, who work five hours a day, are paid at the same rate as the laborers. There are two watchmen at $840 per annum; one elevator conductor, salary approximately $840; one engineer at $1,320, and one assistant at $1,320.

PLAN No. 895. INSPECTOR OF LOCOMOTIVES

There are two inspectors in this department of the same rank; they receive $3,000 per year each. The appointment is made by the Interstate Commerce Commission at Washington, D. C. They employ together one office woman, who does all the clerical work, and their duties call them out of the office a great deal of the time. Their purpose is to see that all of the rules of the Interstate Commerce Commission are lived up to. A pamphlet or booklet is put out by this department giving all of the rules and regulations of the Interstate Commerce Commission as to locomotives. These inspectors investigate all accidents and keep in close touch with all of the locomotives, safety appliances, etc., and in case of defects in locomotives, the matter is taken up at once with this department.

PLAN No. 896. BUREAU OF ANIMAL INDUSTRY

This is governed by the Civil Service Department. The salaries in this department run from $100 to $125 per month. There is one veterinary in charge, and three who act as inspectors. There are also five lay inspectors, grade number two, and four lay inspectors, grade number one.

It is the business of this department to examine all stock and meat. They make certain examinations prior to the death of the animal and post mortem subsequent to the death. The five lay inspectors, grade number two, look after and inspect the curing and shipping of all meats. The four lay inspectors, grade number one, assist veterinaries. One clerk is employed.

PLAN No. 897. BUREAU OF CROP ESTIMATES

There are two persons employed in this department under the Civil Service, one being the field agent and the other the stenographer and clerk. All information concerning crops in a certain territory is gathered together by the field agent and stenographer and forwarded to the Government to supply information for the Crop Reporter, which is sent out from Washington, D. C. The salaries in this department range from $100 to $125 per month.

PLAN No. 898. BUREAU OF MARKETS

This is a very interesting department. It has in its employ two telegraphers, receiving $1,400 per annum; three stencil cutters and persons who can run the mimeograph, who receive about $1,200 per year each. The person in charge must be able to decipher codes. One stenographer, one office boy and two general office workers are also employed. The General Chief Clerk, and his immediate subordinate receive $2,200 and $1,800 per annum respectively.

There is also a special man sent out from Washington, D. C., who is on the road most of the time. This department issues a market report giving the price for farm produce at certain points where the farmer sells. It also gives the cost of handling the produce at other points and the price retailers ask. This shows the farmer the difference between his selling price and that of the retailer. A pamphlet called the Confidential Apple is also published and sent to all apple growers twice a week. This shows the price that apples are being sold for; also what the various farmers receive for the apples they dispose of. Since the Confidential Apple has been established, there has been only a few cents difference in the sale price of apples. Prior to that time there was frequently a difference as high as 50 or 60 cents which shows the great advantage of this service to the farmer.

This department also sends out a Post Card Reporting Service for Washington, Oregon and Montana. All carload shipments are recorded, showing the point from which cars are shipped. If a carload of apples was shipped last week from a certain town, it is indicated by a certain red pin on a map, and one can from this pin, find the entire history concerning that shipment of apples. Or if it is potatoes that have been shipped from a certain district, the clerk has that information at hand. All of this information is furnished to the farmer by the department and is of great assistance to him. It is also helpful to those buyers to whom it is important to know just where the crops are produced.

The man in charge of this department must make inspections when any question occurs as to the produce received by the wholesale houses or other persons who purchase from the farmer. This service

is of great value to the farmer, because if he has sent in a load of good potatoes and the market has changed in the meantime, the inspector has to examine the potatoes, and if they are as good as represented by the farmer when they arrive, he will recover for any loss. Or, if a bad quantity of apples or other farm produce is shipped to the wholesale houses, they can call upon the government inspector and show what was forwarded to them, and this inspector's opinion is a basis for settlement.

PLAN No. 899. HAY AND GRAIN INSPECTORS

There are two employees in this department—one clerk and one manager, both being subject to the Civil Service and receiving from $100 to $150 per month. A letter, called a Market Letter, is issued. The inspectors see to it that the rules governing hay and grain are lived up to by the farmer.

PLAN No. 900. SEED INSPECTOR

There are two employees in this department—the man in charge and the clerk or stenographer. A letter is also issued by this department, which will also furnish all desired information as to seeds and their value.

PLAN No. 901. CLERK OF DISTRICT COURT

This appointment is made by the Federal Judge. Four officials are also employed besides the clerk, serving out of the city. Salaries run from $2,500 to $5,000 per annum fixed by the United States Attorney General.

PLAN No. 902. FEDERAL EMPLOYMENT OFFICE

This department employs one person. It has not

existed long enough to come under the Civil Service, so work in the office may be obtained by appointment from Federal Director and confirmed by the Department of Labor. In 1918 this office filled more than 197,000 positions in the State of Washington. The salary is $130 per month.

PLAN No. 903. FEDERAL LAND OFFICE

There are four employees in this office: one registrar and one receiver, who receive their appointment by the President and are confirmed by the senate. Each has an appointment of one clerk. The department is established on the fee basis, the registrar and the receiver getting not more than $3,000 in fees per annum and not less than $500.

This department issues a circular relative to the law covering government lands. It will furnish you information about the area of the government land in various counties of the United States and will give you such information as the department has on file. To this department come matters relative to homesteads, minerals, desert claims, timber claims and oil matters. Final proof to the land you locate is made in this office. Salaries received by the clerks range from $125 to $135 per month.

PLAN No. 904. CLERKS OF THE RAILWAY MAIL SERVICE

This department is under the Civil Service. Seven persons are employed in the city and more than 170 men report to the office in the city of Spokane, Washington.

CIVIL SERVICE

It often happens that a man who has occupied a

position for years finds the work in which he is engaged is injuring his health, for example, the labor he is performing has an effect on his lungs, like marble working, or some similar trade, and he desires a change. Or perhaps he is in some service that is not suitable to him and he is unable to progress. For such a man it is well to run over the preceding list very carefully and ascertain what field of work appeals to him. He should also read carefully plan No. 217.

I have in mind at the present time a man of good legal ability, but who did not possess business-getting qualities. He was somewhat discouraged, being unable to make his profession yield him a proper income. He was urged by one of his friends to take a Civil Service Examination in one of the departments. He took the examination and after a few months, his position was available, and he has occupied it for a number of years.

Work with the Government is always pleasant and the income steady and permanent.

PLAN No. 905. FEDERAL JUDGE

A Federal Judge of the United States District Court is appointed by the President and confirmed by the Senate, his salary is $7,500 per annum. He has one clerk, one assistant and one stenographer. The stenographer is appointed by himself. Then there are the various departments such as the United States Marines Recruiting Office, which employs three men; the United States Navy Recruiting Office, which employs three men; the United States Army Recruiting Office, which employs three men, and is under the Civil Service. These departments employ many emergency men at times.

PLAN No. 906. BUREAU OF FARM MANAGEMENT

This department is governed by the Civil Service and employs three persons, the salary being——.

PLAN No. 907. HOME DEMONSTRATION AGENT

The Government and Agricultural School usually name a woman for this position. She must be trained in her work and have an Agricultural College course to her credit. Here is a field where women can do as good work as men, and it offers an excellent opportunity for them.

PLAN No. 907B. FORESTRY DEPARTMENT

Six persons are employed. At the present time the headquarters of this office is at Missoula, Mont. It is under the Civil Service, but from time to time emergency men are employed.

PLAN No. 908. HE NETTED BETTER THAN $5,000 A YEAR TAKING PICTURES

This man, for years, was unable to make much of a saving in his photographic work. His wife and he possessed ability in preparing photographs. He finally hit upon the following plan:

He hired two men called spotters, who took the pictures and went into different communities picturing men in the offices and at work at their desks. These two spotters were able to take at least fifty pictures a day each, making better than one hundred pictures per day. These men he paid $25.00 to $30.00 per week and traveling expenses. He saw to it that they had their supplies and everything ready when they arrived in town for work. Immediately following these men were salesmen

who, after the pictures were printed, called and gave the price per dozen, which was $4.50 mounted size 9x7. Unmounted his charge was three pictures for a dollar. The salesmen were able to make the number of pictures actually taken average about $0.80 per picture.

The two salesmen were then followed by two delivery women. The photographer and his wife did all of the developing and finishing. A city of 125,000 would take about six weeks.

Great care must be taken by the man who is directing this work to see that his men are all kept busy and working. This man succeeded in keeping the spotters going fast enough, and everything was worked out in a systematic manner. He also gave the workers an opportunity of receiving a commission in addition to their salary.

I remember clearly the way the spotter approached me. “I would like to take a picture of yourself and office,” he said, but I protested that I did not care to have the picture. “That is all right, I would like to have the negative and I am paid just the same and it is no obligation to you.” He then took the picture relying entirely upon selling me the picture when I saw the finished product. In this he took very little chance, as he well knew that 80 per cent of the people who saw a picture of their office and themselves at work would be glad to pay the price for it.

There is a great field in this work and there is no reason why there should not be work in many different parts of the United States affording a good livelihood and a big saving for many photographers who are not now making a good living.

IMPORTANT NOTICE!

The following plans were compiled by the Federal Board for Vocational Education, U. S. A.

We gratefully acknowledge with thanks the Board's permission to publish them.

PLAN No. 909. JOURNALISM AS A VOCATION

Acknowledgment

For the material of this monograph the Federal Board for Vocational Education is indebted to the J. Lippincott Co., Philadelphia, Pa., through its publication, "Training for the Newspaper Trade," and the Collins Publicity Service, Philadelphia, Pa., through its publication, "Journalism," School Edition, Teachers' Auxiliary, of which this article is largely an abstract. This article was prepared by Dr. H. L. Smith under the direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division for Editorial assistance.

It is very important that the right decision be made, for one's future success and happiness is largely dependent upon this choice. No two individuals have the same desires or the same ability or experience. Some like and are by nature and experience fitted to prepare for one line of work and unfitted for another, even for one in some instances which close acquaintances may urge them to take up. It is one's duty therefore, to consider carefully the

line of work one wishes to train for. Some may choose wisely to enter the field of journalism. It is hoped that this pamphlet may assist such to make the proper choice and may prevent those who are unfitted for this profession from undertaking it.

What is the Nature of the Work in Journalism?

The main purpose of a newspaper is to give the day's news. Another purpose is that of making the meaning of this news clear to the readers. Moreover, newspapers often furnish their readers with advice and with useful information as well as with entertaining reading. There was a time when the purpose of a paper was thought to be that of simply stating conditions as they are. At the present there is a rapidly growing tendency to use the newspaper to state conditions as they should be. A newspaper that tells what to do to make things better plays a great part in making democracy safe.

In any large newspaper plant there are three main divisions—the business office, whose duty it is to make the paper pay; the plant that must see to the actual printing of the paper; and the editorial department, which prepares all of the reading matter except the advertisements. It is with the editorial department that the term "journalism" is connected, and it is with the work of that department that this pamphlet deals.

There are two classes of reading matter in a newspaper, the news and the editorial comment, each class of material being prepared by a different force of writers. The editor in chief is at the head of the editorial staff, and since editorials consist of opinions rather than of bare statements of new facts, he holds the most important position on the paper.

He is helped by men who are very well informed about all matters that are of interest to the public. The number of these helpers is from one to a dozen, according to the size of the city paper.

The managing editor looks after gathering and reporting news. His department is made up of several parts, each one in charge of an editor. The news editor looks after all out-of-town news, that is, all news from other countries or from this country outside of a distance 75 miles from the city of the newspaper. The telegraph editor looks over "copy" sent in by outside reporters and decides what is good and what is poor. The Sunday editor gets up the pictures and other "features" and special articles outside of strictly news articles. The art editor decides upon the pictures to be used and the method of making those pictures. The cable editor prepares the foreign news by filling in cable messages and making long articles out of them. The city editor hires and directs reporters on city work and on work outside the city but within a distance of seventy-five miles, having sometimes as many as seventy-five helpers within the city, and as many as that outside called local correspondents. The sporting editor looks after news of sports and has an assistant for each kind of sport. The night city editor covers late news, being in charge after 6 p. m. to receive copy brought in by reporters previously assigned to their duty by the city editor. The night editor is in charge of the "make up" of the paper and the getting of the paper to press. Most newspapers also have other editors called department editors for such departments as music, drama, society, finance, literary criticism, railroads, real estate, and stock markets. The department editors gather as much of their news as possible by themselves. Their work differs from that

of other editors in that their copy goes directly to the printer and is not first looked over and corrected by the city editor.

The life of a newspaper man is not an easy life. A study[11] of newspaper work in Boston sums up the hardships and difficulties in the life of a reporter in the following way:

[11] Vocational Studies, Journalism, P. 11. School Ed., Teachers' Auxiliary, No. 16, Collins Publicity Service, Philadelphia, Pa.

"The hours are long and irregular. On a morning paper they run from 1 in the afternoon until midnight, usually with an occasional evening off. But the free evenings can never be counted on in advance; they come only when the news happens to be slack. On the afternoon papers the hours are almost as bad, for, while they are only supposed to be from half-past 8 or 9 to 5, an assignment will very often come in at the last minute that will keep the reporter out until midnight. This means little or no freedom.

"The irregular hours also affect the meals. An assignment often takes the reporter out into the suburbs for hours at a stretch, where there are no restaurants, and where one can only work as fast as possible in order to get back to town. It means all kinds of weather, too, for suicides and elopements will occur, be it fair day or foul, in houses several miles from the nearest car track, and they have to be looked up at once. A long, hard trip, like this, is not only an every day matter, but it means no extra pay."

The desk man or editor, while freed from the hardships of travel, has other difficulties to overcome. These difficulties are set forth in the following further quotation from the same report:

"As the time for going to press approaches, the copy pours in faster and faster, the composing room signals that the paper is already overset and yet perhaps, now, at the last minute, an item of first importance in the whole day's events comes in, and room must be made for it. In the midst of all this clamor the desk man must keep his head, racing

through the piles of copy, weighing its merits discriminately and giving as cool and careful decision as though he had all the leisure and quiet in the world."

What Physical and Personal Characteristics Are Necessary for Success in Journalism?

One must have good health to stand the hardships of long and irregular hours of work, under bad conditions, often long distances from the office and in all kinds of weather. There are also certain personal qualifications that one must have to succeed in the field of journalism. Chief among these personal qualifications is the ability to adapt one's self to many different subjects and feel at home in each.

Unlike writers in other fields, the reporter is a writer of matter which lives today and is dead tomorrow. He is not so much in need, therefore, of the artistic quality in his writings as he is in need of the ability to pass quickly from subject to subject writing briefly but to the point on each.

Another thing one must have for success in journalism is what may be termed "the news instinct"; this is the ability to recognize news in any form, even in the most commonplace events, and to write these commonplace things up in such a way as to interest the reader. This ability is not found in the person who does not observe carefully.

A clear, easy style full of dash is necessary for the reporter. This style can usually be gained with a little practice by the man or woman with a sense for news. The reporter's main aim is to catch the public eye, after that he needs most to produce copy at great speed, remembering all the while that his work is not likely to be read more than once.

Other qualifications a reporter should have are intelligence, and an understanding of people. He must have tact, and be a "good mixer," capable of easily gaining the confidence of people in order to draw them out in his search for news.

What Training Is Necessary for Success in Journalism?

A college education is a help, of course, but it is not absolutely necessary in the journalistic profession. One who wishes to become a journalist may enter the newspaper field as a reporter at almost any time after he has had enough experience and general knowledge to make him well acquainted with a number of subjects and when, in addition to this, he has learned to write his thoughts in clear, forceful language. Certainly a grade education is necessary and some high school education is advisable for the beginner. More and more as the field of newspaper work enlarges and broadens a full four-year high school course is becoming essential. The best opportunities will more and more open up only to those of wide experience and knowledge. Toward this experience and knowledge a college education adds very much, particularly if the college education deals with the theory and methods of newspaper organization, as well as with practical training in reporting and in editing work. Whether the foundation education is gotten in the grade school, in the high school, or in college, one must have acquired somewhere along the line the ability to write correctly and briefly in language that can not be misunderstood. Much of the ability to do this comes from the practical school of experience. Much of it, however, can be given in schools. More and more the emphasis is being placed upon thorough

preparation before entering the profession of journalism.

Once the college man in a newspaper office was thought of as a joke by others in the office. They sneered at his style. Two things have happened to change that feeling. In the first place college men are now trained in a simpler style of writing than they once were. In addition to that they now get more practical training than they once did. Besides this, so many college trained men have done well in journalism that newspaper men are beginning to see that their success is due largely to the college training. On many papers today one will find the staff made up very largely of college men. On many papers now when they are looking for a new man for the writing force they often look for a man with a college degree.

The first school of journalism in the world was started by Joseph Pulitzer in 1904 at Columbia University. In the words of its founder the purpose of this school was to raise the standard of newspaper work through better education of those who enter the profession. “I am deeply interested in the progress and elevation of journalism,” he wrote, “having spent my life in that profession, regarding it as a noble profession and one of unequaled importance for its influence upon the minds and morals of people * * *. It will be the object of the college to make better journalists, who will make better newspapers, which will better serve the public. It will impart knowledge, not for its own sake, but to be used for the public service. It will try to develop character, but even that will be only a means to the one supreme end—the public good.”[12]

[12] Vocational Studies, School Ed., Teachers’ Auxiliary, No. 16, Collins Publicity Service,

Philadelphia, Pa.

Since the beginning of the Pulitzer School of Journalism at Columbia University, about 20 colleges and universities have put in courses in journalism. One of the requirements for entering these courses is the full four years of high school work. The course, itself, ranges from courses of lectures by newspaper men to a complete course, four years in length, which usually leads to a bachelor of arts degree, or its equivalent. Instruction in journalism includes a study of the English language, literature, and composition, the work of the reporter and editorial writer, the methods of gathering news, the technique of newspaper making, the general management of papers, the history of journalism, together with general history, economics, sociology, psychology. Typewriting and often stenography are also required for graduation. The college work in journalism is accompanied by actual experience on papers, either college publications or papers published in the city or town in which the college is located. Students trained in such courses know how to write a story, how to get up a headline, and how to write editorials, and because of this fact men so trained get promotions in shorter periods of time than others.

For the benefit of those journalists who have not the chance to take the full college course, several phases of journalism are given in the summer schools of many colleges, and special courses in newspaper and magazine writing are given in evening schools. Such courses can be taken at the same time that one is employed on a newspaper.

It is clear, therefore, from the above, that more and more journalism calls for education and training before one begins actual work as a regular reporter on a paper.

How Much Income May One Reasonably Look Forward to, if Successful in the Field of Journalism?

In few vocations is there greater difference in salaries than in the field of journalism. So far there does not seem to be any general standard that all the papers of the country attempt to live up to. The managers of certain newspapers follow the practice of employing only experienced men, taking them wherever they can be found from the staffs of other newspapers. Such papers, of course, pay good salaries. Other publications are willing to take on a few, or even a large number of beginners. Such papers naturally pay smaller salaries. Seldom, however, is the beginner in journalism paid less than $12 or $15 per week on the daily papers, though some receive as low as $10 a week. Often a paper works, not only on a basis of straight pay, but on the basis of the space the articles contributed occupy.

"Space rates" range from $2 to $10 per column, the amount varying with the standing of the newspaper, and with the character of the news itself. Promotions are very rapid and anyone with promise can hope to get a raise in salary from time to time until it reaches from $19 to $25 a week, which is the salary of regular reporters. Reporters who do special work are generally paid more. Their salaries range from $25 to $35 per week. On the very best papers there are very few reporters who draw salaries ranging from $35 to $50 per week. Such men are as well paid as men in the editorial department. The chiefs of the different editorial departments draw from $30 to $50 a week. Managing editors and editors-in-chief get salaries ranging all the way from $2,500 to $10,000 per year.

From the mere money point of view there are

other lines of work far easier to master, and more certain to bring large money rewards than journalism. The tendency now, however, is to pay bigger salaries to newspaper men. As it is, the income is greater than that of the minister and equal to that of a lawyer.

What Are the Other Rewards to a Journalist, Aside from the Financial Rewards?

With many men in journalistic work, however, ideals mean more than money. The public good with such men means more than private gain. Another reward to the young man in this profession is that he comes in contact with mature people. He learns to know even personally many of the great men in business, in politics, in law. The newspaper is one of the very greatest educational agencies. What it does for the adult in an educational way is like what the public schools do for children in an educational way. Among the mature there are masses of ignorant people, ignorant in letters and ignorant in citizenship. The journalist, through the newspaper, has all the people as his audience. Through his opportunity for instruction the journalist may exercise great influence in politics in connection with work for municipal reform, clean streets, better schools, etc., and against machine control in politics, with its bribery and election frauds. Some people have objected to newspaper work because they thought such work corrupted beginners. The truth is that journalism is to each man in it what he makes it. There is more freedom of action in journalism than in the ministry or even than in law or medicine, but a code of ethics is rapidly being developed in the newspaper world that compels each one to do more nearly the right thing. Certainly the reporter does not

know the full significance of his stories, headlines, and editorials until he realizes the probable effect of his writings on the ideas and ideals of his readers. Especially is the opportunity for such influence by the journalist good in America, where there are twice as many papers published as in any other country, and far more than twice as many copies issued. It is estimated that more than 5,000,000,000 copies of newspapers of all kinds are printed in the United States yearly.

How Many Years Will It Take to Establish Myself in Journalistic Work?

The newspaper reporter does not have the experience of a young lawyer or doctor, who must pick up business slowly and wait sometimes for years before he is satisfactorily established. The reporter succeeds or fails from the outset. In fact reporting is the work of comparatively young men, and is especially liked by those of from 20 to 30 years of age. Those who have been successful in this period of life are generally picked for promotions, and less uncertain assignments in the later periods of life.

Very often men who have been successful in early life as newspaper reporters take up magazine writing later. It is often stated that magazine writing is post-graduate newspaper work. The monthly magazine has become an important influence in the modern world, many of the more popular magazines having a larger circulation than any newspaper. On the staff of each periodical there are usually several special editors in charge of separate departments. These editors are often assisted by a regular staff of writers. Frequently, however, those who write for magazines are not connected with the regular staff, but are “free lances” contributing articles from time to time on

subjects which they are especially fitted to write about.

The question often arises, Where shall the start be made? Is it best to begin in the country or in the city? The editor of one of the New York dailies says that there are many changes in the staff on a city paper, so a man who is capable has a chance to get a pretty good position, in fact a very good newspaper position, within a half dozen years' time. This editor also says that it takes about as long to get a good position on a country paper, and after that if one goes to the city he must begin at the bottom and work up, so that much time is wasted. The advantage in beginning on a paper in a small city rather than a large one is that one is more likely there to gain an all around knowledge of everything that must be done in a newspaper office.

How Great is the Demand for Men in the Journalistic Field?

There are in the United States and Canada at the present time approximately 25,000 newspapers and periodicals being published. Nearly 40 per cent of all such publications in the world are published in the United States and its outlying territories. In 1915 these publications in the United States gave employment to over 100,000 people, approximately 35,000 of whom were editors and reporters. The total circulation at that time aggregated 164,468,040. Moreover, newspapers are being circulated in larger numbers every day and are being read by an increasing number of people every day. The whole field of journalism is constantly enlarging and the claim is made by those who are expert in the field that the profession is not overcrowded with good workers.

How Much Will It Cost to Prepare for Newspaper Work?

If you are a soldier or a sailor discharged from the service since October 6, 1917, with a disability for which the Bureau of War Risk Insurance will grant you compensation, your education will be furnished free by the Government. The Bureau of War-Risk Insurance, through its compensation, will meet a part of the expenses and the Federal Board for Vocational Education will supplement that amount to a minimum of $65 a month with the purpose of meeting all of your expenses for living, clothing, transportation, tuition, and incidentals.

THE LUMBER INDUSTRY

Lumbering is the felling and conversion of trees into lumber. The extraction of the timber from the forest is known as logging, and the manufacture of the logs into lumber is known as sawmilling.

PLAN No. 910. LOGGING

Regions

The chief centers of the logging industry are in New England, the Lake States, the Southern Appalachians, the Southern pine region, the cypress swamps of the Atlantic and Gulf coasts, the Inland Empire (Montana, Idaho, and Eastern Washington and Oregon), and the Pacific coast.

Methods and Labor Conditions

The methods of logging and the opportunity for employment in this work present many different

aspects in these regions. Animal logging prevails in the Northeast, the Lake States, and the Inland Empire, and power logging in the other sections, although no one method is universally used in any of these regions.

The demand for labor, both skilled and unskilled, in every section is now greater than the supply, and competent men can readily find some form of employment to which they are adapted.

Conditions surrounding work in the forest vary greatly in the different regions, and one who is not familiar with local conditions should weigh carefully his own ability and the opportunities which each section may offer to him.

Who Should Undertake the Work?

Logging work will appeal most strongly to one who has been accustomed since his early years to an outdoor life, and who is familiar in a general way either with outdoor manual labor or with some mechanical trade.

The best opportunities for men who wish to make lumbering a life work are with the larger companies, since they have organizations in which employment is more continuous, and in which there is the greatest possibility of advancement. Small lumbering concerns offer but little inducement, unless a way is open to secure an interest in the business.

Advancement to the beginner in the lumber industry is not rapid and, therefore, it holds more promise to the young, single man who can afford to serve an apprenticeship, than to the older man who has a family to support and whose financial requirements are greater at the beginning.

Felling timber is hard work, but appeals to strong, robust men, because the wages paid for it are among

the highest paid in a logging camp. The work is too heavy for one past the prime of life, or for a young man who may be physically incapacitated.

Where logging is done by animals, the position of teamster may be filled by older men as well as that of swamper, grab setter, tong hooker, scaler, and like positions which do not call for heavy manual labor.

Power logging, which is common in the South and in the far West, affords an excellent opportunity for active young men with mechanical ability, since skilled operators are required to run the skidding machinery and to keep it in repair.

A northern logger should not consider employment in the cypress swamp forests, because it is work which appeals chiefly to those who have grown up in the cypress “brake” region.

PLAN No. 911. RAILROAD CONSTRUCTION AND OPERATION

Men who have had experience with railroad construction or operation will find a promising field in the lumber industry, since on most large operations the logs are hauled from the forest to the mill over logging railroads. Locomotive engineers and firemen are in demand and command a fairly high wage. The hours are long because it is necessary to deliver a certain quantity of logs to the mill daily, and in case of delays in schedule, the crews must work until the necessary quantity of logs has been delivered.

On large operations new railroad lines are continually under construction, and opportunity is afforded for employment to those who are familiar with railroad construction.

Log Driving

Where logs are transported down streams to the mill, log drivers are required during the spring and summer months. On “rough water” this work requires experience and skill, and is hard work which must be done often in inclement weather. It is not a class of work to which an inexperienced man would be adapted.

Social Conditions

Social conditions in the different regions have played a prominent part in the distribution of labor in the lumber industry. The trend of labor migration has been from the East to the West, and not from the North to the South, because woods workers from the North and East have found both climatic and social conditions more to their liking in the West than in the South. Northern and eastern loggers have gone South in small numbers to fill positions of responsibility, but in general, the unskilled laborer has not found living and working conditions to his liking in the lowlands and southern pineries.

An important factor to be considered in this connection is the color line, which is more or less sharply drawn in the South. In some sections both whites and negroes work together on the same operations. The standard of work and the social conditions which prevail in southern logging camps, however, do not appeal to the northern man, and but few are content to remain for any length of time.

In the West the northern logger meets with conditions similar to those existing at home and, therefore, he is satisfied to become a permanent resident in the region.

Logging work in most sections is more or less removed from settlements and, in general, it is not

possible for the logger to enjoy family life. The exception to this case is the logging camp of the southern pineries, which is a community comprising the loggers and their families. The buildings are small, portable houses, two or more constituting the home of a single family. Medical facilities are provided by the company, along with a school and a church and each community comprises a settlement in itself. Although both white and colored laborers may live in the same camp, the quarters are separated and the two races do not intermingle. The social advantages for an ambitious man with a family are not great and many northern and eastern men would not find conditions to their liking. Only men familiar with local conditions should seek employment in southern logging camps.

The mountain region of the Southern Appalachians appeals to many northern loggers, because the conditions in this region are not dissimilar to those with which they are familiar.

It is not practicable to point out any particular branch of logging work which might appeal to individuals. Each man after choosing the region in which he desires to work should try out the various classes of employment to which he may find himself adapted, expecting ultimately to find that class of work for which he is best fitted.

In general, one who desires to enter the field of logging should be young, have a robust constitution, possess a liking for outdoor work, and should seek employment in some region with which he is familiar, or in some section which is similar in climatic and social conditions to his home region.

PLAN No. 912. SAWMILLING

The sawmill industry is scattered over a wide area in this country, but the chief centers of lumber manufacture are in or adjacent to the great forest areas of the country, in the southern pine region, which produces nearly one-third of all of our lumber cut, and in the Pacific Northwest, which produces about one-eighth of our total cut. The sawmill business includes plants ranging from the small mill, cutting a few thousand feet daily, up to the plant which turns out nearly one million feet of lumber in twenty hours.

Lumber Settlements

Lumber manufacture is centered in permanent settlements, a new plant usually having a normal life of at least 20 years. Some of these communities comprise only the lumber companies' employees (a "one-man town") while others are located at or near cities or towns. Merits are claimed for both systems, but it is true that some of the cleanest and most enlightened communities are those in which the control of affairs rests largely in the hands of the lumber company. In this way undesirables may be kept away from the settlement, better schools are usually maintained, and the entire tone of the community placed on a higher standard than exists in the "open" towns.

Character of Work

The work at a sawmill plant is extremely varied in character, and ranges from that requiring high technical and mechanical ability down through every degree of skill to work which can be performed by a low grade of common labor. The wage scale likewise shows a wide range. The highest technical positions, such as saw filer in a large mill, may command $12

per day and up, while the lowest wage is the minimum for common labor in the region. Sawmilling proceeds in all kinds of weather, except during the winter season in the northern regions. At all plants, however, some forms of work, such as lumber piling, trucking dry lumber to the planing mill, and loading cars, may be discontinued during short spells of inclement weather. The actual sawing of lumber, in most regions, seldom ceases except when the entire plant closes down, since this work is largely done under cover and the men therefore are sheltered.

Sawmill work should appeal to one who is interested in factory work; who desires employment which keeps him more or less in the open; and who prefers to live in a settled community. It offers a clean, healthful occupation for all degrees of skill, hence it affords opportunity for every industrious man.

WAGES

The wages paid in the lumber industry vary with the region in which the work is performed and local wage scales, but the compensation is as great as in other industries requiring an equal amount of skill.

PLAN No. 913. CLASSIFICATION OF LABOR IN THE LUMBER INDUSTRY

225 JOBS LISTED

Logging work as a rule requires a man of robust constitution who can stand up under hard physical labor performed in the open in all kinds of weather. Loggers must as a rule be skilled in the use of ax, crosscut saw, and like tools, or to be competent

teamsters, although considerable unskilled labor is employed in each camp.

Sawmill employees should in most instances be robust. They are not as a rule exposed to inclement weather to the same degree as loggers. A high degree of mechanical skill is required of saw filers, sawyers, mechanics, and persons filling like places, but the greater part of the sawmill work does not demand mechanical skill of even average degree and consequently the work can be satisfactorily performed by labor which has had but little previous experience. In most positions a man who is of average intelligence and has the ability to quickly adapt himself to new lines of work will prove successful.

Woods work as a rule does not appeal to the city born and bred man, because it takes him from settled communities. On the other hand, both logging and sawmill work often appeal to the country-reared man because it keeps him out in the open.

The scarcity of labor during the last year has necessitated the employment of many laborers who would not have been acceptable in former times. Women are now filling many places in the industry to which they were not formerly considered eligible. They are now driving teams on logging jobs, felling timber, laying railroad steel, surfacing railroad track, and doing other work in the woods, as well as filling very satisfactorily a large number of places in sawmills, box factories, and other woodworking establishments which were formerly filled exclusively by men.

There is promise of a readjustment of labor conditions in the industry, and it is certain that the discovery of the worth of female labor in the industry will have a marked effect on labor

conditions. The entrance of female workers will mean that many forms of the lighter labor formerly performed by physically deficient males will be given over to women, and it is possible that this may have a marked bearing on the possibility of employing wounded soldiers for this purpose. Few soldiers will be advised to enter the lumber industry unless they were formerly engaged in a similar line of work.

The following tabulation shows in a very general way the minimum range of the technical and mechanical qualifications required for certain lines of logging and sawmill work. Experienced men with greater disabilities than those mentioned may prove efficient, but it is not believed that inexperienced men who can not meet the requirements would prove satisfactory in the industry.

Better Than 225 Jobs

Labor Classification—Lumber Industry

Physical and Technical Qualifications

	Physical requirements.				
	Physique.	Arms.	Legs.	Eye-sight.	Hear-ing.
A. Logging engineering:					
(1) Land surveys—					
a. Instrument man.	Robust.	2	[13]2	Good.	Fair.
b. Rodman.	do.	2	[13]2	Fair.	do.

c. Chainman.	do.	2	[13]2	do.	do.
d. Axeman.	do.	2	[13]2	do.	do.
(2) Timber cruising —					
a. Cruiser.	do.	1	[13]2	Good.	do.
b. Compassman.	do.	2	[13]2	Fair.	do.
c. Cook.	do.	2	[13]2	1 eye, fair.	do.
(3) Topographic mapping and map making.	do.	2	[13]2	Good.	do.
(4) Railroad location—					
a. Instrument man.	do.	2	[13]2	do.	do.
b. Rodman.	do.	2	[13]2	Fair	do.
c. Chainman.	do.	2	[13]2	do.	do.
d. Axeman.	do.	2	[13]2	do.	do.
(5) Planning logging operations—					
a. Forester or logging engineer.	do.	2	[13]2	do.	do.
B. Logging:					
(1) Felling and bucking (including saw fitting)—					
a. Head faller.	Robust.	2	2	Fair.	Fair.
b. Second faller.	do.	2	2	do.	do.

c. Saw filer.	Fairly robust.	2	1	Good.	Fair to poor.
d. Saw boss.	do.	1	2	1 eye, fair.	Fair.
(2) Skidding and yarding (animal) —					
a. Teamster.	Robust.	2	2	Fair.	do.
b. Swamper.	do.	2	2	do.	
c. Grab setter.	do.	2	2	1 eye.	do.
d. Tong hooker.	do.	2	2	do.	do.
e. Tong unhooker.	do.	2	2	do.	do.
f. Cant hookman.	do.	2	2	do.	do.
g. Skidway man.	do.	2	2	do.	do.
(Power—Pacific coast):					
a. Hook tender.	do.	2	2	do.	do.
b. Rigging shingle.	do.	2	2	do.	do.
c. Choker man.	do.	2	2	do.	Good.
d. Sniper.	do.	2	2	do.	Fair to poor.
e. Signalman.	Average.	1	2	1 eye, fair.	Good.
f. Yarding and road engineer.	do.	2	2	Good.	do.
g. Yarding and road-engine fireman.	do.	2	2	Fair.	Fair.
h. Wood buck.	Robust.	2	2	do.	Fair to poor.
i. Head loader.	do.	2	2	do.	Fair.
j. Second loader.	do.	2	2	do.	do.

k. Loading engine engineer.	Average.	2	2	do.	Good.
l. Loading engine fireman.	do.	2	2	do.	do.
m. Pump man.	do.	2	1	do.	Fair.
o. Master mechanic.	do.	2	2	do.	do.
n. Blacksmith.	Robust.	2	1	Good.	do.
p. Carpenter.	do.	2	2	do.	do.
q. Car repairer.	do.	2	2	do.	do.
r. Pole road construction (foreman).	do.	2	2	Fair.	do.
s. Pole road construction (laborers).	do.	2	2	do.	do.
t. Landing construction (foreman).	do.	2	2	do.	do.
u. Landing construction (men).	do.	2	2	do.	do.
(3) Transportation —					
a. Locomotive engineer.	do.	2	2	Good.	Good.
b. Locomotive fireman.	do.	2	2	do.	do.
c. Conductor, log train.	Average.	1	2	do.	do.
d. Brakeman, log train.	Robust.	2	2	do.	do.
e. Section foreman.	Average.	1	2	do.	Fair.
f. Section man.	Robust.	2	2	Fair.	Fair to poor.

g. Railroad construction (foreman).	do.	2	2	do.	Fair.
h. Railroad construction (men).	do.	2	2	do.	Fair to poor.
i. Rafting or boom foreman.	do.	2	2	do.	Fair.
j. Rafting or boom men.	do.	2	2	do.	do.
k. Driver foreman.	do.	2	2	Good.	do.
l. River driver.	do.	2	2	Fair.	do.
(4) Timber measurement—					
a. Scaler.	Average.	1 or 2	2	Good.	do.
b. Scaler's helper.	do.	2	2	Fair.	Fair to poor.
(5) General camp crew—					
a. Foreman.	Robust.	2	2	do.	do.
b. Barn man.	Average.	2	1	do.	do.
c. Cook.	Robust.	2	1	1	do.
d. Flunkey.	Average.	2	1	1 eye, fair.	do.
e. Chore boy.	do.	2	1	Fair.	do.
f. Camp clerk.	do.	1	1	do.	do.
Lumber manufacture:					
C. (1) Log storage—					

a. Log car unloaders.	Robust.	2	2	do.	Fair.
b. Pond foreman.	Average.	2	2	1 eye, fair.	do.
c. Sinker raiser.	Robust.	2	2	do.	do.
d. Boom men and jacker feeder.	do.	2	2	do.	do.
(2) Sawmill proper —					
a. Dock man and scaler.	Average.	2	2	Good.	Fair.
b. Sawyer.	Robust.	2	2	do.	do.
c. Setter.	do.	2	2	do.	do.
d. Carriage rider.	do.	2	2	Fair.	do.
e. Swamper or off-bearer.	do.	2	2	do.	do.
f. Tripper.	Average.	2	2	do.	do.
g. Edgerman.	Robust.	2	2	Good.	do.
h. Tail edger.	do.	2	2	Fair.	do.
i. Slasherman.	Average.	2	2	do.	do.
j. Gang sawyer.	do.	2	2	Good.	do.
k. Gang feeder.	Robust.	2	2	Fair.	do.
l. Gang tailer.	do.	2	2	do.	do.
m. Trimmer loader.	do.	2	1	do.	do.

n. Trimmer leverman.	Average.	2	1	Good.	do.
o. Clean-up man.	do.	2	1	Fair.	do.
p. Oiler.	do.	2	2	Good.	do.
q. Foreman.	do.	1	1	do.	do.
r. Saw filer.	do.	2	1	do.	do.
s. Saw filer helper.	do.	2	1	do.	do.
t. Jump saw operator.	do.	2	1	Fair.	do.
u. Millwright.	Robust.	2	2	Good.	do.
v. Watchman.	Average.	1	2	do.	do.
(3) Sorting and grading—					
a. Inspector, lumber.	do.	2	2	do.	do.
b. Graders.	Robust.	2	2	do.	do.
c. Sorting table man.	do.	2	[14]1	Fair.	do.
(4) Yard and kiln work—					
a. Foreman.	Average.	1	2	do.	do.
b. Teamsters.	do.	2	2	do.	do.
c. Stackers.	Robust.	2	2	do.	do.
d. Send-in men.	do.	2	2	do.	do.
(5) Planing mill—					
a. Foreman.	Average.	1	2	do.	do.
b. Machinist.	do.	2	2	Good.	do.
c. Shipping clerk.	do.	1	1	Fair.	do.

d. Machine feeders.	Robust.	2	2	do.	do.
e. Grades behind Machines.	Average.	2	2	Good.	do.
f. Machine tailers.	do.	2	2	Fair.	do.
g. Tyers.	do.	2	1	do.	do.
(6) Loading and shipping—					
a. Truckers.	Robust.	2	2	do.	do.
b. Car loaders.	do.	2	2	do.	do.
c. Checkers.	Average.	2	2	Good.	do.
(7) Office and Sales—					
a. Clerk.	do.	2	1	Fair.	do.
b. Salesman.	do.	1	2	do.	do.
(8) Commissary employees.	do.	2	1	1 eye, fair.	do.
(9) Power house—					
a. Engineer.	do.	2	2	Fair.	do.
b. Fireman.	do.	2	1	do.	do.
c. Common labor.	do.	2	2	do.	do.
(10) Machine shop—					
a. Foreman.	do.	2	2	do.	do.
b. Blacksmith.	Robust.	2	2	Good.	do.
c. Machinist.	do.	2	1	do.	do.
d. Boiler maker.	do.	2	2	do.	do.
e. Pattern maker.	do.	2	1	do.	do.
f. Welders.	do.	2	2	do.	do.
g. Electrician.	do.	2	2	do.	do.
h. Helpers.	do.	2	2	Fair.	do.
i. Common labor.	do.	2	2	do.	do.

(11) Miscellaneous—					
a. Timekeeper.	Average.	2	1	do.	do.
b. Common labor.	Robust.	2	2	do.	do.
D. Lath Manufacture:					
a. Foreman.	Average.	2	1	Fair.	Fair.
b. Slab picker.	Robust.	2	1	do.	do.
c. Machine feeders.	do.	2	2	do.	do.
d. Machine tailers.	do.	2	2	do.	do.
e. Lath bundlers and Graders.	Average.	2	2	do.	do.
E. Shingle manufacture:					
a. Foreman.	do.	2	1	do.	do.
b. Bolter.	Robust.	2	2	do.	do.
c. Shingle sawyer.	do.	2	1	do.	do.
d. Knob sawyer.	do.	2	1	do.	do.
e. Grader and bundler.	Average.	2	1	do.	do.
F. Paper industry:					
(1) Millwork—					
a. Head piler (wood).	do.	1	2	do.	do.
b. Wood handlers.	Robust.	2	2	do.	do.
c. Conveyor man.	do.	2	1	do.	do.
d. River man.	do.	2	2	do.	do.
e. Head wood handler.	Average.	1	2	do.	do.
f. Slip man.	Robust.	2	2	do.	do.
g. Head preparer.	Average.	1	1	do.	do.
h. Swing sawyer.	Robust.	2	1	do.	do.
i. Barker.	do.	2	2	do.	do.

j. Splitter.	do.	2	2	do.	do.
k. Waste handler.	do.	2	2	do.	do.
l. Chipper.	Average.	2	2	do.	do.
m. Head grinder man.	do.	1	2	do.	do.
n. Stone sharpener.	Robust.	2	2	do.	do.
o. Grinder man.	do.	2	2	do.	do.
p. Block handler.	do.	2	2	do.	do.
q. Screenman.	Average.	2	2	do.	do.
r. Sliver man.	do.	2	2	do.	do.
s. Head pressman.	do.	1	2	do.	do.
t. Pressman.	Robust.	2	2	do.	do.
u. Decker man.	do.	2	2	do.	do.
v. Sulphur burner.	Average.	1	2	do.	do.
w. Acid maker.	do.	1	2	do.	do.
x. Lime slacker.	do.	1	2	do.	do.
y. Lime handler.	do.	2	2	do.	do.
z. Towerman.	do.	2	2	do.	do.
aa. Cook (digesters).	do.	1	1	do.	do.
bb. Cook, first helper.	do.	2	2	do.	do.
cc. Cook, second helper.	do.	2	2	do.	do.
dd. Blow pitman.	do.	2	2	do.	do.
ee. Screenman.	do.	2	2	do.	do.
ff. Waste handler.	do.	2	2	do.	do.
gg. Head pressman.	Robust.	2	2	do.	do.
hh. Pressman.	do.	2	2	do.	do.
ii. Head beater man.	Average.	1	1	do.	do.
jj. Beater man.	Robust.	2	2	do.	do.

kk. Clay and size man.	Average .	2	2	do.	do.
ll. Machine tender.	Robust.	2	2	do.	do.
mm. Machine man (others).	do.	2	2	do.	do.
nn. Head finisher.	Average.	1	1	do.	do.
oo. Cutter man.	do.	2	2	do.	do.
pp. Rewinder.	do.	2	2	do.	do.
qq. Weigher.	do.	2	2	do.	do.
rr. Marker.	do.	2	2	do.	do.
ss. Balers.	Robust.	2	2	do.	do.
tt. Oilers.	Average.	2	2	Good.	do.
uu. Cleaner.	do.	2	2	Fair.	do.
vv. Filter man.	do.	2	2	do.	do.
ww. First core cleaner.	do.	2	2	do.	do.
xx. Core cleaner.	do.	2	2	do.	do.
yy. Stock saver.	do.	2	2	do.	do.
zz. Engineer.	do.	2	1 or 2	do.	Good.
aaa. Fireman.	do.	2	1	do.	Fair.
bbb. Dynamo man.	do.	2	2	do.	do.
ccc. Coal and wood handlers.	Robust.	2	2	do.	do.
ddd. Boiler cleaner.	do.	2	2	do.	do.
eee. Head repair man.	Average.	1	2	do.	do.
fff. Repair man.	Robust.	2	2	Fair.	do.
ggg. Repair man helpers.	do.	2	2	do.	do.
hhh. Core maker.	do.	2	2	do.	do.
G. Cooperage industry:					

(1) Woods work (same qualifications as for regular logging).					
	Average.	2	2	do.	do.
	Robust.	2	2	do.	do.
(2) Manufacture—	do.	2	2	do.	do.
a. Drag saw operator.	do.	2	2	do.	do.
b. Bolter.					
c. Peeler.					
d. Sawyer.					
e. Knife grinder and filer.	Average.	2	1	Good.	Fair.
f. Jointers.	Robust.	2	2	Fair.	do.
g. Matchers.	do.	2	2	do.	do.
h. Turners.	do.	2	2	do.	do.
i. Packers.	do.	2	2	do.	do.
j. Truckers.	Average.	2	2	do.	do.
k. Clean-up men.	do.				
H. Veneer mill:					
a. Foreman.	do.	1	1	do.	do.
b. Drag saw man.	Robust.	2	1	do.	do.
c. Hot box man.	do.	2	2	do.	do.
d. Deck labor.	do.	2	2	do.	do.
e. Machine operator.	do.	2	2	do.	do.
f. Sawyer.	do.	2	2	do.	do.
g. Grader.	Average.	2	1	do.	do.
h. Stock handler.	Robust.	2	1	do.	do.
i. Trucker.	do.	2	1	do.	do.
j. Kiln operator.	Average.	2	1	do.	do.
k. Packer and loader.	Robust.	2	2	do.	do.
l. Engineer.	Average.	2	1	do.	do.

m. Fireman.	Robust.	2	2	do.	do.
n. Common labor.	do.	2	2	do.	do.
I. Wood preservation:					
a. Superintendent.	Average.	1	1	do.	do.
b. Foreman.	do.	2	2	do.	do.
c. Common labor.	Robust.	2	2	do.	do.
d. Engineer.	Average.	2	1	do.	do.
e. Fireman.	Robust.	2	2	do.	do.

[13] Ability to travel on foot.
[14] Preferably 2.

PLAN No. 914. EMPLOYMENT MANAGEMENT

Acknowledgment

This article was prepared by Edward D. Jones, Director of Course Materials, Employment Management Section of the War Industries Board, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings of the Research Division for editorial assistance.

The New Labor Problem

A great deal of thought is now being given, by American business men, to the subject of employment management. At one time the labor problem seemed to be solely a matter of the policies of organized labor and the methods of industrial warfare. It now shows itself to be chiefly a question of the intelligent handling of the human relations which result from the normal course of business, day

by day. It has to do with a study of the requirements of each occupation, the careful selection of men for their work, their adequate training, the fixing of just wages, the maintenance of proper working conditions, and the protection of man against undue fatigue, accidents, disease, and the demoralizing influences of a narrow and inadequate life, and the opening of a channel through which employees may reach the ear of the management for the expression of any dissatisfaction with its labor policies.

A Departure in Business Practice

Hitherto, executive control in business has been exercised through three main divisions of administration:

(1) Finance—in charge of a treasurer or president.

(2) Manufacturing—in charge of a general manager or general superintendent.

(3) Sales—in charge of a sales manager.

To these general divisions industrial enterprise is now adding a fourth, i. e., employment management or, as it is sometimes called, supervision of personnel. In the employment department of a business are gathered all those activities which have to do with the human relations—hiring, education, promotion, discipline, discharge, wage setting, pensions, sick benefits, housing, etc. To bring all these matters together under one head, and provide each subsection with specialists, is a great step toward scientific industrialism.

Industrial experience has proved the advantage of a separate department equipped to deal with questions of personnel by themselves. The prompt discovery and analysis of unfavorable working conditions can be made only by a central bureau. Most of the approved methods of dealing equitably

with the working force have been devised or brought to notice by the new type of industrial specialist.

Where employment departments have been established under competent executives, the waste of turnover has been uniformly reduced, and employees have been rendered more efficient through proper selection, assignment, training, and supervision. In no case of which there is record has an establishment which once tested the benefits of employment work of this character ever returned to the old methods of permitting employment functions to be handled by a variety of minor executives.

Functions of the Employment Manager

The primary functions of an employment manager are to hire shop employees (and often office employees also), to superintend transfers and discharges, to assist in determining rates of pay, to study the causes of labor turnover and absenteeism and strive to reduce them, to adjust grievances, and to recommend changes in working conditions which will eliminate fatigue and accidents, or will improve the health and spirit of the force.

In performing these functions the employment manager will need to organize a staff and provide himself with proper office aids. He will require a set of labor records, which will reveal for each department of the business the degree of efficiency being attained in the utilization of labor. He will analyze the sources of labor supply and make studies upon which job specifications, which set forth the qualifications required for each task, can be based. He will install such methods of physical and mental examination as will safeguard the force against the hazards of the occupation and the hazard of co-employment with men unfitted for their work.

To the employment manager often falls the function of supervising the training of employees by apprenticeship, in vestibule or shop schools, or by Americanization programs.

The employment manager should be the chief agency of his corporation in forming and executing the policies which may be adopted for keeping the worker up to the standard. These efforts may take any one of a variety of forms. In one case a restaurant may be opened; in another housing may be provided. In one plant a mutual benefit organization may be a success; elsewhere local transportation may be a serious problem, or a recreational or thrift campaign may occupy the most attention. Each industrial situation requires particular study. The prescription of economic and social remedies should rest as strictly upon diagnosis as does prescription in medical practice. This means that the employment manager should know how to make industrial and labor surveys.

Finally, in connection with the government of the shop, the employment manager will have a hand in drawing up shop rules, and will, by means of suggestion systems and control sheets, deduce the significance of complaints and the causes of discharge. He will be in contact with shop committees, should such be formed. And he will be a harmonizer and mutual interpreter in all collective bargaining negotiations with organizations of employees, striving ever sincerely to reach a fair and permanent basis for loyal co-operation.

It will be observed that most of these functions are not new in industry. They are now being gathered together under one authority so that they may be handled in a more expert manner, that they may be harmonized into a consistent policy, and that they

may be made the definite responsibility of competent officers.

In such a summary of possible activities as the foregoing, the range of duties indicated is wider than would be actually undertaken in most individual cases. Nevertheless, the employment manager has need of a firm grasp on the technique of his art, and an acquaintance with the successful policies of other employers.

He is called upon to practice human engineering, and he has a leading part in transforming the relation of employer and employee from a mere "cash nexus" into a satisfying human relationship. Before the employment manager there opens one of the finest opportunities American business life has to offer. In proper ratio to these opportunities should be the dominating purpose and the training of the candidate.

The Employment Manager and the General Officers

The employment officer comes into a business organization as a staff man, to relieve the general executives. The general executive is a correlator. He is a balancer of claim against claim. His business is to define the general aims and to harmonize all lesser activities with them. To do this work well, he must be supplemented by specialists who do not have a wide range of functions, and so can concentrate upon some special phase and, upon demand, can furnish him with detailed knowledge and standardized special agencies.

The line executive in war determines where a battery shall go and what it shall do, but he depends upon staff men to breed a reliable artillery horse, to design convenient gun carriages, and to prepare

service tables for sighting guns. In industry, the function of staff departments is already understood with reference to mechanical equipments. The general executive decides to construct a factory or a warehouse; but he depends upon an architect to design a building which will resist the probable stresses. He desires a product; but he organizes a designing department and an inspection department to control the dimensions of parts. He would not pretend to a mastery of all the sciences involved. The analogy between the function of the purchasing agent in a modern organization and that of the employment manager is close. Formerly, factory foremen thought they knew best how to purchase raw materials. The development of the purchasing agent proved the fallacy of this, since his testing laboratory and specialized knowledge made the results far superior to those obtained by the individual foremen. This principle of staff service is now being carried over into the field of human administration. General executives demand well-chosen men, men who are physically examined and pronounced safe for the work they are to do, men who are properly paid, and men who are so handled that they become permanent, contented, and loyal co-operators in the general plans of the enterprise. Of all the standardized agencies which a service department can put at the disposal of a general executive, the supreme one is a first-class man.

When it is recalled that the general superintendent of a modern factory is responsible for general supervision of the purchase, repair, and use of equipment; for the purchase, testing, storage, and accounting of materials; for shop schedules, promises of delivery, and measurement of output; for cost estimates, inspection of product, tool accounting, and

all production orders, it can readily be seen that he has little time or energy to consider the interests of the workers in other than a very general way. There is some excuse for his looking upon men as merely the tools of production. With such an administrative blockade already existing, even in small businesses, there has intervened in recent decades the enormous growth of American corporations. This growth has so overwhelmed executives with functions, and so regimented each class in industry by itself, that officers and wage earners have been swept apart, and the friendly elbow-touch of the earlier day of small shops entirely destroyed. The effort is now being made to build a bridge between employer and employed—the chief span in this bridge is the employment department.

The Employment Manager and the Foreman

From the shoulders of the overloaded superintendent there have slipped down upon the foreman of the shops a mass of heterogenous functions. In establishments where the modern plan of functionalizing the foreman is unknown, each foreman is for his own shop a Jack-of-all-trades, endeavoring to deal directly with the details of a great variety of duties. The inefficiency of such methods has been amply revealed by the analyses of the exponents of scientific management.

The remedy is specialization. This means that groups of related duties are put in the charge of special foremen or service departments, such as the stock clerk, the engineer in charge of repairs, the planning room, and the tool room. From the foreman's point of view the employment manager is such another functionalized foreman.

In this way the general shop foreman is relieved of

hiring friends of employees in his own department who importune him for selected jobs merely on the basis of friendship and not fitness. He is no longer a "bouncer." He no longer can sell jobs, or hold his pets in soft assignments. He has not the easy device of covering his own incompetence by firing a man. He can ask for the transfer of unsatisfactory employees, but if enough of these transfers show that discarded persons are able to make good in another shop where the foremanizing is different, he prepares a prima facie case against himself. The foreman gets a more even and dependable run of workmen from the employment department than he can provide for himself. And he is freed from many distractions to become an expert in shop manufacturing processes. The employment manager must find a way to secure the enthusiastic co-operation of the foremen with whom he works, and to enlist their sympathy with the policies of the management, and of his own department, as if those policies were their own.

Will Employment Managers Be Needed After the War?

The movement which is developing human engineering is not a temporary nor sporadic demand, but is in response to an underlying trend of our economic life. It has not been dominantly, nor even largely, a product of war conditions, except as the war has made men everywhere appreciate more keenly the social virtues, and has made them long more earnestly for a new justice and comradeship. After the war, the underlying economic forces, which are all based upon the urgency of human wants, will steadily drive forward those economic reforms for which human knowledge has prepared the way.

The distinction between the economics of the war

period and of the post-war period lies in this: during the war the competitive struggle was chiefly to save time, after the war it will be to reduce costs. During the war speed outweighed economy. The employment manager was demanded because time was lost by absenteeism and turnover and the training of new men. Time was lost when workers were put at jobs for which they were unfitted; and time was lost by sickness, accidents, and strikes. After the war efficiency will appear to be more a matter of cost. If the losses of this war are not recouped by the efficiency of superior organization, and the only means of making them good is a curtailment of consumption, we may look for the struggle to lessen costs and lower prices to be more intense than has ever been known in modern times. In such an event the employment manager will be demanded by intelligent employers, because sickness and voluntary absenteeism mean idle equipment; because labor turnover means the cost of breaking in new workers; because an antagonistic attitude means waste of materials and tools, spoiled work and soldiering; while strikes mean the entire loss of overhead charges.

Relations to the United States Employment Service

The United States Employment Service is a national system of recruiting bureaus operated by the Department of Labor of the United States Government, for the purpose of organizing the general relations of supply and demand on the labor market, and of distributing the available supply of wage earners as efficiently as possible to those localities and to those employers where they are in greatest demand.

The employment manager is the representative of private business, which has the task of selecting such labor as it needs and of utilizing it to the best possible advantage in the actual work of production. If, therefore, the Government assists in finding men for industry, it is the function of the employment manager to use those men with intelligence, to take such steps as are appropriate for private industry to maintain their productive efficiency unimpaired, and to see that no condition which can be remedied throws them upon the labor market to be placed again.

By the new system the employer is brought into contact with public officers, who seek a justification of his demands. It is necessary for employers to state accurately what types of skill they require—a thing which requires job analysis. It is necessary to give advance notice of wants; for this a labor schedule is needed. It is certainly no recommendation for an employer, in the eyes of his community labor board, if he must admit that he still continues the antiquated hiring-and-firing process, or that he has a high labor turnover, or that he has no department charged with responsibility for maintaining proper working conditions.

A Permanent Demand

We have spoken of the underlying forces which are creating a demand for specialists to deal with the human factor in industry. It would be difficult to point to an industrial reform which is more clearly the converging point of a number of progressive movements. Employment management is a result of the evolution of cost accounting, of the idea of supplementing line executives by competent staff departments, and of the movement to specialize the

work of foremen. It is an opportunity to apply vocational guidance and industrial training. It provides the expert required for setting wages by investigation rather than by dispute. It gives the needed supervisory agency for safety first, industrial hygiene, and medical aid. And it provides an officer able to deal intelligently with shop committees and collective bargaining.

The personnel officer, as an accountant, applies the methods of cost analysis to the factors which influence labor efficiency. As a hiring officer he has an opportunity to make vocational guidance more definite than it has yet been, because he can supplement the analysis of the individual with a parallel analysis of jobs. He has a powerful motive for competence in industrial training work, for he graduates his pupils in rather than out. His students benefit from the psychology of doing real work for pay in a real shop.

The employment manager is related to recent movements in psychology. He has an opportunity to apply appropriate performance tests and general intelligence tests, for the purpose of sorting out those persons who, although adult in physical development, have still the minds of children. These classes he identifies, not to reject from employment but to place at appropriate work; not to browbeat and terrorize, but to protect and guide by patient and educative foremanizing to insure their becoming happy and permanent members of the productive community.

The evolution of wage systems demands a specialist. The ideal form of reward is that of the man who is in business for himself, whose remuneration rises or falls according to his talent and effort. In the complexity of the modern corporation it

is difficult to devise such a wage. In general, it may be said that to take a step toward greater fairness in wage setting, it is necessary to achieve greatness in measuring the basic factors involved in wages. Such are the worker's talent, the nature of the task, the character of the working conditions; the chances of permanency and promotion, and the local cost of living. There is need of some agency to supervise the prolonged process by which each craft or skill in an establishment is placed at its proper point in the wage scale, with reference to the others.

"Safety first" has exerted a great influence toward personal supervision. Workmen's compensation laws have enforced responsibility upon employers. Students of accidents maintain that a greater number of disabilities result from the carelessness or ignorance of the working force than from faults of equipment and processes. This puts the matter as much in the domain of the personnel officer as of the engineer.

A great advance has been made in medical science in recent decades. This advance has laid bare the intimate relation between good water, ventilation, digestible food, a reasonable work schedule, and home conditions, on the one side, and accident rates, fatigue, absenteeism, antagonism of mind, and strikes, on the other. The interlacing of these factors accounts for the profitableness of the health work which has been undertaken by progressive employers.

Employment supervision represents a movement in the direction of the democratic shop, in which a voice is given to labor in determining working conditions. It may be said to be a method of applying to the relations of employer and employed those conceptions of "Truth" and "Service" which have

revolutionized salesmanship and advertising. As the customer is "sold" a finished product—that is to say, is convinced and satisfied by square and generous dealing—so the workman is to be "sold" his job. The latter must be satisfied as to the task, the working conditions, the wages, the foremanizing, and the general policies, before he becomes a genuine employee.

All of these movements, which have so rapidly shaped the new art of employment management, are functions of a rising level of intelligence, of an increasing power to produce wealth, and of growing interest in ideals of social welfare, as contrasted with ideals of personal luxury or arbitrary power. We may look upon them, therefore, as enduring forces and destined to work a progressive change in business management. Upon them the future of employment management rests. That future is secure.

Necessary Qualifications

The employment manager, who measures up to the new standards now being set, is a first-class executive, standing on a parity with the sales manager or the production engineer. He has the more need of talent because of the newness of his position; a circumference which emphasizes flexibility of ideas, the ability to conduct investigations, the courage to be a pioneer, and the power of commanding the confidence of others in his pioneering. Again, his position is difficult, because he stands between parties which have been traditionally opposed to each other, namely, capital and management on the one side, and labor and craftsmanship on the other. He must always perform the functions of a mutual interpreter and often those of a peacemaker.

In considering a proposed occupation it is wise to present a sober view of its conditions, so that persons who lack a sufficient persistency and depth of conviction for success may be early dissuaded. Wherever there is authority there is responsibility; wherever there is reward there is struggle. If the general significance of employment management lies in its accord with the progressive tendencies of the age, the greater part of the energies of the individual employment manager is absorbed by the practical problems of finding enough workmen, of supervising records, and of hearing and adjusting complaints. It may be the lot of an employment officer to deal with a hard-headed proprietor, who is habituated to take the defensive against new plans. He may encounter the open or concealed opposition of foremen who, for the sake of prestige, cling to functions they can not properly perform. He may find organized labor cold to benefits which the unions have not won, and which look toward the substitution of a vertical bond, uniting employer and employed, for the horizontal union of employees of different establishments.

All of this means that the successful employment manager must be a person exceptionally fitted for leadership. He needs good native ability, made serviceable by adequate general and special training. He should possess a well-balanced and absolutely impartial judgment. It is a powerful aid if he possess humanitarian instincts and a sympathetic disposition. These must, however, be real attributes, and not a mere pose or policy, for no deception will long blind those with whom he is associated.

The person who measures himself for this profession should be able to find indubitable testimony as to the strength of his own character, in

the quality and amount of his achievements, and in the regard he has been able to earn from responsible persons with whom he has been associated. He should find in himself, also, the ability to understand human nature, not through the absurd practice of some quackery of phrenology and physiognomy, but by having analyzed his own nature, and having found therein the instincts and emotions which illuminate for him the motives and passion of others.

With these endowments the employment manager should couple sufficient education to avoid embarrassment in the oral or written use of his mother tongue. His education should enable him to understand the use of general principles, avoiding the pitfalls into which the so-called “practical” man has usually fallen when he complains of “theories.” And this education should have had a wide enough scope to enable him to meet the minds of others, and cement friendships, in a world of ideas larger than the details of his work.

Finally, the employment manager is perfected for the practice of his art by general industrial experience and (if the position in view be in a manufacturing establishment) by actual contact with shop problems. This shop experience is useful to make the candidate familiar with factory tools, machinery, equipment, materials, and processes. It will instruct him, as no form of systematic training can do, in the meaning of factory life, the significance of its discipline, the meaning of its schedule of hours in terms of fatigue, and in the attitude of the worker to his job, his boss, his fellow worker, and to life in general. Any general social experience which the candidate may have had, which has taught him how to deal with people, not as individuals only but in the various forms of

voluntary organization, will have value.

It is not to be expected that every candidate will be ideal in all particulars. Special merits may offset deficiencies, within reasonable limits, bearing in mind always that defects of native endowment are less remediable than those of education and experience. If the employment clerk and the labor scout of the past are to give way and personnel relations in industry be placed upon a new footing by an executive officer who is able to formulate adequate policies and bear large responsibilities a high standard of ability must be maintained for the new profession.

To summarize the matter of qualifications we give the relative weights which a number of successful employment managers have agreed upon for five principal factors:

	Per cent.
Personality	35
General industrial experience	25
Executive experience	20
Shop experience (for employment managers in manufacturing establishments)	15
Experience with organized social movements	5
Total	100

What a Maimed Man Can Do

Employment management is a thinking job—a matter of judgment, and organizing ability, and tact, and personality. If a man has lost an arm or leg, but still has a good head and a noble heart, he may become a success in this field. Without a leg, or even both legs, a man may still get about enough within a plant to keep in touch with his shops, and be known

by the rank and file as something more than an armchair officer. If he has lost an arm, or even both arms, he may be able to work out, with his stenographers and secretarial aids, such a detailed and searching division of labor between hand and brain as to make a success. Robustness and dependable health may play the same role in this work as in other administrative positions. Nervous poise and stability of temperament are highly essential.

Remuneration

The employment manager's remuneration is salary and not wages. This signifies that its amount is fixed rather by an estimate of the standard of living of the class of persons with whom the employment manager should associate on terms of equality in the business world than by an effort to measure his exact contribution to the income of the company. At present the salaries of employment managers—the great majority of which probably fall between $2,000 and $5,000—are not equal to those commanded by sales managers and production engineers of equal ability. This discrepancy is due partly to the recentness of the function and to its more subtle and indirect relations to the profit-making process. It is due further to the fact that the work of the employment manager is a form of social service which is deeply satisfying to many natures, and which in itself provides a reward able to compensate for some inadequacy of salary.

Educational Agencies, Literature, etc.

It may be remarked concerning untrained candidates for an important position that those who are best qualified by nature and general education

will usually possess a certain insight which gives them warning of future difficulties, and makes them willing to take preliminary training, and to work at first in subordinate positions. Those without this insight are likely to argue that training is unnecessary and that they are qualified to take at once responsible posts. Thus the line is illustrated, “Fools rush in where angels fear to tread.”

To indicate the scope of any vocational course of training dealing with the art of employment management a brief analysis of the subject into its major and minor component parts is given herewith.

Organization and equipment of an employment department:

Causes which have produced the need of employment management.

Functions of employment departments.

The administrative organization of a department.

Relations to other departments of a business.

Types of records and reports used in labor accounting—Forms—Office management.

Layout of an employment department.

The employing of the worker:

Job specification.

Analysis of the labor market and its sources of supply.

Problems of dilution.

The selection of employees—Physical examinations—Mental tests.

Discharging, paying off, and the collection of control statistics.

Definition of labor turnover and its calculation.

The law of the labor contract.

The training of the worker:

Apprenticeship indentures and schools—Vestibule schools—Americanization.

The psychology of the presentation of the task to the worker.

The payment of the worker:

Wage setting—Minimum wages and the cost of living—Wage scale formation—Technique of wage paying.

Promotions and deferred benefits.

The control of working conditions:

Health, hygiene, sanitation, medical aid, fatigue, mental strain, motion study.

Working hours and rest periods.

Problems connected with the introduction of women into industry.

Efforts to keep the worker up to standard:

Accidents, accident prevention, insurance, and workmen's compensation.

Canteen economics.

Local transportation—Home conditions.

Housing—Community efficiency.

Recreation and its effect upon productive energy.

Thrift, loans, relief and legal aid.

Pensions and the problem of the aged worker.

The relation of the employment manager to local and State agencies.

The government of the shop:

Shop rules, rule books, foremanizing, absenteeism.

Suggestion systems and the treatment of complaints.

The organization of shop committees and their functions.

Collective bargaining contracts and procedure.

Associations of employees.

The ultimate bases of discipline and loyalty.

Fortunately, there is now a considerable body of literature available to the person who would inform himself. It should be remembered, however, that mere reading is not study; and that even earnest study only yields correct conceptions. It is experience alone which teaches us the uncommunicable art of applying the powers of our personality in the pursuit of a course of conduct which receives its guidance from our conceptions. There is a great difference between being informed on a group of subjects and being expert in the practice of a profession. If you feel qualified to undertake this training talk it over

with the Vocational Advisor of the Federal Board for Vocational Education.

Following is a brief list of references which may be called the employment manager's 3-foot bookshelf. They indicate the broad range of his interests and activities, and with these any course of training for this new trade or profession must deal adequately.

1. Annals of American Academy of Political and Social Science, Philadelphia.
   May, 1916.
   May, 1917.
2. Bureau of Labor Statistics, Washington, D. C.
   Bulletins as follows:
   - No. 144. Industrial Court of the Cloak Industry, 1914.
   - No. 196. Proceedings of Employment Managers Conference, Minneapolis, 1916.
   - No. 198. Collective Agreements in the Men's Clothing Industry, 1916.
   - No. 202. Proceedings of Employment Managers Conference, Boston, 1916.
   - No. 208. Profit Sharing in the United States, 1916. 20 cents.
   - No. 222. Welfare Work in British Munition Factories, 1917. 10 cents.
   - No. 221. Hours, Fatigue, and Health in British Munition Factories, 1917. 15 cents.
   - No. 227. Proceedings of Employment Managers Conference, Philadelphia, 1917.
   - No. 229. Wage Payment Legislation in

the United States, 1917.
No. 230. Industrial Efficiency and Fatigue in British Munitions Factories, 1917. 20 cents.

3. Emerson, Harrington. The Twelve Principles of Efficiency. New York, 1917.
4. Handling Men. Chicago, 1917.
5. Hoxie, R. F. Scientific Management and Labor. New York, 1915.
6. Industrial Management (monthly). New York.
7. Jones, Edward D. The Administration of Industrial Enterprises, New York, 1916.
8. Kelly, Roy W. Hiring the Worker. New York, 1918.
9. Metcalf, H. C. Report of Committee on Vocational Guidance. New York, 1916, National Association of Corporation Schools.
10. Monthly Labor Review, Bureau of Labor Statistics, Washington, D. C. Gratis.
11. Price, Geo. M. The Modern Factory, Safety, Sanitation, and Welfare. New York, 1914.
12. Stimpson, W. C. Prevention of Disease and Care of the Sick. Washington, 1917, United States Public Health Service. 50 cents.
13. Tarbell, Ida M. New Ideals in Business. New York, 1917.
14. Tolman, William H. Social Engineering. New York, 1909.
15. Trade Specifications and Occupational Index of Professions and Trades in the Army. Washington, 1918. War Department Document 774. Office of The Adjutant General. Gratis.

16. Webb, S. B. Problems of Modern Industry (an English book). New York, 1913.

PLAN No. 915. THE PRACTICE OF MEDICINE AS A VOCATION

Acknowledgment

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Nature of the Physician's Work

The work of the physician is twofold. It is his duty to cure those who are sick and to keep the well from becoming sick. Usually he is not called upon until there is illness, so that the bulk of his work is with the sick. There are two general fields of activity for a physician, that of the general practitioner, and that of the specialist. Physicians in rural communities and small towns and cities must be prepared to deal with any type of accident or disease. In cities the tendency is to specialize on some particular disease or on disturbances connected with some particular part of the body. Some specialists in large cities are able to

confine their activities to office work altogether.

The work of the physician is difficult. There is a great mental strain connected with his work, for often even the life of the patient is at stake. With the general practitioner there is a great physical strain due to irregular meals and sleep, and trips in all kinds of weather. Particularly is this true of the practice of medicine for its curative effects. More and more thought in medical science is being directed in modern times to preventive medicine, that is, to ways and means of keeping well rather than of getting well. The preventive work can be done under conditions more nearly those that the physician himself chooses rather than under conditions forced upon him as is usual in the case of curative work.

Physical Characteristics Essential to Success

Of all the professions the practice of medicine makes the greatest demands along the line of a good sound body. In some professions a man with even severe physical defects can, through careful living, be successful. Good health, however, is essential to the physician in order that he may successfully withstand the long periods of strain, the irregular hours for meals and sleep, the bad weather he is often forced to go out in, and the dangers of infection.

Personal Characteristics Essential to Success

Not only must the physician be practically fit, he must have a natural aptitude and love for his profession. He should care more for medicine than for any other calling in life. By natural aptitude for medicine is meant certain foundation qualities which are essential.

It goes without saying that the physician, because

of his close relationship with his patients, must be of the highest moral character in order to gain and retain the confidence of his patients. A kindly and tactful manner are essential also in gaining this confidence. One must be alert, too, particularly at the present time when rapid advances are being made in medicine—more rapid than in many other professions. Self-reliance is essential in medicine because unexpected situations are constantly arising, and emergencies, too, in which the help of other physicians can not readily be gained. To practice medicine successfully one must be constantly learning. Because of the rapid changes in medical science one's apprenticeship is never completed. Each day some new method or means of treatment must be mastered. Moreover, one's work is never ended. One great element of success is faithfulness to the patients one already has. This means love for the work and enthusiasm over the idea of service to mankind.

Among the characteristics that lead to failure in the practice of medicine are dislike of the work, inability to decide quickly and definitely, and lack of ability to get along well with other practitioners and with patients.

General Education Necessary as a Basis for a Course in Medicine

As a basis for a course in medicine one must have completed not only the eight grades of common-school work, but the four years of high school. Twenty-eight medical schools require two years of college work for entrance, and there is some tendency to require even four years of college work. This tendency, however, will probably not grow very fast. Certainly if the requirement is made it can not

be a hard and fast rule, for the simple reason that it would raise the age of graduation from the medical school to a point higher than the age at which it is wise for one to begin practice.

The question of what subjects should be taken in premedical work is very important also. Not long ago some 300 graduates of the Harvard Medical School were asked to fill out answers to questions, giving their opinions in regard to the value of their premedical education. They were asked to state whether they thought it best in this premedical work to have a large amount of general culture—such as history, philosophy, economics, literature, and art—or a large amount of natural science—such as physics, chemistry and biology. Of the 300 reporting, 120 favored a large amount of science, while 110 favored a large amount of general culture. Seventy favored an equal amount of general science and culture. It would seem, therefore, that according to the present opinion there should be an equal amount of general culture and science in one's college education previous to taking up the special training in medicine.

Available records show that in 1904 there were only 20 States that had made any legal provision for preliminary education to go before the definite education in medicine. Now 26 States have such a provision. At that time only 10 States required four years of high school as a minimum amount of preliminary premedical education and none required college work. Now 30 States require the four years, or an equivalent, and 8 of these 30 require either one or two years of college work in addition. At that time 36 States required that all candidates for license be graduates of legally chartered medical schools. Now 44 States make this requirement by law. At the

present time 48 States require an examination to be taken by all those who are seeking license to practice medicine, unless they hold a license granted by some other State.

It is necessary, therefore, that the course of instruction taken in medicine shall include courses that will qualify the graduate to meet the requirements of the examination for license to practice in the State in which he wishes to locate. There is a tendency at present for the examination to consist not only of questions and answers, but of some practical test of one's ability to practice medicine successfully.

The Length of the Medical Course Itself

At the present time one can not hope to get a satisfactory medical education without taking a full four-year course in the medical school. The course of study in American schools of medicine at present is definitely laid out, and one can know beforehand just what subjects will have to be taken. Even at the end of the four-year course in medicine it is not advisable to begin the practice of medicine immediately. Those who are looking for good positions in the profession should add to the theory gained in college some actual practice. The best way to get this practical work is to serve as an interne in a hospital. Appointments to such positions are often made on the basis of an examination. Such positions last sometimes for one year and sometimes for two years. During the first period of his work in the hospital an interne is directed to some extent by other physicians, but largely by his senior internes. During the last six months of his experience as an interne, however, when he is usually acting as the house doctor or surgeon, he is shown especial attention by

physicians and surgeons who have patients in the hospital. There is generally no pay given the interne aside from board and lodging. The period in which one acts as an interne is considered as a further educational period. It has been said that the experience gained during the two years' interneship in New York City's largest hospital is considered equal to that acquired in 10 years of ordinary undirected practice.

But even after one actually begins the practice of medicine his education is not complete. In order to keep up with the times he must do a great deal of reading. He must attend district medical meetings, and also State and national meetings. Moreover, he should visit other cities and thus come in contact with the ideas of other practitioners in other communities.

An ideal standard of medical education is outlined in the following quotation:

"The American Medical Association's ideal standard of medical education as set forth by the Council on Medical Education, after years of extensive study, research, and investigation, is given herewith:

"(a) Preliminary education sufficient to enable the candidate to enter our recognized universities, such qualifications to be passed upon by the State authorities.

"(b) A course of at least one year to be devoted to physics, chemistry, and biology, such arrangements to be made that this year could be taken either in a college of liberal arts or in the medical school.

"(c) Four years in pure medical work, the first two of which should be largely spent in laboratories of anatomy, physiology, pathology, pharmacology, etc., and the last two years in close contact with patients

in dispensaries and hospitals in the study of medicine, surgery in its various branches, and the specialties.

"(d) A sixth year as an interne in a hospital or dispensary should then complete the medical course. Under such procedure the majority of students would begin the study of medicine at about 18 years and graduate from the hospital interneship at about 25."[15]

[15] Vocational Studies: School Edition, Teachers' Aux. No. 1, p. 4, Collins Publicity Service, Philadelphia, Pa.

The Income That Can Reasonably be Expected in the Practice of Medicine

The practice of medicine does not hold out the hope of any great financial reward. There are some medical practitioners who have made small fortunes in their practice, but such cases are few. The ordinary practitioner can not count on much more than a comfortable living, in accordance with the living standards in the community in which he lives. Not only is the physician's salary generally small, but it is uncertain as well.

The following table gives the incomes of Harvard medical graduates, by classes and by years of experience, according to a study recently made:

Average Earnings of Harvard medical graduates, by classes and by years of experience.[16]

Years in practice	Classes							
	1901	1902	1903	1904	1905	1906	1907	1908
First	$866	$787	$541	$362	$625	$502	$350	$533
Second	827	1,089	790	995	773	826	588	1,250
Third	1,181	1,539	1,412	1,295	995	1,262	1,353	1,025

Fourth	1,505	1,694	1,720	1,566	1,559	1,765	1,963	1,575
Fifth	2,027	1,556	1,966	1,981	1,818	2,359	2,347	1,847
Sixth	2,341	1,837	2,333	2,277	2,347	2,997	3,202	2,360
Seventh	2,527	2,161	2,654	2,967	3,043	3,650	3,545	
Eighth	3,003	2,491	3,155	3,043	3,337	4,332		
Ninth	3,560	2,900	3,616	3,604	4,500			
Tenth	3,524	2,963	4,135	4,535				
Eleventh	3,885	3,691	4,604					
Twelfth	4,422	4,130						
Thirteenth	4,680							
Maximum number of men	38	39	29	39	33	26	29	29

[16] Training Rewards of the Physician (Cabot), J. Lippincott Co., Philadelphia, Pa., v. 136.

Other Rewards Connected with the Practice of Medicine

The fact that the physician's work has a great effect upon the length of life of the patient is in itself a great reward. During the past three centuries medical science has made so great an advance that the average working life of the English-speaking people has been almost doubled. The things that have added to this increased length of life are physical comfort, medicine, hygiene, and surgery. Aside from the satisfaction of seeing length of life increased, the worthy physician enjoys the satisfaction of holding a position of trust and leadership in his community. As a result of this, he is in a position to teach others what they should know. Through his work also a physician has a chance to come in contact with all classes of people.

The Length of Time It Will Take to Establish

One's Self in the Practice of Medicine

If one decides to establish one's self as a general practitioner he must count upon at least a year of patience and hard work with little income. At the end of the year, however, if he has been fortunate in the choice of location, and if he has a good personality, he can reasonably hope soon to inspire confidence and come into public recognition. Often he can hasten this public recognition by giving his services, free of charge, to those whom he knows to be worthy of such assistance and consideration. If it is necessary for the graduate from the medical school to become an actual earner immediately, he will probably apply for an official position in some public institution, such as health officer, teacher, medical missionary, or research worker.

The Extent of the Need for Physicians

It has been said that in America the number of doctors, in proportion to the number of people, is greater than in any other country. A recent study shows that there were in the United States 151,132 practicing physicians and surgeons, 16,920 students in medical schools, and 6,955 instructors in medical schools. Before the European war the supply of physicians in the United States was large—so large, in fact, that the income of physicians was being materially affected thereby. As a result of the war, however, new fields of practice will be opening up for American physicians in other countries, because of the fact that many physicians in those countries were either killed or disabled, and also because students have not been graduating from the medical schools in those countries during the past few years. It is said that it will take five or six years to develop or to train a new group of physicians in England,

France, and in other warring nations.

How Much It Will Cost to Prepare for Practice of Medicine

If you are a soldier or a sailor discharged from the service since October 6, 1917, with a disability for which the Bureau of War-Risk Insurance will grant you compensation, and if a course in medicine is approved for you by the Federal Board, your education will be furnished free by the Government. The Bureau of War-Risk Insurance, through its compensation, will meet a part of the expense, and the Federal Board for Vocational Education will add to that amount to a minimum of $65 a month with the purpose of meeting all of your expenses for living, clothing, transportation, tuition, and incidentals.

PLAN No. 916. SAFETY AND FIRE PROTECTION ENGINEERING

Acknowledgment

This monograph was prepared by J. Albert Robinson, Special Agent for Safety and Hygiene. Acknowledgment is due Mr. Jos. B. Finnegan, Professor of Fire Protection Engineering, Armour Institute of Technology; to Mr. R. M. Little, Director of the American Museum of Safety; and to Mr. F. M. Griswold for excerpts from his address entitled “The Inspector and the Insured.” For editorial assistance acknowledgment is due to Dr. John Cummings, of the Research Division of the Federal Board.

You who have been under fire at the front and have come back disabled have had an insight into

life that of necessity affects your outlook on the future. Things which once assumed importance in your mind have lost their appeal. Positions which you held before going over may now seem ineffectual after the vision of war which you have beheld. In the months of facing death and later of adjustment to a new condition, your outlook has broadened beyond a mere material view. You have been in the fight for world peace and safety, and the impetus gained in helping the other fellow still carries you on. This feeling is not a weak sentiment, but an appreciation of the fact that life has more windows than the one which looks out on material welfare.

Perhaps no form of work offers more opportunity for a combination of success in material and altruistic lines than safety and fire protection engineering. Especially in safety engineering, a man himself disabled carries to everyone with whom he comes in contact a warning and an encouragement. There is nothing more inspirational than a man who has ignored or made use of his handicap in his own forging ahead. Handicapped himself, he may prevent others becoming so. The safety engineer is a guardian of the people's happiness and future. The work offers to those who have the insight an opportunity to join in the general drive for world safety from an industrial point of view and for conserving human power.

This same inner purpose holds also in the case of the fire protection engineer. To him falls in large part the work of saving the created and natural resources of the nation. While it is true that men disabled by amputation can not so easily take up this profession as that of safety engineering, the war's statistics show a larger percentage of the returned men to be

disabled by disease and internal wounds which have undermined their strength than by dismemberments. For these men, the vocation of fire protection engineer is particularly suitable.

No work which is done for the material gain alone can satisfy a man's ambition, and these two important professions are doors which open to service as well as to material welfare.

PLAN No. 917. SAFETY ENGINEERING

Safety engineering in a broad sense of the term is a new profession in industry which offers good opportunities for well-qualified men. It undoubtedly offers a broader field than fire protection engineering, yet in many ways these two professions are analogous and they are frequently combined. A soldier or sailor disabled in service who wishes to be trained for this vocation may be given the opportunity. In order to benefit by the training and be assured of a good position in an industrial plant, certain qualifications are necessary.

EDUCATION

A high-school education or its equivalent is practically essential, and if this education has been secured in a technical high school it will have especial value. Men who have had more advanced training in technical schools, colleges, or universities stands a better chance than others of becoming leaders in the profession. A knowledge of the fundamentals of any of the other leading engineering professions is helpful in safety engineering as in fire protection engineering.

Personal Qualifications

To become a good safety engineer one needs to have a clear mind, capable of analysis and of constructive thinking; a pleasing personality, and the qualities of leadership. Safety engineering has quite as much to do with the human element as it has with mechanics. In general, it is divided into two parts; Structural engineering and engineering revision; and mechanical safeguarding, coupled with safety organization in industrial plants and educational methods aiming to reach managers, superintendents, foremen, and workmen. It is apparent, therefore, that mechanical and engineering technique, coupled with educational ability and leadership, are necessary qualifications in safety engineers. As he must respond to humanitarian as well as to business interests, the safety engineer must be a man of sterling character, or moral enthusiasm, and of broad human sympathies.

Nature of Work

Safety work proper is divided into two essential branches—safeguarding and education, both conducted under a well-planned scheme of organization.

In the company and rating organization field the safety engineer will make careful inspections, reporting upon many details from which the risk is determined and the rate made.

A careful study of working conditions, a painstaking analysis of accidents occurring under them, a searching inquiry into potential causes of accidents that may not have occurred is made to determine truly the hazards to which workmen are exposed. The correct means of overcoming them are determined upon and put into effect. In order to

overcome the unfortunate lack of safety precautions when machines are built or plants designed, it is an essential duty of the safety engineer to check plans and specifications for new machinery, new equipment, new construction, and for alterations, repairs and rearrangements, in order to see that every safety requirement is covered so far as is possible. Safety engineers must have the personality to get the sympathetic interest and co-operation of men and bosses, and to get them interested in his safety propaganda; to organize committees and campaigns; to make men get the safety habit and think safety unconsciously. Safety engineering is related to problems of industrial management, employment and labor turnover. It has to do with welfare work, first aid treatment, hospital service, etc. It is really human engineering, embracing all the broad features that are implied thereby.

Opportunities

The opportunities for well qualified men are many and constantly increasing. There is undoubtedly a future in safety engineering for those who are well trained for the work.

The nature of the casualty insurance business is such that men with the technical training and skill of safety engineers are in more demand, in the actual details of the business, than perhaps are the fire insurance inspectors in the fire insurance field.

There is a close connection between workmen's compensation insurance and safety engineering due primarily to the fact that the insurance rate is made to depend on safety conditions. This necessitates the employment of a large number of inspectors and safety engineers. Up to the present time there has been a demand for safety engineers and competent

inspectors far exceeding the supply, and it is believed that these conditions will continue to exist, as industrial plants are now absorbing a large number of these men.

The State compensation laws are awakening all of our industries to the necessity of prevention of accidents to wage-earners. Large industrial corporations have safety departments, with a chief safety engineer and many assistants.

Capable safety engineers receive good salaries, and those especially well qualified and experienced are often advanced to executive positions in the larger industries.

State factory inspectors and casualty insurance inspectors receive from $1,200 to $2,000 per year. Capable safety engineers in industry receive from $1,500 to $5,000 per year.

The following excerpts from letters received from prominent men in the casualty insurance and engineering field show the opportunities in this profession:

"In the field of safety engineering there is an exceptionally good opportunity for men who are adapted to this work. Even in normal times employers in this field of endeavor have found difficulty in securing men with proper educational foundations and ability. There is always a demand for men in this field and the opportunities for advancement are exceptionally good."

"The field of safety engineering is a rapidly extending one. As the people awake to the tremendous economic drain of the waste of life through accidents, more and more attention will be given to these matters, and the demand for men who understand them will strengthen."

"The opportunities for safety engineering are as

large, or larger than the opportunities presented in other branches of engineering work. The field has hardly been scratched on the surface."

"There is without question an unusual opportunity for trained men in the field of safety engineering. The rapid spread of the safety idea, and the recognition of the importance of human relations in general, are leading many manufacturing organizations to install safety departments, and properly qualified men are not available for these positions."

"Up to the present time there has been a great demand for safety engineers and competent inspectors that was far beyond the supply, and these conditions will continue to exist, as industrial plants are now absorbing a large number of these men."

Physical Qualifications

A man with one eye, one arm, or one leg can be a good safety engineer. Likewise, a man with a weak heart or lungs may be a good safety engineer. Disabilities which disqualify men for many industrial pursuits do not disqualify but may partially qualify them for safety engineers. In other words, one does not need to be 100 per cent physically fit. In fact, men who have suffered the loss of members may precisely, on that account be more effective in teaching the principles, habits, and practices of safety to men in our industries.

It will be noted that the physical requirements for a safety engineer have not been made as rigid as those for a fire protection engineer. This is because the great field of activity for a safety engineer is employment at a manufacturing plant and the work can become more one of the head and less one of physical perfection.

TRAINING

Men who have been disabled in the military or naval service of the Government and wish to be trained for safety engineers will be trained by the Federal Board for Vocational Education. The Board will make arrangements with the safety organizations of the country to give special courses for them. The teachers will be experienced safety engineers. Part of the work will be classroom lectures and assigned readings. The study of mechanical safeguards and hazards will be given in a well-equipped institution, with visits to industries for personal instruction in the methods of active operations. When the course in the institution is completed, the men will be placed in the industries themselves, under the direction of the head safety engineer, there to be given the benefits of a further practical instruction, in order that when the course has been completed the students may all be assured of positions.

The National Safety Council, through its local councils, is establishing courses in safety engineering in various centers as fast as a suitable demand warrants, and classes are already under way in St. Louis, Pittsburgh, and Rochester, N. Y.

The American Museum of Safety in New York City has a similar class under consideration.

PLAN No. 918. FIRE PROTECTION ENGINEERING

Fire protection engineering, or fire insurance engineering, is a well-established line of effort which has been raised to the dignity of a profession during the past 20 years of its development. The fire insurance inspector belongs to this profession, as do inspectors in municipal fire prevention bureaus such

as the large cities are organizing as an auxiliary to their fire departments. There are certain institutions in which instruction is given, and ways whereby a disabled man discharged from the military and naval forces of the United States may be trained for this vocation. In order to benefit by the training and be assured of good opportunities, certain facts should be considered.

EDUCATION

Primarily it may be conceded that the man who has had a technical education can generally get on in the profession more rapidly than one who has not. When technical knowledge and scientific attainments are secured in the hard school of experience the graduate has paid dearly for his lack of earlier training.

A distinction may be made between the requirements for fire protection engineering proper and those for routine inspection work.

A well-equipped fire protection engineer should have the equivalent of a sound engineering course, with a knowledge of the fundamentals or basic principles involved in civil, architectural, mechanical, hydraulic, electrical, and chemical engineering. These principles can be utilized in the problems of plan drafting, proper building construction, occupancy equipment, public and private fire protection, and common and manufacturing hazards. Experience has demonstrated, however, that such foundation is not absolutely essential, and that many possessing the requisite personal qualifications have succeeded without it. For instance, many industrial occupations provide valuable experience as a foundation for development of the necessary technical ability. Men

who have had experience as building inspectors, construction or factory engineers, piping foremen, estimators for automatic sprinkler concerns, and men who have been employed in municipal fire departments or in fire-alarm and signal work have been successful in routine inspection work and have risen to places of eminence in the world of fire protection engineering.

Graduates of engineering departments other than fire protection engineering have repeatedly shown themselves to be readily adaptable to work in this field, after a period of readjustment to enable them to acquire the point of view necessary to a man to whom the causes and prevention of fire, rather than other phases of engineering problems are significant.

Personal Qualifications

Whether technical qualifications be founded on training in a technical school or be the result of later effort the aspirant for success as an insurance inspector should be familiar with insurance practice, and should be endowed with a broad complement of common sense. He should have an inquisitive and observant mind, coupled with a desire to investigate the "why and how" of every problem, a constantly receptive brain, a retentive memory, and should be competent as a teacher of those less thoughtful or less well informed than he.

Above all a successful fire protection engineer must not minimize the importance of accurate observation and faithful reporting of small details which may have most vital import in determining the conditions of a plant.

Finally he should be resourceful and capable in planning and carrying out to a successful issue the details of technical propositions.

Tact and judgment must be exercised when dealing with men who may not always appreciate the viewpoint of the inspector, and courtesy is always a prime essential.

Nature of Work

It is the work of the inspector to scrutinize closely all conditions and materials which may in any manner create or increase the fire hazard, including the character and nature of raw stock or material used, all the processes of manipulation, from its reception at the plant, its handling and storage, to the completion of the operations necessary to produce the finished goods or article. The inspector must carefully note and define the hazards incident to each state of progress where physical or other changes affecting the conditions may take place. In addition to these purely technical investigations and conclusions, he should closely observe and study "shop practice" or management, including supervision and discipline of employees, as related to the cleanliness and care of hazards, which form the basis of "good housekeeping" and are important essentials in securing safety from fire in all classes of property.

The apparatus and appliances for fire protection or fire defense need to be very critically examined and described. This often necessitates going into dark basements or low pits to locate automatic sprinkler valves, etc. Water-supply tanks for automatic sprinkler systems have to be climbed to examine their condition and to ascertain water levels, and when the assent and co-operation of the insured can be secured, tests for efficiency of such devices as fire pumps should be undertaken. The nature and condition of the structure forming the plant or risk

require careful consideration and full description, and finally, the information gained is generally embodied in a written report of such lucidity as to convey a mental photograph of the hazards and conditions to the minds of those who have to decide upon the acceptability of the risk from an underwriting viewpoint.

Opportunities

Fire protection engineers are employed at the present time largely by insurance companies, either individually as company field engineers or collectively in the inspection and rating organizations. Every important geographical section in the country has somewhere within it an insurance organization consisting either of an insurance exchange or rating board for making insurance rates and specifying requirements for improvements, and an engineering or inspection bureau for making surveys, inspections, and reports to its members. Large municipalities are cared for by local rating boards. Many large corporations are employing engineers, often with the title of "Fire marshal," and others combine their fire insurance affairs, both business and engineering, in the office of a "Superintendent of insurance."

Insurance engineers are frequently called to a company home office, after having had a good field experience, to take charge of the underwriting or passing upon the business offered in special departments, for the business requiring a technical or engineering knowledge. These are variously known as "Improved risk departments," "Sprinklered risk departments," etc., because the use of automatic sprinklers is fundamental in fire protection and required in risks accepted by such departments. One

of the best avenues of approach to good home office positions is through the field experience of a fire protection engineer, employed by an inspection bureau or by an individual company.

There is a marked tendency among the larger insurance agencies and brokerage offices, in striving to render service to their customers, to employ fire protection engineers as a means of obtaining and holding business by reason of their superior technical knowledge.

Training obtained as an insurance or fire protection engineer is one of the best means of acquiring the technical knowledge requisite for success as a broker, by one who would become an expert buyer of insurance, able to study the needs of his clients, advise with regard to the kind of insurance to purchase, work out satisfactory contracts, and negotiate with the rating authorities to secure the lowest cost.

The agency end of the business offers the greatest financial inducements, since one may develop a clientele of his own, receiving commission on the amount of business he can bring into the office, and may perhaps become a partner in the business.

Trained inspectors are rarely employed for less than $1,200, and salaries run up to $2,400 for field men. Chief engineers of organizations, engineers in agencies, and company executives obtain much more.

The following excerpts from letters received from prominent men in the fire insurance and engineering field show the opportunities in this profession:

“The opportunities in the field of fire protection engineering were never greater that at the present time, as the public now seems to be in a receptive mood as regards conservation of all resources.”

"There is a constant demand among fire insurance companies for practical fire protection engineers. The number employed by any one company is not great but the number is growing now that insurance companies as a whole are getting to appreciate the constant dangers of conflagration areas, poor water supply, poor fire equipment, and other kindred effects."

"There is a splendid opportunity in what is called the inspection or rating bureau service, as even prior to our country entering the war there was always a shortage of competent help."

"In the inspection and engineering branch of fire insurance a wide field can be readily opened to disabled soldiers and sailors as well as to other discharged service men."

"Several months ago one inspection bureau formulated tentatively its own employment plan, which in brief was, 'first, to re-employ its former men now with the colors, and to thereafter give preference to disabled soldiers and sailors.'"

"In the field of fire protection there are comparatively so few trained men in this vocation to-day that the opportunity is unlimited. Where yesterday the idea was the protection of property by fire departments, water supply, etc., to-day it is one of fire prevention, i. e., checking the cause of fire before it may have an opportunity to do any damage. Fire prevention to-day is confined mainly to organizations covering wide fields. There is no question but what in the future each industrial plant of any size will have their own fire protection or fire prevention engineer, and probably the same will be extended to each city of any considerable size."

"Graduates of the Armour Institute of Technology and former students who have not graduated have

been in demand. In most cases the employment entered into immediately after graduation has been moderately remunerative, but advancement has been much more rapid than in the case of untrained men. A few graduates have been employed by companies manufacturing and installing automatic sprinkler equipments. The typical case is that of a man who enters an inspection bureau, and after three or four years assumes work of responsibility with a fire insurance company. Recently several companies have shown a tendency to depart from the traditional plan of looking to the bureaus as training schools, and have engaged men with the Institute's degree, but without field experience. A large proportion of the classes of 1917 and 1918, who entered military or naval service upon leaving school, will probably be employed by insurance companies immediately after discharge from the service. There are now, as at all times, in the history of the department, applications for more graduates than are available."

Physical Qualifications

Disfigurements or physical incapacities which are not too serious need not be a handicap for pursuing the profession of fire protection engineering. These can be more than offset by good education, technical training, a pleasing personality, and enthusiasm for the work.

It must be remembered, however, that this work involves a great deal of traveling, either about the country or locally in large centers, carrying usually two grips. While making an inspection, an engineer is constantly called upon to climb around in unfinished buildings, and through manholes to roofs, which ordinarily requires the use of both hands and legs. Measurements are made, notes taken, plans

drawn, and reports written up.

Minor handicaps, such as loss of an eye, pieces of bone removed, claw hand, stiff knee joint, or slight limp, etc., need not debar men from the profession. Those having tubercular tendencies to a degree necessitating an active outdoor life, should be materially benefited, and should recover both health and strength by this line of activity. This would apply to other cases where fresh air and activity are desirable but it must also be borne in mind that a certain amount of physical stamina is necessary, and that exposure to weather, walking and climbing about for many hours at a stretch, might affect some forms of disability adversely.

It is obvious that loss of a leg or an arm, except in unusual cases, would be a serious handicap. Field experience is important as a means of training for inside consulting, or executive work in this profession. However, men who have become used to artificial limbs can best judge if they are qualified to undertake these activities.

Training

The Federal Board for Vocational Education will make arrangements with certain institutions and insurance organizations of the country to give special courses for men who have been disabled in the military or naval service of the Government who wish to be trained as fire protection engineers.

We believe that at present the only regular four-year college course in fire protection engineering is that offered by Armour Institute of Technology. Special courses and facilities for amplification are offered by the Massachusetts Institute of Technology, Worcester Polytechnical Institute, Columbia University, Cornell University, Stevens Institute,

Washington University, and perhaps by other institutions.

Experienced engineers believe that men who have started college courses, especially in engineering branches, should continue them, keeping in mind the line of work they contemplate pursuing, and should then supplement their college work by entering the employ of an inspection bureau.

A course of fire protection engineering is offered by the American School of Correspondence. The Insurance Institute of America, through its several branches in local insurance or insurance library associations throughout the country, has offered night school lecture courses. Plans are being considered, if there is a warrantable demand in any given locality, to offer a more intensive bureau. In some cases these inspection bureaus may cooperate to the extent of giving a well-rounded training to a man who has had sufficient general technical education or experience to justify such action.

PLAN No. 919. THE METAL TRADES

ACKNOWLEDGMENT.

This monograph was prepared by Eugene C. Graham, Special Agent for the Federal Board, under direction of Charles H. Winslow, Chief of the Research Division. Acknowledgment is due to Dr. John Cummings of the Research Division for editorial assistance.

A METAL-WORKING AGE.

Nearly every industry depends to some extent, and most industries depend to a very great extent, upon

metal working, either by employing metal workers directly in some processes, or by using metal products as raw materials in the manufacture of other products, or at least by using tools, implements, machines, and engines, which are products of metal-working trades and industries. And, in addition, these trades and industries produce a great variety of finished utensils and furniture ready for consumption in households. More than any other ours is a metal-working age.

Machine Work and Handwork.

Metals must be worked largely by machine processes, but they must be worked also in many instances by hand processes. All-round machinists and other metal workers must know how to operate machines, but they must also be skilled artisans capable of using a variety of hand tools. Bench hands, assemblers, and specialists in many lines are hand workers and only incidentally if at all machine operators.

If you like machinery and tools, and working with durable materials—working with steel and other less difficult metals as the carpenter works with wood, you can almost certainly find some line of metal working in which you can succeed, whatever your disability.

In the metal-working trades there is every variety of handwork and footwork and headwork to be done, light work and heavy work, work in shop or factory and work in the open, bench work and machine work, highly skilled as well as simple routine work.

Trade Training for Promotion.

Promotion comes to trained men who acquire dexterity in handling tools, in operating machines, in

manipulating various metals. It comes easily to men trained broadly, who are able to deal intelligently with any problems that may arise in their line of work.

If you decide to enter one of the metal-working trades, you should take training for the trade, rather than for some job in the trade. Learn the trade rather than simply how to operate some one machine, or how to do one simple task, and you can then accept promotion in the trade, and make good at any job in it.

What Metal Workers Produce.

Everything in metal from a minute screw to a locomotive engine—from a tin can to a great gun casting. They produce machines to produce machines, and with tools and machines which they themselves produce, they produce every sort of metal product or metal part of a product, including machinery and equipment for the farm, the factory, and the home.

Nearly every article of common use, whether made of metal or of other material, is more or less a machine product, and practically the whole machinery for producing nonmetal as well as metal products is originally the product of the metal trades.

Specifically the product of a machine shop may be a complete machine, a rebuilt or repaired machine or machine part sold to other firms. For such a product raw material of cast iron, sheet iron, steel of varying degrees of hardness, wrought iron, brass, or bronze, comes from the foundry or from a stock department in which are kept sheets, steel bars, castings and forgings. Much of the labor in some shops must be employed in producing shop equipment, including formed cutters, reamers, drills, and various metal

working tools made in the shop.

PROCESSES.

Molding, which is a basic operation in the metal industries, is a comparatively simple process especially when standardized parts are being cast, and it is not necessarily heavy work since castings in various metals, may be of any size and weight. Molten metal, pure or alloyed, is poured into a mold formed by a pattern in sand or loam. In many instances castings must be finished by machinery.

When a part is to be subjected to hard usage or to severe strains and stresses, forging or hammering rather than casting may be the process employed in shaping it. Drop forgings are made by means of automatic power hammers and dies. With few exceptions forgings, also, must be finished by machining.

Sheet-metal workers lay out work on sheet metal, cut it, shape or bend it, and solder, rivet or weld it into various forms, such as are required in building up ornamental cornices for buildings, or in constructing hot-air heating apparatus, or in manufacturing filing cases, various sorts of containers, and many other articles. Some of the work is outside work, but an increasing number of processes are being performed in the shop with the use of machinery. Metal stamping and electric welding machines are used to form and weld together parts of, for example, automobile bodies, doors, and fenders.

Of all the metal-working trades, that of the machinist is the most varied in its hand and machinery processes, although many workmen never learn more in the trade than how to operate some one automatic machine, or how to do some one

simple task. In general the machinist should know how to operate all of the machinery of his trade, and in addition he must acquire skill of hand in metal working, and especially in the processes of building, repairing, assembling, and erecting every sort of engine and machine.

PLAN No. 920. MOLDERS

Variety of Employments.

Foundry employments generally will not be found to be suitable for men who have suffered serious physical injuries, or for men whose physical strength has been seriously impaired by exposure or illness, and they are not generally employments for which any extended course of training is required. These employments are, however, more varied in character than they are commonly supposed to be, and some lines of molding and casting may very well be undertaken by men who have been disabled, especially in cases where previous experience and training in foundry work will prove helpful.

Practically all floor molding is heavy work. Shovels and various hand tools are used in building molds around patterns or templates which determine shape and size of castings. Bench molding and machine molding, on the other hand, may involve no considerable physical strains, and many operations in machine molding can be done with one hand. Some lines of bench molding may be done sitting at the bench and do not require the molder to move about in the foundry.

Promotion.

In welding as in other trades, advancement comes

to specialists, and to those who acquire such technical knowledge as is practically useful in the various lines. Some training in metallurgy, for example, will have value where alloys of vanadium, chromium, tungsten, nickel, and manganese are used, and the expert molder who can calculate quickly and accurately, and can handle men may expect promotion to foremanship.

Hours and Wages.

Working hours in foundries vary from 8 to 9 a day, and wages of molders in private concerns range from 50 to 75 cents an hour, the Government rate in railroad shops being 88 cents. Pieceworkers in stove foundries and in other shops where machines are used earn highest wages.

Core Making.

Core making is lighter work than molding, since cores are generally smaller and lighter than molds or castings. The core maker often works at a bench, with a mixture of core sand and binder, which he rams tightly into molds. Comparatively little training is required and such disabilities as partial loss of sight or hearing, loss of fingers or thumbs, stiffness of knee, ankle or hip joint, and weakness of heart or lungs, need not be serious handicaps.

Machine Molding.

In well equipped plants machines do most of the ramming, turn over the mold, draw the pattern, and do away with much heavy lifting. Machine molders usually work by the piece, and must be active and quick to earn good wages.

Training.

Foundry work is taught in many schools, but only a few schools have been able to keep up with the industry in providing machinery.

PLAN No. 921. SHEET-METAL WORKERS

Demand for Workers.

The sheet-metal worker is the survival in modern industry of the village tinner or tinsmith, and the demand for these workers is large and increasing.

In the building trades, in ship building, in automobile and airplane construction, and in the manufacture of furniture, kitchen ware, heating and ventilating apparatus men of skill and experience in sheet-metal working are required.

What the Worker Does.

Workmen at the trade are mainly occupied in cutting out shapes or patterns, bending and forming these shapes on machines or with hand tools, and assembling the parts by hand. Edges are fastened together by riveting, soldering, or by lock seams. For example, a shaving-exhaust system consists of suction pipes, an exhaust fan, and a large pipe leading to the outlet, at which point is a dust separator called a cyclone. Practically all of the system is built of galvanized iron in sections, which are first constructed in the shop, then erected and supported in place in the factory where it is to be used. All of this work, including the erecting, is done by sheet-metal workers.

It is the work of the journeyman in a job shop to use the common machines for cutting and forming the sheets of metal, to rivet or solder the parts

together, and to fasten them in place on buildings or in any location where the product is used.

This job-shop worker is, therefore, commonly both an outside and an inside worker. He must know how to place on buildings all the roofing, skylights, gutters, down spouts, cornices, metal ceilings, etc., needed in the construction. He installs air ducts for hot-air furnaces and for ventilating systems. He may be called on for a variety of repairs on sheet metal—to line tanks with lead, copper, or zinc, and to make and attach guards for machinery. The material for this work is bought in the form of sheets of various sizes, and the workman spends a large part of his time in the shop cutting up his material and working it into the required form.

Extreme accuracy of measurement is seldom necessary, and not much attention is paid to finish since much of the work is immediately painted.

In the building of ships there is a great variety of sheet-metal work done. Heavier gauge metal is used than on most architectural work and the joints are more often required to be oil and water tight.

In the automobile and motor truck industry many men are employed in the making and assembling of bodies, fenders, tanks, and radiators. Much of the formed work is drawn to shape in large presses, the finished shapes being assembled by hand.

Large factories now produce most of the kitchen utensils and stamped sheet-metal ware. This ware is coated with enamel or japan, or plated with nickel. Tin plate is still used, but sheet aluminum and enameled steel ware are fast taking its place. The manufacture of metal containers for canned fruits, meats and fish, oils, and sirups is an important industry. Very few machines for any purpose could dispense with sheet-metal parts without increasing

the weight or the cost. In building construction the use of sheet metal is increasing, and when properly protected with paint it is both durable and inexpensive. Sheet metal is taking the place of wood for lath, sash, and trim for fireproof construction in large office buildings. It is used, also, in the manufacture of metal furniture for schools and offices.

Tools and Machines.

Tools and machines used by sheet metal workers include the following:

Hand tools.—Hammers, punches, chisels, hand snips or shears, rivet sets, rule, soldering outfit, and a variety of stakes of different shapes and sizes.

Hand and power machines.—Turning, burring, forming, setting, grooving, double seaming, beading, wiring, and folding machines, circular, rotary and squaring shears, cornice brake, and presses for drawing hollow ware.

Requirements.

Shopwork in sheet metal does not require men of great strength or quickness of movement. The machines are operated with the right hand and the stock supported with the left. To be of value to the shop a man should know something about pattern drafting, but many workmen are unable to lay out new work, and must work from old patterns or depend on the foreman for help. A sheet-metal worker needs fairly good eyesight, two hands with strong fingers, and on construction work a clear head and good use of his limbs. Requirements for outside work are quite different from those for inside work in the shop.

Hours and Wages.

Hours of labor average about nine a day, but in Government work the standard is eight hours.

Wages range from 45 to 85 cents per hour, but will average about 65 cents, with 68 cents as the union scale on Government work.

Future of the Employment.

There seems to be no reason for doubting that this occupation will remain a very stable one. After the war it may be difficult to absorb into industry all the men who have been trained as sheet-metal workers for shipbuilding, but it is certain that the normal requirements of the building trades, the automobile industry, and airplane construction will take many men.

Reeducation.

No single course of instruction will fit all cases. If a man can shift from general outside and inside work to inside work exclusively, it will be possible for him to learn the drafting of patterns to great advantage to himself and to the shop. Skill in soldering may also be acquired by practice and will increase the man's earning capacity. Competent foremen are very much in demand, and they should be trained in drafting and in estimating the cost of construction.

This ability to estimate costs on job work can be attained by special training and would make a disabled man more independent of his handicap.

For the disabled man any course which provides only the theory will fail absolutely in making a man useful to the average employer. It will be necessary to locate the man in a selected situation where his handicap will count for the least and then train him to overcome entirely the handicap. If the school can

help with this training the man should go to school, but in a majority of cases it will be necessary for the shop to provide the training, supplemented by evening courses or correspondence-school work. The latter would be quite satisfactory in pattern-drafting and cost-estimating courses.

PLAN No. 922. FACTORY WORKERS

Factory production of articles made of sheetmetal implies that machines will be used where possible. Parts will be stamped out with dies and hollow ware drawn to shape in large presses. The hand operations, as a rule, will be confined to riveting, soldering, and assembling parts.

Where disabled men can qualify it will not be difficult to place them on machines or at hand operations. While the pay will be lower than in the outdoor branch of the trade, work will be steadier and less dependent on weather conditions. Men with a variety of disabilities can find places. Training will be given on the job by foremen. Previous experience in any branch of sheet-metal work will be of value, and since the machines are largely automatic, only a short period of training will be required.

The position of foreman of a department is worth striving for, and the qualities which will help a man to overcome handicaps will also help him to get a foreman's position, in which he will be largely independent of physical disabilities.

PLAN No. 923. MACHINISTS AND MACHINE OPERATORS

Previous training and experience in some of these metal-working employments will greatly help you if

you elect to take up some related line of work. With a little training to overcome your handicap, you may be able to resume your old employment or one in which your previous training and experience will count.

Machines Operated

Machinists work with the following machines:

Metal turning.—Speed lathes; screw-cutting lathes; engine lathes; turret lathes; shaft and wheel lathes; automatic lathes.

Planing.—Planers; slotters; shapers; gear planers.

Milling.—Hand-feed millers; plain and universal milling machines; planer type millers; special milling and hobbing machines.

Drilling and boring.—Sensitive drills; vertical drilling machines; radial drills; multiple drills; horizontal and vertical boring machines, and boring mills.

Grinding.—Rough, wet, and dry grinders; tool grinders; cylindrical and special shaping grinders; planer type grinders; disk grinders.

Machines for special operations.—Bolt and nut machines; automatic screw machines; broaching machines; cutting-off saws; profiling machines; chasing and engraving machines; rifling machines.

Shop Conditions

The machinist and machine operator work sometimes in a room crowded with machines, and frequently under artificial light, but usually in a room with plenty of air properly heated. Most of the machines are safeguarded, but there is always danger of accident from moving trucks, flying particles of metal, and sometimes from unprotected belts, gears, and shafting. State laws and inspection may be

counted on to reduce this danger materially. Most well-organized shops have announced safety rules to promote the health of the men and to reduce the number of accidents.

Hours of labor average from eight to nine a day. There is a tendency toward a standard eight-hour day, which is already established in Government work. There is usually an increase in the hourly rate for overtime work. Many shops pay according to a piecework rate or premium plan. The trade is fairly well organized, especially in job and railroad shops.

Equipment of The Worker

It is common practice for a machinist to provide himself with a kit of tools useful in his work. This outfit usually includes steel scales, inside and outside calipers, hammer, surface gauge, punches, and an indefinite collection of other tools of less importance. All classes of workmen, in fact, depend more or less on the shop tool room, and men beginning their employment often have nothing but a steel scale.

Opportunity for Promotion

A highly skilled general machinist who can handle men has an excellent opportunity to become a foreman, and workers who understand the technique of their trade may fairly expect to advance rapidly in wages and position. Men who can figure costs and devise economies in production especially are in demand.

Future of The Trade

The war has very greatly increased production in machine shops. The manufacture of guns and munitions and the demands of the shipbuilding

industry for tools and machinery for ships have multiplied the demand for men many times. While there must be a readjustment after the war, it is certain that the manufacture of standard products will be very greatly in arrears, and since all industry, including agriculture, transportation, and the arts, depend on the machine shops for their product, there will be a continued demand for trained men.

Wages

Where machinists or machine operators receive wages at an hourly rate this rate approximates the Government scale in railroad shops, which is 68 cents an hour. In shops where the piecework or premium plan prevails, the amount earned by employees varies. It is safe to say that most men employed at any branch of the trade get more than $4 a day in wages.

Muscular Strain

A machinist is commonly expected to do some lifting, varying from very light weights to more than 100 pounds. Operators of large machines doing heavy work are often provided with air hoists or jib cranes or with chain hoists to help serve their machines. Probably the operator of a machine working on medium weight parts on lathes or grinding machines may have the maximum of physical strain, due to the quality production expected of him.

Your Disability

It would be foolish to make many general statements as to the effect of the loss of various members on the future of a man who desires to be a machinist or a machine operator. So much depends on the will power of the man and on the exercise of

wisdom and foresight in selecting a line of work. Talk it over with the placement officer.

A study of the rehabilitation in industry of those injured in industrial accidents shows that most men have been taken back to work after such injuries as the loss of fingers, thumbs, one eye, or similar accidents. Others with more serious injuries have often been taken on again and provided with jobs, perhaps as watchmen or gate tenders, without any reeducation. They accepted their job, lived up their industrial insurance, and were down and out industrially. This should not happen to the man injured in industry, and must not happen to you, because there is a better way which will keep you in a good wage-earning occupation and make you independent.

It will be necessary, of course, for you to take account, not only of your physical condition and of the requirements of the trade, but also of your previous experience, your resources, and your aptitudes.

PLAN No. 924. BENCH HANDS

Kind of Work Done

In the construction of machinery, including the repair of worn and broken parts, there are many operations which can not conveniently be done on machines. This work is done by hand at a bench, fitted with a vise for holding the work. The work done consists of chipping and filling to remove metal, the laying out of centers, circular arcs, lines and limits for the operator, and a variety of operations which require the use of hand tools.

Examples of this work are:

Fitting piston rings to grooves and to standard test gauges.

Filing machined parts to provide smooth surfaces, and to remove burrs.

Laying out and marking parts for drilling and other operations. Much of this work is necessary in making special jigs and fixtures to increase quantity production.

Tools

The bench hand uses a variety of files, marking punches, light and heavy hammers, cold chisels, measuring tools and gauges, and often uses hand or power machines, such as bench drills, hand taps and dies.

Hours, Wages, and Conditions of Work

The hours of labor are as a minimum forty-eight a week, and will average between fifty-one and fifty-four. Wages are generally according to the scale paid to machinists and are subject to overtime, piecework, and premium rate changes. For instance, the wage scale in railroad shops is now 68 cents per hour and in shipyards 72 cents. Other shops seldom pay as much, but the union scale is from 50 cents to 75 cents an hour in sections where large shops predominate.

The health of the worker is not apt to be impaired by his work, as the muscular strain is not severe, and the sanitary conditions of shops are not generally unfavorable.

The importance of the bench worker in the metal-working industry is decreasing with the increased use of automatic machines, jigs, and fixtures which do away with laying out, and with improvements in molding and casting. All repair work in railroad,

automobile, and other shops, however, require much handwork at the bench.

HANDICAPS

Filing, chipping, hammering, etc., may be done by men provided with an artificial hand or arm. The training required before a man can become accustomed to this substitute will take some time, since the bench worker is required to use a variety of tools, and the output of work will depend on the skill of the worker in handling these tools.

Previous experience in the employment will go a long way toward starting a man in the trade again. The use of hand tools is relatively less complicated than that of machine tools, and previous experience should provide the man with the essential knowledge of processes.

Reeducation for any line of bench work should take all possible advantage of previous experience. Many of the things done by the bench hand can be taught in a school in short courses, but experience at the bench on productive work may be obtained at the same time. If the school is provided with satisfactory benches of the proper height and with standard vises, the course may require no longer than from three to six months, allowing for instruction in the reading of blue prints, the use of tools, and for getting accustomed to the work again.

PLAN No. 925. ASSEMBLERS AND ERECTORS

The parts which go to make up the finished machines come from the shop and after inspection are ready to be put together. Men who work at a bench in the assembling room or on the erecting floor fasten these parts together.

Assembling Work

Examples of heavy work are found in the assembling of locomotives, stationary and marine engines, mining and pumping machinery, printing presses, rolling mills, and sugar machinery; of medium work in the assembling of gas and gasoline engines, farm machinery, automobiles, and trucks; of light work in the assembling of sewing machines, shoe machinery, cream separators, and typewriters.

Machinists who assemble medium and light machinery receive the parts from the stock room after they have been inspected for accuracy and finish, and bolt them together. Frequently mechanical means are used to carry the parts to the assembler, who bolts them in place on the frame of the machine. This is common in automobile factories.

From the assembling room the machines go to be tested or to be painted and prepared for shipment.

In contract work in job shops the routine described is not usually followed, and the work is performed by all-around men who take the place of the assemblers.

Erecting Work

Machinists who work as erectors usually fit the parts together, bolt them solidly, then test the machine for alignment. Shafting is fitted to bearings and sliding surfaces brought into contact by scraping with steel scrapers. Oil grooves are cut in bearing surfaces and all accessory parts fitted. Then in most cases the machine is taken down for shipment, and after reaching its destination is erected again on permanent foundations. Traveling machinists are frequently sent out from the shop to do this work in the field.

Tools

Assemblers and erectors use a variety of wrenches, hammers, and other tools. They are often provided with cranes and hoists for all heavy lifting. In the field they may have to devise special means of moving heavy machinery.

Hours, Wages, and Conditions of Work

The hours and wages of labor are the same as for the machine operators and bench men, the hours ranging from forty-eight to fifty-four a week.

The position of the assembler or erector is very important. There is no possibility of his being displaced by the introduction of machinery. The increase of production will demand more men, but it is fair to say that there are very many men who are qualified to fill the lower grades of work in this occupation. Only through experience and training on the job can men learn to be competent machinist erectors. These men hold responsible positions in industry and there is a constant demand for competent men.

Handicaps

The workman in this branch of the trade must be active and have physical strength, good eyesight, and considerable skill in the use of hand tools. He should know something about machine-tool processes, and may find it necessary to operate machines on occasion. Any handicap must be considered from the point of view of the man and the job he expects to take. If the man has had experience in the given line of work and wants to reenter it, he will be a very good judge of his own ability.

Nearly every disabled man who has previous experience in a machine shop will find it possible to

use this experience to advantage.

Handicapped men who are preparing to enter this occupation may be trained in special classes in the factory where the work is done. A group of ten or twelve such men may be taken to a large factory and trained for special jobs under the instruction of a practical teacher.

PLAN No. 926. THE PRACTICE OF OPTOMETRY AND THE TRAINING IT REQUIRES

ACKNOWLEDGMENT

The material of this monograph was compiled by S. Reid Warren, editor of The Keystone Magazine of Optometry, assisted by several successful practicing optometrists, to whom acknowledgment is gratefully accorded. The monograph has been prepared under the direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due Dr. John Cummings, of the Research Division, for editorial assistance.

It is an indisputable fact that the efficiency of the American troops during the late war was greater than that of any other army. One factor which contributed largely to their success is apt to be overlooked by the casual observer, but excited comment wherever our troops were thickest in the fray: *Our men were properly glassed.*

You, for whom this monograph is written, well know how thoroughly and systematically your eyes were examined. Perhaps you do not know that the actual testing of your eyes and the adoption of proper glasses whenever necessary to bring vision up

to normal was done in a number of camps by optometrists.

What an important part glasses played in the success of our Army and Navy is a chapter yet to be written.

Now that the conflict is over it is fitting to call attention to the opportunity of entering a profession which has contributed so much to the winning of the war. And as optometry is a comparatively strange word to those not personally concerned with the profession, an explanation of its meaning had best preface this monograph.

What is an Optometrist?

An optometrist examines eyes for the detection and correction of *visual* or *muscular* defects not requiring medical attention. He uses no drugs; he does not treat *diseases* of the eye, nor does he practice surgery. To one not familiar with optical sciences it may be difficult to comprehend, then, what the work of the optometrist includes. Comparison of his work with two better known and somewhat related vocations—that of the oculist and that of the optician—will perhaps be the quickest method of explaining the practice of optometry.

First, let it be understood that the human eye may be considered as a refracting and focusing mechanism, similar to a camera, as well as an organ subject to diseases like any other part of our body.

An *oculist* (a physician who specializes on the eye) deals both with refraction and muscular deficiencies, and with pathological or diseased conditions.

An *optometrist*, on the other hand, specializes on the functions of the eye as a refracting and focusing apparatus.

An *optician* grinds the lenses and puts together the

necessary fittings to form the eyeglasses prescribed by the oculist or the optometrist.

Type of Man Required

The serious nature of the optometrist's work—the care of human vision—makes it imperative that only men of good moral character and high ideals be admitted to the practice of optometry. An optometrist should be more interested in helping his patient than in making money; he should be tactful, and not only professionally competent, but of the type of personality that inspires confidence. He should realize that the completion of his course of technical instruction and the receipt of a license to practice merely mark matriculation in a postgraduate course stretching out to the end of his days of practice. He should not enter the profession of optometry unless willing to continue the study of never-ending developments in this science and practice.

Length of Preparatory Training

As the optometrist takes up little in medical studies, his technical training requires a briefer time than that of the physician or oculist. The optometrist, of course, must be able to recognize the symptoms of eye diseases, but does not attempt to remedy them; he refers such cases to a physician.

In view of the lesser scope of the work of the optometrist his course of technical training covers only two to four years, as against four to seven years for medical education.

The practice of optometry is regulated by law in 41 States, and in Hawaii, Philippine Islands, Porto Rico, and Alaska. These laws usually require a general education equivalent to two years of high

school instruction and (before admission to examination for a license) completion of a course in a school of optometry having an approved two-year course, in addition to one year of practical service in an optometrist's office.

The laws of the different States vary considerably as to these requirements, and the prospective optometrist should inform himself as to the provisions of the law in the State in which he expects to practice. A few optometry laws have reciprocity clauses, making it permissible for licensees of one State to practice in another.

Most of the schools have two-year courses—some longer. One of the universities—Ohio State—has an optometry course laid out over a period of four years. The course at Columbia University is planned to cover two years. In a number of instances it has been covered in one year by students who were exceptionally well prepared. The studies in optical subjects can be counted toward a B. S. degree, for which four years are required, as is usual. Besides these universities, a number of schools of optometry in various parts of the country have two to three year courses. A list of such schools and their addresses may be obtained from the Federal Board for Vocational Education.

The Optometrist's Work

The word "optometry" is made up of two Greek words: optos, visible and metron, a measure, meaning the measurement of the visual powers. Examination for detection of visual deficiencies includes tests by the use of charts and of certain precise measuring instruments. For example: One instrument permits inspection of the interior of the eye; another, measurement of the curvature of the

cornea; still another, the field of vision. With the data obtained by the intelligent use of all these instruments the optometrist can determine the nature of the lenses required to correct any refractive errors found.

Formerly glasses were given merely as an aid to vision, now they are prescribed for the relief of strain and its resultant symptoms, such as headache, etc. They are also supplied for efficiency and protection purposes to factory employees, for some workmen without glasses will exhibit as much eye fatigue in 5 hours as others will in 10; and employers are now recognizing this to their own advantage.

Thus the field of usefulness and profit for optometrists is ever enlarging.

Indoor Work—Physical Requirements

An optometrist confines his practice to office work, there being no traveling or outdoor activity. If desired, his office may be established in his own home. As the work is all indoors, there is no great physical strain. While sound health and normal strength are always desirable, robustness is not a first requirement of this vocation; nor is possession of all the members essential. A man who has lost a hand, an arm, a leg, or even both legs could successfully practice the profession of optometry, if properly fitted with artificial equipment. It is also quite possible for a man with one eye to practice optometry. To a determined man this would not prove an insurmountable obstacle, though he might be at a disadvantage because some patients might think he could not do his work as well. This is, of course, unreasonable, but should be considered. Several instances are known to the writer of successful optometrists who have lost the sight of

one eye through cataract or other cause.

A Colorado woman who has been practicing optometry for a number of years sums up some of the advantages of this profession in the following words:

"There are fewer objectionable features, and more to commend the practice of optometry than in any other profession or semiprofession. No midnight calls, as in the case of the physician, no direct contact, as in osteopathy, or chiropractic; no proximity to offensive breath, as in dentistry. Variety and fascination attach to the work, besides the joy that comes with doing something that relieves suffering and is beneficial to humanity. The time required for preparation and getting established is somewhat less than for other professions; the expense incurred more moderate."

The Demand for Optometrists

No man taking up the study of optometry need fear a lack of opportunity when his course is completed. There is a scarcity of optometrists all over this broad land, and in thousands of optometrists' offices to-day opportunities are open for assistants. As such, an optometrist can develop a following, and eventually start for himself. Moreover, the call of young men to the defence of their country cut down the number of students in this, as in all other vocations; hence the number of graduates from the optometric schools and colleges is insufficient to meet the demand.

Another advantage in following this vocation is the fact that the profession is still in the formative stage. For this reason there are unusual opportunities for progressive, studious, conscientious men of the professional type.

The hours of work, which are regular, are of course determined by the individual practitioner; the man who has established his own office can make his hours to suit his own convenience. If he is employed by another optometrist, he will find the hours are not as long as in many other callings.

Scope of a Course in Optometry

The curriculum of the course in applied optics in one of our leading universities will give a comprehensive survey of the branches of scientific knowledge forming the science of optometry. The following subjects are included in this course: Chemistry, anatomy, physics, physiology, algebra, geometry, trigonometry, bacteriology, optics, psychology, drawing, pathology, and English composition. Under theoretical and applied optics are of course grouped the chief subjects bearing upon the science and practice of optometry. The mathematical studies are necessary as a foundation for an understanding of the optical science.

While the university course, in its cultural as well as technical development, is desirable, still, as in other professions and callings, success and service are not dependent upon the completion of such a course. But general education, culture and personality developed therefrom are all potent factors in success in any profession, and should be acquired from one source or another before or during technical training.

Possible Income

As in other professions, it usually requires a few years to build up a practice, but few men who have started under proper conditions and with fair qualifications have failed to achieve success. An

income of $1,500 or $2,000 yearly is common, and many optometrists earn incomes of from $5,000 to $10,000. As an employee of another optometrist, a practitioner can earn from $30 to $50 a week, and even more.

Optometry is not a means of earning a living with ease nor a haven for the indolent, but it does offer a reasonable competency without unusual sacrifice or hardship.

PLAN No. 927. THE FACTORY WOODWORKING TRADES

Acknowledgment

This monograph was prepared by Eugene C. Graham, special agent for the Federal Board for Vocational Education, under the direction of Charles H. Winslow, Chief of the Division of Research. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

The trades of the planing-mill operator, of the cabinetmaker, and the finisher are the outgrowth of the trades of the village carpenter and painter.

Woodworking factory products are innumerable, and a choice of occupation can be made so that you will find the work interesting, if you have any liking for the trades at all.

In these trades the worker leads an active life and he is not generally exposed to severe weather conditions. The work is not usually heavy, and practically all of the men employed work indoors.

The industries are bound together by the use of common materials and machines and related operations, while their products, as noted below,

cover a wide range; many of the operations are similar, whether the product is furniture, interior finish, boxes and crates, truck bodies, or musical instruments.

PLAN No. 928. CLASSES OF WORKERS AND WHAT THEY DO

Workers in these trades may be grouped as in the following tabulation:

Classes of workers.	What the men do.
Yardmen Dry kiln men Lumber inspectors Swing-saw men Planer and resaw men Filers Millwrights	Prepare raw material and keep machines and tools in order.
Machine operators Off-bearers Gluers Carvers Turners	Operate machines and prepare stock for assembling.
Cabinetmakers Chair makers Frame, sash, and door makers Interior wood finishers Assemblers Box, crate, and basket makers Toy makers	Assemble prepared pieces of stock into built-up products.

Men who apply stain and filler	Apply finishing materials and prepare the product for sale.
Rubbers	
Varnishers	
French polishers	
Upholsterers	
Packing-room employees	
Foremen	Direct labor.



Plan No. 928. Industry Makes Al

Many employees in woodworking establishments are common laborers, some of whom have learned to do the simpler operations by watching other men at work. They may finally learn to run machines. Boys who are taken on as off-bearers get into positions as machine operators in this way.

Other men of a somewhat higher grade, operate machines, work at the bench assembling parts, and in the finishing room apply the finishing materials.

There are certain special occupations which require more skill, such as hand and machine carving, wood turning, and saw filing, for which men must be trained through a kind of apprenticeship, which may take several months or years.

In these occupations workmen move about easily from one factory to another, or shift from one machine to another. Many men move about constantly, and seem to have little difficulty in fitting in wherever they go.

The operator of woodworking machines is commonly required to look after the oiling of his machine, to change knives, saws, and cutter heads when they become dull or when the work requires it, and to adjust the machine properly so that it will do good work at a fast rate.

Some Products of These Trades

Factory woodworkers are employed in many industries in which the men carry on one or more of the lines of work specified above. Of these industries the principal products are the following:

Products of Woodworking Industries



In planing mills.	In vehicle, truck, and body factories.	In furniture factories.	In box, crate, and basket factories.	Special products.
Stair material; sash; doors; blinds, interior finish for homes, stores, and offices; built-in furniture parts; cabinets; cases; mantels; bar, store, and hotel fixtures.	Wagons; buggies; auto bodies; truck bodies; poles and shafts; baby carriages.	Tables; chairs; bedroom, office, and library furniture; kitchen cabinets; case goods; specialty furniture; school furniture; billiard and pool tables.	Boxes; crates; splint baskets; patent carriers; fruit and berry boxes.	Airplane parts; agricultural implements; cane, reed, and fiber goods; trunks; wooden canoes and boats; coffins; musical instruments; toys; games, etc.

PLAN No. 929. THE PLANING MILL INDUSTRY

Much of the work formerly done by carpenters in the shop is now done to order in planing mills. This branch of the woodworking industry supplies lumber and building material at retail, and builds store and office fixtures, interior woodwork for dwelling houses, and a variety of special work which requires the use of machinery.

Planing mill employees usually are able to do a variety of hand and machine work and usually

receive therefrom somewhat higher wages than do factory workers. They rank with outside carpenters as mechanics, and the trade is organized as a branch of the carpenters and joiners national organization. Opportunities for advancement in this industry are greater than in other related woodworking occupations, but there is some irregularity in employment, since the prosperity of the trade depends on local building operations.

PLAN No. 930. VEHICLE MANUFACTURING

Buggies, wagons, and auto and truck bodies are built in special shops. These have separate departments for wheel making, body making, and other processes, and often buy their stock partly finished.

PLAN No. 931. OTHER MANUFACTURING

Musical instruments, such as pianos, organs, phonographs, and violins, are built in special factories, but the same processes are used here that are employed in the other woodworking occupations.

Toys, games, gymnasium equipment, special wood products are made to a large extent by machine operations. The men employed are mostly machine hands, and women and boys do much of the assembling and finishing.

Box, crate, barrel, and basket making are low-grade woodworking occupations. Much of the work done is rough and unfinished, and is turned out in large quantities. Women and boys are employed and machines are used as much as possible.

Demand for Labor Increasing and Steady

The field of the factory woodworker is growing. Much of the woodwork formerly performed on the job is now done in whole or in part in the factory. Growth of population and higher standards of living have increased the demands made upon woodworking factories for all sorts of furniture and equipment. The greater cost of metal furniture limits its use somewhat. Woodworking is less seasonal than many other lines of employment, and a disabled man may choose one of the woodworking trades in the assurance that he will be permanently employed at all seasons of the year.

Safety and Hygiene

Safety devices have reduced greatly the accident risk. Except for dust and fumes, now largely eliminated by means of exhaust fans, the working conditions are good. Fumes of paints, varnishes, and of their solvents are of course detrimental to health, if no precautions are taken to remove the fumes or to provide for adequate ventilation, and even under favorable conditions, it is only fair to say that a person who is inclined to tuberculosis should avoid the finishing trade.

Conditions of Employment

Hours will average 54 a week. Wages have increased about 10 per cent in the past two years, and there has been some tendency to shorten hours.

The wages received by box makers vary from 15 cents to a maximum of 40 cents an hour. Crate and basket makers, many of whom are women and boys, receive less. Cabinetmakers get from 20 cents to 75 cents an hour, according to the skill required. As a rule in the planing mills, where the men are organized, wages are higher, but these are offset by

the fact that the planing-mill operators do not have as steady employment.

Men in this occupation are employed quite regularly and do not move about much. In planing mills and to some extent in other factories, men remain year after year at the same bench, and there are many old men who have worked at the trade for 50 years. They are quite certain of steady employment at a living wage. But there is not much opportunity for advancement and independence unless the workman can become an owner of stock in the factory.

PLAN No. 932. SPECIAL OPPORTUNITIES FOR DISABLED MEN

In this field there are positions which will appeal to men with certain sorts of disabilities. Some of these occupations require a knowledge of materials and processes and the ability to direct men, but demand little in the way of mechanical training. Among these may be mentioned the following:

Foreman of cabinetmakers and assemblers.

Foreman of shipping room.

Yard foreman, in charge of dry kiln and yard.

Cost estimator for planing-mill.

Salesman for factory-made products.

Furniture designer and detailer.

Other occupations which require more mechanical ability and which pay better wages than straight factory work may be mentioned also. These include:

Foreman of the filing room (saw filing, knife and cutter grinding, etc.).

Factory millwright.

Foreman of the mill room or machine room.

Operator of Linderman machine or of automatic

turning machines.

Practically all of the above special positions may be obtained only by men who have had previous training and experience before becoming disabled. These positions will be attractive to such men because they offer better wages and do not require so much manual labor.

PLAN No. 933. QUALIFYING AS A TEACHER

There is a demand for teachers of woodwork and drawing in the schools. If a disabled man with previous experience in the trade has had a high-school education and wants to become an instructor he may find it more profitable to do so than to go back into the trade. His injuries may not prevent the simple movements necessary in demonstrating to a boy or to another man the principles involved in the use of the tools.

But it must be understood that both teaching ability and a knowledge of the trade are necessary for success. A man who already possesses one or the other will be far on his way, the school undertaking to provide for his deficiencies in one or the other line. But rarely can the school, in the limited period at its disposal, undertake both to develop teaching ability and to give a practical knowledge of the trade.

What Other Disabled Men Have Done by Training

Many examples might be cited of disabled men who have retrained for some line of woodworking. For example, a common laborer who became afflicted with chronic bronchitis and emphysema, took a three months' course in cabinetmaking and

now has a good position as a cabinetmaker. A farmer, who had suffered partial loss of function of his left hand through a gunshot wound, studied cabinetmaking and is now employed in this work by a motor company. A commercial traveler, whose right leg was rendered lame by a shrapnel wound, became a teacher of manual training at a good salary, by taking a teacher's course.

Other disabled soldiers who had a knowledge of some woodworking trade secured promotion through special courses. Their wounds brought them an opportunity of which they took advantage. A wood machinist, for example, whose hearing was seriously impaired in the service, took a course in lumber estimating and specification work in lumber yards, and now has a position in that field. A cabinetmaker, who suffered deformity of his left forearm, studied drafting and building construction, and secured a position, where his training counts, with a large sash and door company. A cabinetmaker, whose left leg was greatly weakened by a gunshot wound, obtained a position as instructor in manual training by taking a teacher's course in this subject.

PLAN No. 934. MACHINE OPERATING

Tools and Equipment

The machine operator needs no personal equipment of tools, and most workmen carry only a folding pocket rule and a pencil. He operates a variety of machines, of which the principal ones are listed below:

Saws.	Planers.	Sanders.	Lathes.	Boring and mortising machines.

Swing saws; single and double cut-off saws; hand and power feed ripsaws; variety of universal saws; band scroll saws; horizontal and vertical band resaws; grooving saws; jig saws.	Single and double surfacers; hand and power feed jointers; continuous power feed jointers; Linder machines; stockers, or two and four side molders.	Belt sanders; drum sanders; disk sanders; edge sanders; spindle sanders.	Spindle lathes; Blanchard lathes; special automatic forming lathes.	Single and multiple spindle boring machines; foot lever mortisers; hollow chisel mortisers; chain mortisers.

PLAN No. 935. DISABILITIES FOR MACHINE OPERATING

Such disabilities as slight deafness, blindness in one eye, hernia, or minor troubles of the heart, liver, kidneys, or digestion will not bar a man who can turn out fair work. Injuries to the fingers, hands, and arms have always been common in the woodworking industry and many of the best men have been disabled more than once. Some men have to change machines on account of injuries but not many lose out entirely.

The loss of an arm or a leg would require intelligent placement on a particular machine. Some

machines, including spindle carvers and some types of belt sanders, may be operated by men while sitting down. A great many machines require but little movement from a standing position, and could be operated by a man with one injured limb after some training.

There is usually considerable dust in the air of a machine room, and this dust may be injurious to men with tuberculosis. Furthermore, men who are quite deaf or whose sight is not good, and who are certain to find it hard to handle material quite rapidly with safety to themselves and others, should avoid the machine room.

Overcoming Handicaps

In order to become accustomed to disabilities men will be trained in schools or shops to use injured members and thus to overcome the natural disinclination to use such members freely. Each man in training will change from one machine to another until he finds his place. Special training on machines will be offered in schools where, under a practical instructor, a man may try himself out.

The operator will be taught in school to take care of his machine and remove dull cutters, knives, and saws. If he can be trained to set the knives and cutters in an automatic machine his future employment at good wages is assured. There is at present a strong demand for men who can operate automatic machines and set them up for a variety of work.

Employers may be willing to substitute automatic or power feed machines for other types, at least where this may be done to the great advantage of the employer himself, as in the case of wood turning. A disabled man operating a modern automatic lathe

can turn out a quantity of perfect work quite as easily as any other workman.

Unlike the machinist the machine woodworker does not often work from blue prints. He needs only to learn to understand a stock bill stating the dimensions of the finished parts in plain figures, and is not concerned about the destination of these parts. All routing from machine to machine is looked after by the foreman.

Previous Experience an Asset

Previous experience and training will often provide the man who is trying to come back with certain useful information about machine processes, adjustments, and lubrication. For instance, a carpenter who is incapacitated for climbing or for outside work, or a sawmill hand who requires indoor employment because of his injury may easily fit in as a machine operator.

Conditions of Employment

Machine operators work about nine hours a day. They receive in wages from 25 cents to 50 cents an hour. The man who cuts up good lumber with a swing saw may receive more than the average because he must know how to avoid wasting expensive material. His good judgment is his capital.

The machine woodworker often moves from one factory to another, but he is usually in demand and may count on steady employment without much regard to the season.

Re-education for Machine Operating

No apprenticeship is usually considered necessary for machine operators. A try-out period of a few

weeks will decide whether a man is likely to make good or not. A short period of training in a school where a variety of different machines is provided will help a man to get a real insight into his prospective occupation.

The training required is usually obtained in the factory, but disabled men can shorten the period of training necessary in their case considerably by taking a short course in a well-equipped school under an instructor who is a practical woodworker. The course taken will be planned to prepare the pupil for a definite occupation. An agreement may be made with a prospective employer before the course is undertaken, so as to provide opportunity for overcoming any handicap in a definite way.

The same results may be secured by short tryout courses in the factory itself and in most cases this will appeal both to the man himself and to the employer. But in order to guarantee an adequate course of training the factory must be required to make definite preparations to train disabled men under an agreement as to the instructor, the length of the course, and the subject matter of the instruction.

PLAN No. 936. CABINETMAKERS

The Occupation

The work of the cabinetmaker, and of such other allied occupations as chair makers, assemblers, and box makers, is to use hand tools, and sometimes certain machines, in putting together furniture, interior woodwork, or manufactured articles of wood. In some factories he actually builds furniture or a completed product. In others he performs a few

operations and passes the work on.

Men who assemble furniture must apply glue to the joints, nail and screw parts together where necessary, and see that the finished product is clean, square, and solidly built. They use a variety of hand tools and sometimes take material to machines for certain operations. They are expected to leave surfaces well scraped and sanded. In all high class work they must show considerable skill in construction and knowledge of design. What tools are used will depend on the line of work. They are usually the property of the workman and are kept in order by him. They include the usual outfit of hammers, squares, saws, rules, shaves, chisels, bits, levels, planes, rasps, etc.

The trade of the cabinetmaker may not appeal to more than a few disabled men from each community. Men who have worked at the trade and who already know something about it will naturally wish to stay in it if they can.

Cabinetmakers are found in nearly every town or city. Planing mills and box factories are very common. Furniture factories are scattered throughout Wisconsin, Michigan, Illinois, Indiana, New York, and North Carolina more generally than in other States.

HANDICAPS

Since the cabinetmaker must be a skillful user of hand tools, any injury which prevents him from using his hands and arms easily will interfere with his success, but, as he does not need to move about much in the factory, foot and leg injuries need not constitute serious handicaps. He may have some lifting to do, and must be active in order to turn out a sufficient quantity of work.

Partial deafness, blindness in one eye, or minor diseases of the heart, lungs, kidneys, or digestive organs need not disqualify a man if he can handle tools and work without undue fatigue.

Loss of an entire arm, or severe injuries to both hands, or blindness, or diseases which cause considerable bodily weakness would generally constitute serious handicaps.

School and Shop Training

Cabinetmaking is the kind of training which most manual-training schools are best equipped. Successful schools are not hard to find, and men who are trying to overcome handicaps may find it easy to get a start through this school training. The cabinetmaker should learn:

(a) How to use hand tools.

(b) How to operate a few machines.

(c) How to read a stock bill and to work to dimensions.

(d) About glue, grain of wood, cabinet hardware, finishing material, etc.

(e) How to make and read a simple drawing.

Many good schools will provide the equipment and give instruction in the subjects mentioned.

If the disabled man arranges for a combination of shop and school training in which he will have the benefit of practical instruction for half of each day, and will spend the remainder of the day in some factory, he will, after perhaps six months' schooling and training, be able to maintain himself at the trade.

Any other division of time as seems wise may be made. For instance, the first three months of training may be full-time work in the school and the next three months half-time in the shop and factory.

PLAN No. 937. FINISHING

The men who apply stain, filler, varnish, and other finishes properly belong in a class by themselves in the woodworking trades. Many of these men can do all of the operations necessary in finishing a piece of woodwork. The same ability and skill is possessed by men in the painters' trade, but some of the processes are different, and the occupation may be considered separately.

The finisher of wood products may use any of the following materials; Oil stains, acid stains, water stains, liquid and paste fillers, putty, linseed oil, shellac and shellac, substitutes, varnish, paint, enamel, lacquer, wax, and prepared polish.

These materials are applied by dipping, brushing on with a brush or cloth or spraying on with an air brush or spraying machine. Excess material is removed by wiping with cloths, cotton waste, or vegetable fiber. Varnish is rubbed down to an even surface with pumice stone and water, or with sandpaper and steel wool. Drying ovens or hot rooms are often used to hasten the processes.

The air brush is a spraying machine which atomizes the liquid finish and spreads it on a surface quickly and evenly. The machine consists of a tank, an air hose, and nozzles which spray the material in a fine mist. Various materials, such as varnish, shellac, and stain, may be applied with this machine.

Men who apply filler, stain, and putty need very little training. Their skill consists in doing the work rapidly without waste of material. The same may be said of men who use rubbing machines or hand blocks in rubbing down varnish.

A somewhat higher degree of skill must be possessed by the varnisher, whether he works with a common brush or an air brush. The brush hand must

have considerable experience and know how to avoid brush marks, bubbles, and other evidences of poor work. The operator of the air brush acquires his skill by practice; experience with the common varnish brush is valuable but not altogether necessary. The same processes are used in finishing metal surfaces, and there is a demand for men in the automobile factories for experienced finishers.

A disabled man might find an opportunity here if he could do about the same kinds of work as the common laborer. If his previous training and experience had given him a knowledge of the use of different finishes, he could adapt himself to the use of the air brush quite easily even if he had only one working arm and hand. A good eye to judge the condition of surfaces is essential.

While training in a school is possible it is less necessary than in some skilled occupations where more tools are used and where a greater knowledge of processes is required. The handicaps which would interfere with success would be poor eyesight and the loss of both hands or arms. Experience in the employment itself would provide the best sort of training for a man who wants to re-enter the trade. A painter who is disqualified for outdoor work and for climbing could qualify for this work.

Men who have had one arm fitted with a working hook could handle furniture in the process of dipping, and could apply and remove the excess of stain and filler. With factory training they could advance to brush hands and varnishers without great difficulty, if the opportunity offered.

To handle a common brush or an air brush and to operate a rubbing machine requires one good hand, but disabilities of the feet and lower limbs can be overcome.

Men receive from 25 cents to 60 cents or more an hour, according to the work done and the skill required. The hours are usually the 54 hours a week of most factory trades.

There is some danger to health in handling wood alcohol, turpentine, or lead paints, but the use of any one of these materials is not constant enough to make the whole occupation dangerous. Those suffering from chest complaints should, however, avoid this trade.

The trade is quite stable and the demand for men fairly constant. Employment in this trade is fairly certain and apparently will continue to be so in the future. The demand for experienced men for air brush work will increase with the more general utilization of machines, which is almost inevitable. The use of the air brush and the drying room or kiln has greatly increased the output of the finishing room per man employed, but increase in the quantity of the articles finished has offset this increased efficiency so that unemployment has not resulted. Hand varnishing, however, will continue to be done and skill in this work will be a valuable asset to the workman, whether he uses a hand brush or a machine.

A short apprenticeship or try-out period in the factory will start many disabled men in this trade, but no school training is required.

PLAN No. 938. TECHNICAL AGRICULTURE AS A VOCATION

Acknowledgment

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Vocational Education, under the direction of Charles H. Winslow, Chief of the Division of Research. Acknowledgment is due A. C. True, Director, States Relation Service; E. W. Allen, Chief, Office of Experiment Stations; W. H. Beal, Chief, Editorial Division, and Edwy B. Reid, Chief, Division of Publications of the United States Department of Agriculture, for suggestions and data; to the Curtis Publishing Co., for use of illustrations; also, to Dr. John Cummings, of the Research Division, for editorial assistance.

Positions in Agricultural Colleges, Agricultural Experiment Stations, and in Agricultural Extension Service

Many responded to the call to arms from the student bodies and the faculties and staffs of the State agricultural colleges, experiment stations, and extension service. These institutions have lost also to war service, at least temporarily, numerous scientific associates, lecturers, and teachers, research experts and assistants, extension workers, county agents, and others in co-operative agriculture. During the war the withdrawals from all departments and lines of work were of necessity replaced by insufficiently prepared men who in turn, now that the war emergency is passed, will be replaced by trained, efficient men as such become procurable.

It is to be noted further that agriculture in city high schools and other public-school grades is at the present time being taught largely by regular teachers not specially trained in the subject, the number teaching and demonstrating in the agricultural high schools of the country being about 2,500.

Under the Smith-Hughes Act providing for introduction into public schools of agricultural

studies and projects, the demand for agricultural teachers, directors, and organizers has greatly increased, and will continue to increase in the future. In the establishment throughout the States of vocational courses, under this vocational education act, great difficulty has been experienced during the war in securing a sufficient number of men qualified to teach agriculture. From year to year, as more Federal and State funds become available, the vocational schools will broaden the scope of their work and more instructors and trained scientific men will be required.

In the higher institutions and services—the agricultural colleges, agricultural experiment stations, and agricultural extension service staffs—new appointments are constantly being made because of promotions, creation of new positions, changes for various reasons, resignations, and deaths. The agricultural colleges and experiment stations employ approximately 3,500 on their faculties and staffs, including associates, assistants, instructors, and helpers. The extension service workers number approximately 6,500, and the number would be greatly increased were trained men and funds available. Hundreds of counties have no agricultural agents. Compensation in these various lines is liberal and proportioned to service rendered, increasing with promotion from lower to higher positions.

Under these conditions numerous teaching positions are now open to men qualified to fill such positions in our agricultural colleges, in our vocational schools, and in our agricultural high schools located in every section of the country. Each year, also, even under normal conditions, as has been noted, many appointments of research experts and assistants are made to the staffs of our agricultural

experiment stations, as well as of demonstrators and lecturers in extension work, and of county agricultural agents.

Those returning from overseas in fit condition will, in most cases, wisely resume their abandoned studies or scientific employment. Those disabled should, even during the period of their convalescence, begin to prepare themselves to resume former positions or others more desirable and in line of promotion. Some position is certainly awaiting you if you will but "run the course," take the training, and prepare for it.

These positions present exceptional opportunities in every State for disabled men who can qualify for them. They cover every phase of agriculture, and will appeal to men of practical experience in farming whose disability may make it inadvisable for them to undertake hard manual labor on the farm, and to men of scientific or technical training that especially fits them for teaching, lecturing, demonstrating, or conducting scientific research.

In general, the positions most suitable for men who have been disabled, where such men have had practical agricultural experience and some agricultural education, and where they are disposed to take the necessary vocational training, will be positions as county agricultural agents, or as demonstrators in the co-operative extension service, or as organizers and directors of the club work in animal husbandry and cropping. These positions may serve most admirably to give training for promotion to some more specific line of work.

Agricultural Specialists

While the agricultural specialist has usually a thorough knowledge of some particular line of work, and is exceptionally efficient in that line, he does in

many instances specialize in several different lines. For example, many have specialized successfully in "poultry, fruit, and bees," and a specialist may easily be well informed in all three of these lines. Nearly all farmers devote themselves to some specialty in which naturally their sons also become efficient. By vocational training such young men who have been disabled in the war, especially those who have had in addition to their practical farm rearing some systematic school training in an agricultural course, may have their development rounded out until they become capable, practical specialists. Their efforts may be expected to be attended by that success which always accompanies the combination of practice and theory. A special vocational training will be necessary to fit such men for positions in agricultural colleges, experiment stations, or extension service.

Promotion Opportunities Ahead

Much of the specialist's work can be undertaken by men with serious physical disabilities, and the opportunities for promotion along lines of expert and special service are excellent.

The following lists of positions in schools, colleges, and experiment stations, as teachers, lecturers, demonstrators, and research men, indicate the wide range of opportunity open to men of varied training, experience, and capacity. The lists have been made up from official publications showing the positions in agricultural institutions, and an attempt has been made to indicate the number and character of appointments usually made to the staffs of such institutions.

For example, the department of animal husbandry in an established agricultural college located in a

State in which grain production and live-stock industries are prominent will frequently include, in addition to the head of the department of animal husbandry, four or five and sometimes as many as eight or ten associate heads of subdivisions, each subdivision employing instructors and assistants, together with a number of herdsmen and helpers for practical work.

The number of departments and subdivisions and the number employed in each department, of course, varies from institution to institution. In the following lists, when the singular form is used, as for example "associate," it indicates that commonly one associate is employed in the subject indicated in an institution covering the subject adequately. Where the plural form is used it indicates two associates as the usual number employed, and where the name of the position is followed by a numeral or numerals, as "associate (2 to 5)," it indicates that more than two will usually be found on the staff.

PLAN No. 939. AGRICULTURAL COLLEGE POSITIONS

The Federal Board for Vocational Education has completed arrangements with the State Agricultural Colleges for special technical and for regular courses, giving such training for the positions indicated below as seems most suitable, taking account of age and experience in each case. You should consult the nearest vocational officer, remembering that Uncle Sam is ready to train you free in a technical course and pay you while you are taking it, also to help you secure a permanent position after your training is completed.

If you were pursuing a course in one of the State

Agricultural Colleges or in an agricultural high school when called to arms, resumption and completion of that course is generally to be recommended. You can not as a general rule afford to abandon a course once begun in which you have made any considerable progress.

Many minor positions are available to ambitious students requiring financial assistance promptly after or even during preparation. Many of the less important college positions immediately available for men who have taken training provide opportunities for further study and training leading to higher positions in the agricultural colleges, as indicated in the positions here listed. The same is true of positions listed herein under Experiment Stations and Extension Service.

PLAN No. 940. LIST OF POSITIONS IN AGRICULTURAL COLLEGES

Faculty:
- Dean.
- Assistant to dean.
- Office employees.
- Heads of departments.
- Associates.
- Instructors.
- Assistants.

Agriculture, head of department.
- Rural schools, supervisor.
- Junior school, superintendent.
- High schools, agricultural, supervisor.
- College:
  - Librarian.
  - Assistant librarian.
  - Curator.

Assistant curator.
Photographer.
Assistant.
Farm management:
Associate.
Instructors.
Assistants (2 to 4).
Farm manager.
Farm foremen.
Farm laborers (3 to 15).
Journalism:
Editor.
Assistant editor.
Assistants.
Education, scientific:
Associates.
Assistant.
Economics:
Associate.
Instructor.
Assistant.
Pedagogy:
Associates.
Instructors.
Assistants (2 to 5).
Agricultural engineering, head of dept.
Rural engineering:
Associates (2 to 4).
Instructors (2 to 6).
Assistants (2 to 4).
Highway engineering, associate.
Irrigation engineering:
Associate.
Assistants.
Drainage engineering:
Associate.

Assistants.
Agronomy:
Head of department.
Associates (2 to 5).
Instructors (2 to 4).
Assistants (2 to 4).
Seed, analysts.
Farm crops—
Products—
Associate.
Instructors.
Plant breeding—
Associates.
Instructors.
Assistants.
Soil investigations—
Biology—
Associates.
Assistants.
Physics—
Associate.
Instructors.
Assistants.
Soil, analyst.
Bacteriology, associate.
Fertilizers—
Instructor.
Assistant.
Animal husbandry:
Head of department.
Associates (2 to 5).
Instructors (2 to 4).
Assistants (2 to 4).
Cattle—
Associates (4 to 10).
Instructors (4 to 6).

Assistants (2 to 4).
Horse—
Associates (4 to 10).
Instructors (4 to 6).
Assistants (2 to 4).
Swine—
Associates (4 to 10).
Instructors (4 to 6).
Assistants (2 to 4).
Sheep—
Associates (4 to 10).
Instructors (4 to 6).
Assistants (2 to 4).
Pathology—
Associate.
Assistant.
Nutrition—
Associate.
Instructor.
Assistant.
Meats, assistant.
Genetics—
Associate.
Instructor.
Assistant.
Bacteriology:
Head of department.
Instructors (1 to 4),
Hygiene, associate.
Beekeeping:
Associate.
Apiarist.
Instructor.
Botany:
Head of department.
Associates.

Instructors (1 to 3).
Assistants.
Plant pathology—
Associate.
Instructors (2 to 4).
Canning:
Associate.
Instructors.
Assistants.
Helpers.
Chemistry, agricultural, head of dept.
Soil, crops:
Associates (2 to 5).
Instructors (2 to 5).
Assistants (2 to 8).
Soil physics:
Associates.
Assistants.
Fertilizer control:
Manager.
Analysts (2 to 10).
Recorders (2 to 4).
Markers (2 to 5).
Chemistry, general, head of dept.
Inorganic:
Associates.
Instructors (2 to 4).
Assistants.
Organic:
Associates.
Instructors (2 to 4).
Assistants (2 to 4).
Physiology:
Associate.
Assistant.
Daily husbandry:

Head of department.
Associate.
Instructor.
Assistants.

Dairy industry:
Associate.
Instructors (1 to 3).
Assistant.

Dairy bacteriology, associate.

Entomology:
Head of department.
Associates.
Instructors (2 to 4).
Agriculture, instructor.
Insecticides—
Instructor.
Assistant.
Limonology—
Associate.
Instructor.
Assistant.

Floriculture:
Head of department.
Associate.
Instructor.
Assistant.

Forestry:
Head of department.
Instructor.
Management—
Foresters.
Rangers.
Guards.
Pursuits—
Associates.
Assistants.

Silviculture, associate.
Arboriculture—
Associates.
Assistants.
Gardening, market:
Head of department.
Assistant.
Vegetable, associate.
Small fruits, associate.
Truck—
Associate.
Instructor.
Geology:
Associate.
Assistant.
Meteorology, associate.
Horticulture:
Head of department.
Associates (2 to 4).
Instructors.
Assistant.
Pomology—
Associate.
Instructor.
Assistant.
Citriculture—
Associate.
Instructor.
Assistant.
Zymology—
Associate.
Assistant.
Landscape architecture:
Head of department.
Associates.
Assistants.

Microbiology:
Head of department.
Instructor.
Assistant.
Parasitology:
Associate.
Assistant.
Poultry husbandry:
Head of department.
Associate.
Instructors.
Assistant.
Rural sociology:
Head of department.
Assistant.
Instructor.
Veterinary:
Head of department.
Associate.
Assistants.
Diagnosis, associate.
Medicine—
Instructor.
Assistants.
Histology, instructor.
Laboratory—
Supervisor.
Assistant.
Physical therapeutics, instructor.
Anatomy—
Associate.
Instructor.
Pathology, associate.
Surgery, associate.
Bacteriology, associate.
Viticulture:

Head of department.
Instructor.
Assistant.

Zoology:

Associate.
Instructors (1 to 3).
Assistants.
Limonology—
Associate.
Instructors.
Ornithology—
Associate.
Instructor.
Assistant.
Morphology, associate.

PLAN No. 941. AGRICULTURAL EXPERIMENT STATION POSITIONS

Technical books have been in such exceptional demand by the wounded in the hospitals that the American Library Association could hardly fill the orders, it is noted, and that vocational education has received a big stimulus from the soldiers having acquired the vocational study idea which argues well for efficiency in their future undertakings. It is difficult to adequately comprehend the value of the soldier's experience educationally. He has learned discipline and devotion to a cause and that simple reading is not study. Study has been required and he knows how, with concentration of his supple mind, to acquire definite knowledge and employ it.

It should be emphasized that eligibility for positions in experiment stations, except as assistants and helpers, presupposes definite college preparation. The college course pursued should

include training in experiment work in some technical line in agricultural experimentation or demonstration as a vocation. Experiment station work differs radically from educational work in agricultural colleges and high schools, and it may be well suited to those properly qualified for it who are disinclined to undertake teaching.

Experiment work is exceedingly interesting and preparation for it can to greater advantage be undertaken by those who have had some agricultural college training, or even agricultural high school training, combined with practical experience in agriculture. Half the battle is won when one has determined to achieve efficiency in some line of work, and to take such training as is required to prepare one to enter into agricultural service as an expert.

PLAN No. 942. LIST OF POSITIONS IN AGRICULTURAL EXPERIMENT STATIONS

Station Staff:
- Director.
- Vice director.
- Assistant to director.
- Editor.
- Photographer.
- Chiefs of divisions.
- Associates.
- Assistants.

Agricultural engineering, chief:
- Irrigation—
  - Associate chief.
  - Assistants (2 to 7).
- Mechanical—
  - Associate chief.

Assistants (2 to 5).
Electrical—
Associate chief.
Assistants (2 to 4).
Landscape—
Associate chief.
Assistant.
Agricultural extension, chief:
Co-operation, assistant chief.
Farm projects—
Associate chief.
Assistant.
Agronomy:
Chief of division.
Assistants.
Soil physics—
Associate chief.
Assistant chief.
Associates (2 to 3).
First assistants (2 to 6).
Assistant.
Plant breeding—
Associate chief.
First assistant.
Soil fertility—
Associate chief.
Associates (2 to 4).
First assistants (2 to 3).
Assistants (2 to 3).
Crop specialties—
Associate chief.
Assistants.
Crop production—
Associate chief.
First assistant.
Assistants (2 to 3).

Co-operative experiments,
superintendent.
Soils laboratory, assistant chief.
Soil biology—
Assistant chief.
First assistants.
Soil analysis—
Associates.
First assistants.
Assistants.
Rust work, assistant.
Dry farming, assistant.
Seeds control, associate.
Laboratory, analyst.
Testing, assistants.
Animal husbandry:
Chief.
Associates (2 to 3).
First assistants (2 to 3).
Assistants (2 to 3).
Animal nutrition—
Associate chief.
Associates.
Assistants (2 to 3).
Swine husbandry—
Assistant chief.
Assistants.
Sheep husbandry—
Assistant chief.
Assistants.
Horse husbandry—
Assistant chief.
Assistants.
Cattle husbandry—
Assistant chief.
Assistants.

Genetics—
Assistant chief.
First assistant.
Animal pathology—
Chief.
Assistants.

Botany:
Chief of division.
Assistant chief.
Associates.
Assistants (2 to 3).
Plant pathology—
Associate chief.
Assistant.

Chemistry:
Chief of division.
Assistant chief.
Assistants (2 to 3).
Dairy chemistry—
Associate.
Assistant.
Floricultural chemistry—
Associate.
Assistant.
Horticultural chemistry—
Associate.
Assistant.
Soils chemistry—
Associate chief.
Associates.
Assistants (2 to 4).
Crops chemistry—
Associate.
First assistant.
Assistants.

Dairy husbandry:

Chief.
Associate chief.
Assistants (2 to 3).
Bacteriology—
Associate chief.
Associates.
Assistants.
Breeds, experimental—
Associate chief.
Assistants.
Manufactures—
Associate.
First assistant.
Assistants.
Milk production—
Associate.
Assistants.
Dairy production, first assistant.
Economics, assistant.
Entomology:
Chief of division.
Associate chief.
Assistants (2 to 4).
Beekeeping—
Apiarist.
Assistant.
Farm organization, chief of division:
Farm surveys—
Assistant chief.
First assistant.
Management—
Associate chief.
First assistant.
Assistants (2 to 7).
Forestry, chief of division:
Surveys—

Associates.
Assistants.
Horticulture:
Chief of division.
Assistant chief.
Olericulture—
Chief.
Assistant chief.
First assistant.
Assistant.
Truck crops—
Associate.
Assistant.
Plant breeding—
Associate chief.
Assistant.
Fruit breeding—
Assistant chief.
First assistant.
Assistants.
Floriculture—
Assistant chief.
Assistants (2 to 3).
Pomology—
Assistant chief.
Associates (2 to 3).
First assistant.
Assistant.
Plant physiology, associate.

PLAN No. 943. AGRICULTURAL EXTENSION SERVICE POSITIONS

The recent war necessity for organization of agricultural forces exhibited the co-operative extension system through county agents, farm

bureaus, and local organizations, as a very effective means of greatly increasing agricultural production.

To the Agricultural Extension Service established by our Government in connection with the Department of Agriculture and the State agricultural colleges was due this agricultural co-operation enabling the American farmer in a great emergency to meet practically every demand for production promptly and effectively.

Much remains to be done to perfect co-operation of organizations in developing county communities, but a broad foundation has been laid for the service and well-trained, practical men are employed to carry the results of scientific research, demonstration work, and practical experience to the farmer.

County Agricultural Agents

The men holding these positions are known as county agents who direct and demonstrate farm problems, club leaders who direct extension work with young people, and specialists in different lines of agriculture.

There are 2,936 counties in the United States, of which 2,300 have county agricultural agents. The duties developing upon the county agent are numerous. In brief to introduce to the farmers in a practical manner the scientific investigations and the experience of successful farmers. Also to demonstrate so well their practicability that farmers may be induced to adopt them.

If practical and reliable, the county agent is able to reorganize and direct the agriculture of the community and be a force socially and economically in improving country life. In short, he should be able to instruct in all subjects having to do with improved agricultural practice, and from a business standpoint

with buying and selling and general farm management. Many of these projects are brought home to the farmer, and he is influenced in their adoption by actual demonstrations which he is induced to undertake, with his own labor and at his own expense. These projects are conducted under supervision, and may have to do with crops, live stock, drainage, or any phase of farm work.

County Agent in Touch With Farmers

The position of county agent affords an exceptional opportunity as a step to further advancement. The county agent is an organizer of farm bureaus, farm clubs, and stands back of all in demonstration work. He is practically the farmer's business adviser as well as his educator, and need for his services is found in directing farm activities as well as in demonstrations. As has been well said: "The purpose of the agent is not to make farmers' bulletins, but to interpret them; not to take theory to the farmer, but practice to the puzzled tillers of the soil." In no other line of research work are young men of agricultural rearing and experience and with scientific training more successful or acceptable than in directing the farmer, though he may be old in experience, in the many up-to-date measures productive of success and profit on his farm.

Last year 500,000 farmers conducted demonstrations of various kinds in co-operation with county agents which covered an aggregate of 1,000,000 acres. County agents held 135,000 meetings attended by 7,000,000 farmers, made 1,200,000 visits to farmers, and received 1,250,000 office calls from farmers for advice.

The county agent works with all county societies, such as granges, farmers' unions, alliances, farmers'

institutes, community clubs, and such boy and girl clubs as he may organize to support his work.

Club Leaders

This club work is supervised by State and county leaders. Over 2,000,000 boys and girls were enrolled as club members the past year. For example, the members enter into competition in corn growing, for prizes on a basis of largest production at lowest cost, best collection of 10 ears, and best story of the year's work. They receive from the extension instructors definite information regarding soil, planting, and cultivation, and are taught valuable lessons in handling soil, picking seed, improving varieties, use of fertilizers, cost accounting, etc. Similar clubs for like purposes grow home gardens, potatoes, cotton, grain, and fruits and much enthusiasm has been manifest in clubs for the raising of pigs, sheep, calves, and poultry. These clubs are all elementary to the more important work directed by the extension workers in general farm lines, farm gardening in particular, and profitable farm poultry raising.

Extension Service

The extension service workers have the support of many local organizations in addition to those assisting the county agents, such as local boards of agriculture, county councils, farm bureaus, clubs, and agricultural committees. There are over 1,000,000 farmers members of such organizations assisting county agents and extension workers. The agricultural projects contemplated under the vocational education act are lending great assistance to extension-service workers through co-operation by encouragement to the country boys undertaking the projects along with their club competitions.

You may well ask if there is any field of employment open to you which promises greater satisfaction in health, happiness, and service than is found in agricultural extension work. The scientific undertakings are attractive, the positions numerous, paying good salaries, and, if one desires, they can be sought where one's life may be largely in the outdoors. It is in fact difficult to conceive of a more attractive vocation for which to select education and training. The curriculum of some agricultural colleges will give you complete preparation and will assure you success in some specific line of technical agriculture.

Positions available in extension service are shown in the following list:

PLAN No. 944. LIST OF POSITIONS IN AGRICULTURAL EXTENSION SERVICE

Extension staff:
- Director.
- Vice director.
- State leader.
- State leader, junior, extension.
- Assistant State leaders.

Agricultural extension:
- Leaders.
- Assistants.
- Agronomy, specialist.
- Farm crops:
  - Associates.
  - Assistants (3 to 8).
- Soils:
  - Associates.
  - Assistants (3 to 6).

Animal husbandry:

Specialist.
Associates (2 to 5).
Assistants (3 to 7).
Botany, agricultural:
Associate.
Assistants.
Club work, assistants (2 to 4):
Boys' and girls' clubs—
Leader.
Assistants.
Canning clubs—
Leader.
Assistants.
Pig clubs—
Leader.
Assistants.
Calf clubs—
Leader.
Assistants.
Garden clubs—
Leader.
Assistants.
Crop pests:
Specialist.
Associate.
Assistants.
Dairy husbandry:
Specialist.
Associates (3 to 10).
Assistants (2 to 7).
Farm demonstration work, State leader:
Divisional, each branch—
Specialists (5 to 12).
Assistants (5 to 10).
Farm, advisory—
County agents (1 each county).

Assistants.
Junior extension—
State leader.
Assistants.
Farmers' institutes, specialist.
Farm management:
Demonstrator.
Assistants (several).
Farm organization:
Specialist.
Associates (2 to 7).
Assistants (2 to 8).
Hog production, assistant.
Horticulture, specialist:
Demonstration—
Assistants (3 to 8).
Spraying—
Specialist.
Assistants.
Market surveys:
Associate.
Assistant.
Poultry husbandry:
Specialist.
Associates.
Assistants.
Management, associate.
Farm poultry, associate.
Publications:
Editor.
Assistants.
Rural engineering, assistant.
Short courses and exhibits:
Superintendent.
Associates.
Assistants.

Veterinary extension:
State veterinarian.
Associate.
Assistants.

PHOTOGRAPHY, PHOTO-ENGRAVING, AND THREE-COLOR WORK

Acknowledgment

This monograph was prepared by Prof. David J. Cook, Demonstrator and Instructor, in the Bissell Colleges, at Effingham, Ill., under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

In the field of photography, photo-engraving, and three-color work you can succeed and re-establish yourself in civil life as an independent worker, in spite of your handicap, provided you have natural aptitude for the work. You can do this even if you have lost your hearing, or lost a hand, an arm, a foot, or a leg, or both legs, or an arm and a leg.

In the best studies and shops of the country, from $25 to $75 a week may be made by competent men; or one may establish himself in business with pleasant surroundings and ideal working conditions. The photographer and photo-engraver meet people at their best, and the taking of a picture, or the making of an engraving becomes merely an incident in a pleasant business transaction. Much of the work may be done while seated, and the work as a whole requires but little strength.

Photography, photo-engraving, or three-color work

may be practiced as an art, as a business, as a profession, or as a science, and one has a wide range of choice in electing just the kind of work suitable to one's condition, preferences, and past experience.

PLAN No. 945. AIR BRUSH WORK

Air brush work pertains to the working-up of enlargements and contact prints in black and white, sepia, or color. Expert operation of the air brush is little less than magical in its delicate shading and color effects. Operators of the air brush command high salaries and are in great demand.

PLAN No. 946. BROMIDE PRINTING

This is a trade in itself, and numerous houses make a specialty of bromide enlargements for the trade.

PLAN No. 947. COMMERCIAL PHOTOGRAPHY

Photographing machinery, furniture, fixtures, fabrics, glassware, and manufactured products is a distinct branch of trade, and the commercial photographer often builds up an enviable business, conducted with but little overhead expense. He is moreover, much in the open, and he can choose practically his own time to do his work. Some commercial photography is commonly done also by the regular portrait photographer, and much of this work can be done in the studio under cover. But little equipment is required, and the compensation is fair.

PLAN No. 948. COPYING, COLORING

PHOTOGRAPHS AND LANTERN SLIDES, SLIDE MAKING, WORKING IN BACKGROUNDS, MOUNTING, SPOTTING AND FINISHING, RETOUCHING AND ETCHING

All of these special services are embraced in regular studio practice. Good workmen in any one of the lines indicated command good pay and steady employment. The demand for experts generally exceeds the supply, especially for retouchers and etchers, who can improve negatives artistically, and correct the seeming exaggerations of the camera. Good retouchers may establish retouch studios in the larger cities and secure work from local photographers at from 30 cents to $1 per negative, depending upon the amount of work required per negative. A good retoucher can do up to 20 negatives a day, piece-work.

PLAN No. 949. LANDSCAPE AND ARCHITECTURAL PHOTOGRAPHY

This work takes one out into the open; is very healthful; and quite a body builder. One with a knowledge or liking for building and construction work may fairly expect to succeed well. Practically all railroads employ view photographers, and their work is exceedingly interesting on account of the travel from place to place.

PLAN No. 950. PRESS PHOTOGRAPHY

The press photographer leads an exciting life and the man with a “nose” for news items finds himself ideally located at a good salary. Many of the best men recently engaged in war photography were formerly press photographers.

PLAN No. 951. AMATEUR FINISHING

Amateur finishing offers a good field for profit, and many establishments in large cities, and even in smaller communities, provide amateur finishing in sufficient amount to keep a photographer busy long into the night in the busy season. The busy season may, in fact, be practically all the year around, as almost everyone now has a hand camera or kodak, and depends nearly altogether on the amateur finisher to develop and print films.

PLAN No. 952. MAKING HOME PORTRAITS

The home portrait worker photographs his patrons in their own home surroundings. He need have no studio. Hence his expenses are light and his profits relatively large. Home portraiture is one of the most delightful branches of photography, and the highest prices are obtained for work in this line. Equipment will cost about $200; there is no overhead; and the worker may work either during the day, or at night by the aid of artificial lighting installations, such as flashlight or electric light.

PLAN No. 953. MOTION PICTURE PHOTOGRAPHY

Motion picture photography is becoming more and more popular, and appeals strongly to the man who has a liking for the stage and for things emotional. Good operators make perhaps the highest salaries paid photographers. Here again one can specialize as a camera man, a laboratory man, or a printer. The laboratory work is chiefly that of developing the negative and positive films.

PLAN No. 954. PORTRAIT PHOTOGRAPHY

The portrait photographer must maintain more of an establishment than is required for some other lines of work, and may perhaps have to invest more money, since his place of business should be in some degree an art gallery. His is a busy and interesting life, and the maker of portraiture by photography should be a real artist, comparable with the artist who works with brushes and pigments. The artist-photographer's work is just enough varied, in artistic lighting of the subject, development of the negative, retouching, mounting and finishing of the photograph, to stimulate interest. Every portrait is just a little bit different, and presents new problems for the photographer. Many studios employ 5 to 50 workers, and the incomes of some of our best studio owners amount up into five figures. Some workers specialize in portrait operating, printing and finishing, and developing and laboratory work—all highly paid branches.

PLAN No. 955. PHOTO ENGRAVING AND THREE-COLOR WORK

Photo-engraving in halftone, line, and three-color work seems bound to take its place along with its great ally, the art of printing. All sorts of texts are being more profusely illustrated, and the demand for good photo-engravers keeps pace with the demand for good printers. The following subjects may be listed as indicating specialty branches in this field, each of which provides subject matter for a systematic course of training.

SUBJECTS TAUGHT

Line operating.—Making the negative without the

use of the screen for a literally exact reproduction of pen and ink work, etc.

Line printing.—Printing the line negative onto the coated metal.

Line etching.—Corroding the metal with etching solutions after it has been printed upon, thereby producing a printing surface.

Halftone operating.—The process of making screen negatives ready in every respect for the printer.

Halftone printing.—Printing of the stipple negative on the coated zinc or copper plate.

Halftone etching.—Etching the metal plate with the different solutions to produce a relief printing surface that will take the ink in the proper relations.

Finishing.—Working with tools upon the etched metal plates to improve them in various ways, remove defects, etc.

Routing.—Removing with the routing machines undesirable surface from the etched metal plates.

Blocking.—Mounting the metal and making it ready for the hands of the printer.

Proofing.—Inking the finished cut and printing on paper duly prepared.

Three-color work.—Making of color separation negatives color plates, selection of inks, order of printing, etc.

In photo-engraving, and three-color work, one may be an all around workman or a specialist. In shop practice one is usually employed at a single operation, and being highly skilled in that, one obtains correspondingly high remuneration.

Employment in these several occupations may be had in commercial workshops, studios, engraving plants, newspaper plants, printing establishments, manufacturing establishments, homes, colleges, or in the open, and employment is not restricted to any

one locality, but may be secured in the small town as well as in the great city. The practice of these arts is in fact very widespread. All tools are provided by the employer, and but little capital is needed to become established in a paying profession. A camera and lens and a halftone screen are the principal essentials.

Why Training is Necessary

The photographer or photo-engraver who has "picked up" his profession in the ordinary manner will generally do his work but indifferently, and in consequence his success also will be only indifferent. He may have learned to do things simply by rule of thumb. To become an expert workman he must study and practice under competent instructors, and must follow some systematic course of training under such instruction. In a short time he may expect to become fitted to enter into his life work 100 per cent proficient, and he may expect to secure a good position immediately upon completion of his course. One can hardly expect to receive explicit and accurate instruction while working as an apprentice in busy shop or studio, and moreover, one rarely finds a worker that can even, if he has leisure, impart his knowledge to others as effectively as can the professional teacher. The practice in large institutions and organizations generally now is to require some systematic training as a qualification for employment.

After training one is enabled to take a paying position or to enter into business for oneself. The opportunities are good and the field is large for really good workmen. The hours are not long, and the work is not confining. The pay is better than in many other trades or professions and employment is fairly constant, as there is really no well-defined

slack period.

PLAN No. 956. GENERAL INFORMATION—QUESTIONS ANSWERED

Q. What education is required to learn photography, photo-engraving, or three-color work?—A. Anyone with natural aptitude for the work who will make an earnest effort can succeed, whatever his previous education may have been.

Q. At what age is it best to learn photography or photo-engraving?—A. Any age over 18. It is never to late to learn.

Q. Can one learn to be a first-class up-to-date photographer by working in an ordinary studio?—A. Generally a student will learn more rapidly and acquire greater proficiency by taking a systematic course of training in some school of photography—even a short course.

Q. Is retouching a strain on the eyes?—A. Not if it is properly taught.

Q. Is a previous knowledge of photography necessary for those who would learn photo-engraving?—A. Not at all. All the photographic knowledge pertaining to the work is taught in the regular engraving courses.

Q. Is photo-engraving unhealthful?—A. Not in the least.

Q. Can one by taking employment in an ordinary plant acquire facility in all the up-to-date processes of photo-engraving?—A. A student will learn more in a shorter time by taking a systematic course in the subject.

Q. Do students generally take training in all three of the branches which have been described?—A. Very seldom; usually enrollments are for one of the

three—i. e., either photography, photo-engraving, or three-color work.

PLAN No. 957. OPPORTUNITIES FOR EMPLOYMENT IN THE JEWELRY TRADE

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This monograph was prepared by Miss Eleanor Adler, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

The disabled soldier, sailor, or marine during the days of waiting in the hospital will naturally ask himself, “What is the best way for me to earn a living with my handicap?”

He may find one of the many answers to that question in some of the opportunities of the jewelry trade. If he has two good hands and good eyesight, and if he has any mechanical bent, he may become in this trade the equal of any worker in it. One artificial leg or even two constitutes no serious handicap in this line of work. If, in addition to mechanical aptitude, he has any artistic creative capacity, he can become very expert and earn an assured income permanently.

Jewelry making is an old trade with a pedigree reaching back into medieval and ancient times. In those days it was more an art than an industry. Its master craftsmen were known by name and were famous for their particular skills. In recent times the installation of machinery has made it possible to produce some standardized articles by the gross instead of by the piece, thus greatly cheapening

output. Fine-grade factories working chiefly in platinum still use hand processes and make their necklaces, brooches, and other pieces from individual designs and patterns. Cheaper-grade factories work more in gold and make many of their articles, such as cuff links, bracelets, and rings, of a standard pattern, which is stamped out by machines, the articles being turned out by the gross or dozen.

PLAN No. 958. WORKING IN PLATINUM

Processes in the platinum jewelry trade—the hammering, drawing, and soldering of the precious metal—require skilled craftsmanship.

The designer first makes the original picture or pattern of the brooch, necklace, or other piece, and if the details of the design and general character are approved he then makes an accurate pen-and-ink line drawing. He is paid from $35 to $75, possibly $100 a week.

The modeler makes a model in wax in the same way that the designer makes the picture. His wages are the same as the designer's. Designers who are also modelers are much in demand.

The sketch or wax model then goes to the engraver, who transfers the design from the picture or wax to a flat piece of metal, engraving it lightly, in order to make a permanent record of the design. Engravers have to be very skilled and are paid from $40 to $60 per week.

The metal next goes to the jeweler, who "makes the piece"—that is, takes the flat piece of metal and hammers and models it—"using a soft lead block, upon which he rests his platinum plate, face downward, and modeling from the reverse side with various-sized blunt-nosed punches and a mallet

whose head is made of rawhide."[17] He then cuts out the design by following the engraved outline with a saw about the thickness of a coarse thread. All the leaf and so-called demelle decoration and other piercings are made in this way. The work is skilled and requires a steady hand and long practice, but can be developed from any good mechanic. It is paid by the hour, 75 cents to $1.25.[18]

[17] "Jewelry," by De Witt A. Davidson, in "An Exhibition of American Industrial Art."

[18] Unions claim that the wage ranges from 85 cents to $2.50 per hour.

Next the piece goes to the polisher, who polishes the back and attaches it to a frame or catch. Polishers in platinum factories are usually girls and are paid from $20 to $25 per week.

The stone setter then puts the piece into a bed of shellac to hold it firmly and mounts the diamonds, working up platinum beads out of the flat metal to hold the stones in place. Setting a row of diamonds so that they seem an uninterrupted line of brilliancy is called "pave work" and requires great skill. Stone setters are paid by the piece and make $40 to $125 per week.[19]

[19] Unions claim that the wage for this work ranges from $60 to $125 per week.

The metal is then taken off the shellac, goes once more to the polisher, and then to the finisher, who is merely a jeweler doing the particularly skilled work of final inspection and adjustment.

The number of processes in a platinum factory varies. In some cases they are so combined that one man performs several different processes. One expert may even make a whole piece from beginning to end. The tendency in this line is in fact back to the

old Guild conditions at a time when the value of a jewel setting lay in its uniqueness. Very beautiful work is sometimes done in the homes of workmen. The material is called for, and the article is designed, wrought, and returned completely finished.

In cheaper-grade factories, on the other hand, processes are more subdivided, machine work being substituted for handwork. For instance, the engraver may be eliminated by stamping work out by dies instead of engraving it by hand. In this way platinum jewelry can be turned out faster, and in larger quantities than when engraved in single pieces, and of course the same skill is not required. The average wage is $25 per week. Cheaper grade factories all subdivide their processes more in this way, use more machines, and turn out work by the dozen in platinum and by the gross in gold, instead of by the piece.

PLAN No. 959. WORKING IN GOLD

A factory that works with gold employs designers in the same way as does the platinum factory.

The metal itself first goes to a melter and roller, who puts it into crucibles, then into the furnace, and then rolls it into ingots. The work is heavy, and necessitates standing and the use of both arms and feet. Wages are $25 per week.

In the cheaper-grade factories the gold, instead of going to the engraver for piecework, goes directly to the press and stamping room, where it is pierced by machines, stamped and pressed into patterns by the gross. Conditions of work are the same as in the first department, except the presswork, which is fairly light, but necessitates the use of one leg. Wages range from $18 to $25 per week.

The article then goes to the jeweler, who assembles the parts, solders them in the center, and shapes them by the aid of small machines and blowpipes, according to samples shown him. Wages are from $18 to $40 per week.

The work next goes to the polisher, either a man or a girl, who does the polishing seated at a buffing wheel. The polisher earns from $18 to $35 per week.

If the article is to be dipped in a solution to change its color, it then goes to the colorer, who is often also a polisher, and earns the same wages.

When fine work is done by an engraver, his work is much the same as in a platinum factory. Very expert work is paid from $40 to $60 per week. The same statement applies to the stone setter, who is paid by the piece, and often makes from $70 to $100 per week.

The article lastly goes to the finisher, who is here again merely an ordinary jeweler who inspects the completed work.

The toolmaker has charge of making the stamping dies, at 75 cents an hour.

Advantages of The Jewelry Trade

The advantages of the jewelry trade for men with disabled legs are many. First of all the work is seated and requires little physical strength. Most of the processes are carried on at long tables near windows, with articles laid on a sort of easel in front of the men and manipulated with small instruments. The trade itself is such as to insure good working conditions—good light, sanitary workrooms, fair precautions against fire (the sprinkler system is in many factories) and space sufficient to avoid overcrowding. There are no unpleasant odors or unsanitary by-products such as are found in many

industries, and there is little noise. Hours have been shortened in the past 10 years from 55 to 44 per week in New York City and Newark and to 48 throughout the rest of the country. Employment is stable, and the fairly skilled mechanic finds work all the year round. The busy season is in summer and fall; but the spring, which is light, is utilized for developing new ideas for quality production later and stock taking for the holiday season.

As an old stone setter put it, “Training in jewelry work is a good investment, and never leaves a man with a trade on his hands and no value in the market for it.”

Another important advantage of the jewelry trade is its demand for man labor. The industry is a steady, probably a developing one, with possibilities of extended export trade. It can probably absorb a large number of men. Jewelers find it hard to get apprentice boys, chiefly because the apprenticeship is long and poorly paid, but that difficulty is done away with for soldiers, who are paid by the Government while in training. Platinum factories employ on an average 70 to 80 men, gold factories from 400 to 500. There are nearly 150 factories in Newark and about 300 in New York, who assert that they need labor and will pay good prices to get it. Employees start at some such process as soldering, at $10 to $15 per week, and can work up to $20 to $30, and in the better class work later to $60 and $75, or even $125.

PLAN No. 960. AREA OF EMPLOYMENT

The area of employment in the trade is largely in the East, about 75 per cent in New York, Newark, and the cheaper-grade factories in New England.

There are some jewelry factories in Chicago and other large cities in the West.

Tools and Machines Used

The tools and machines used in the trade are chiefly the following:

Drop hammer up to 200 pounds to a large degree power lifted.
Punch and cutter presses.
Lathes, machine and speed.
Power, plate, and wire rolls.
Power drawbenches.
Welding and soldering outfits.
Polishing lathes, lapping lathes (to polish metal.)
Blowers (to supply air in connection with soldering.)
Melting furnaces of various sizes.
Annealing furnaces.
Hand tools, such as workbenches, files, saws, hammers, drills, alcohol, ammonia, emery paper, various shellacs and acids.

Unions

Local unions are fairly strong in New York City, but are not officially recognized by manufacturers. They have, however, enforced competitive bidding, which has driven prices up very high, and has made conditions practically those of the closed shop. They claim a membership in New York City of 3,500. In Newark they are not so strongly organized.

Bonuses

There is no recognized system of benefit funds. A few factories have individual associations for sick

benefits, which are rather discouraged by the unions. Some distribute bonuses on the 1st of January.

Training

There are at present no adequate courses of training for the jewelry trade. A jeweler is put at the bench and starts in with the simpler processes. He is usually broken in at so-called jewelry work, chiefly at soldering processes. If he is quick, he can be promoted in time to the more expert departments. There is a fixed system of apprenticeship in each factory, covering one, two, or even three years, with a bonus at the end of the period, and limiting the number of apprentices allowed by the unions to 1 apprentice to every 10 employees. The jewelers have for some time been considering starting training classes in New York or Newark, similar to a small professional class recently successfully started by a manufacturing jeweler in Chicago. They are also taking up the question of training classes in their own factories. According to their suggestion, courses ought to last anywhere from six months to two or three years, according to the ability of the worker "to catch on."

Educational Requirements

There are no essential educational requirements, though a good school education helps and a knowledge of mechanical drawing is "a leg up," and puts a worker immediately at the more expert and highly paid processes. Any man who has had experience at delicate work of any kind, who has perhaps liked the finer handwork in occupational therapy at the hospitals, who has two good hands and good eyesight, and is not too disabled to reach the shop, will find no handicap in this trade. If he

has a mechanical bent and flexible fingers he can become an efficient jeweler. If, in addition, he has any artistic, creative capacity, he can develop into a stone setter, engraver, or designer. His work then becomes of a personal nature, commands a comfortable salary, and can bring him, despite disablement, to the top in the industry.

PLAN No. 961. TRANSPORTATION—INTRODUCTORY

Acknowledgment

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What Transportation Involves

In transportation men are concerned with the moving of persons and goods from one place to another. Transportation requires, however, many other operations than simply loading, hauling, and unloading passengers and freight. Charges must be determined and collected, records must be kept, movements of trains, cars, boats, and other vehicles must be directed, repairs to equipment must be made, and numerous other matters must be handled. These numerous operations call for hundreds of thousands of employees in many different trades and occupations.

Occupations Varied but of Great Responsibility

Thus in transportation there are so many different sorts of occupations that nearly any individual who likes responsibility can become interested in some part of the great field. There are occupations in which responsibility rests upon the employee for insuring the safety of property, and this responsibility is not by any means inconsiderable. In other occupations employees are responsible for lives as well as property, and risk their own lives in the service. There is office work for those who like it and plenty of traveling for those who enjoy that. If a life out of doors appeals to you, transportation can give you a job of that sort. In short, if you have a liking for responsibility you can find a job in transportation service that will suit you.

Disabilities and Retraining

If you were engaged in transportation before you were disabled, you are probably still interested in this work, and would return to it if you did not feel that your disabilities unfitted you for your old job. If you wish to go back into transportation and can not take up your old job or a new one in that field without retraining, you want to know how to get retraining and how retraining will help you. Retraining and devices may help you to get your old job again. Retraining ought to do more than simply this. It ought to get you a better job than you had before. It is to help you to analyze and see your own possibilities as they are related to the various transportation occupations that this booklet is written.

Divisions of Transportation

In general, transportation is performed by steam railroads, by street railways, by wagons and automobiles, and by boats. Of these agencies, steam railroads employ the largest number of men in so far as regular occupations are concerned. We shall, therefore, consider first the occupations and trades connected with the operation of steam railroads.

PLAN No. 962. PART I. STEAM RAILROADS

Railroading in the United States is a gigantic enterprise. In 1916, a prewar year, our railroads possessed about 65,000 locomotives, 2,342,000 freight cars, 55,000 passenger cars, and 98,000 company service cars. There were 259,000 miles of single track and enough of double track to raise this figure to 293,000 miles of main track. In addition there were 102,000 miles of sidings. Employees of railroads numbered 1,654,000 and were paid $1,403,968,000 as their compensation for the year 1916. Obviously, among so large a number of employees operating so varied an equipment are found many different trades and occupations.

Safety on Railroads

Railroading is attended with personal risk for many of the employees, but only in a small number of cases is a man who is disabled in the service of a railroad rendered unfit for further service. Many of the older railroad men have suffered injuries of some sort, since the use of safety devices is relatively recent. Quite a number of injured men have in the past been given office, clerical, or watchmen's work, since there is a vast amount of such work to be done, and it involves comparatively little personal risk.

Factors Controlling Promotion

For the man who lacks a technical or college education there is almost a dead line to promotion into the higher offices. For instance, the wide-awake section hand can become a section foreman, then a construction gang foreman, a supervisor, and perhaps a roadmaster. But he can hardly ever hope to become an engineer of maintenance of way unless he acquires in the meanwhile an extended knowledge of civil engineering especially as applied to railroading. The disabled soldier or sailor, if unfitted to pursue his old occupation, can secure this very desirable training through the Federal Board for Vocational Education. He can thus secure an advancement that he might not otherwise have obtained.

There have been three conflicting forces governing promotions in railroading—favoritism, seniority, and efficiency. At one time favoritism was so strong that graft and toadyism gave inexperienced men promotion over men with long experience. The seniority rule was introduced by the labor organizations to offset the old evil, and for two men of equal intelligence and native ability selection by seniority is a fair method of giving promotion. In such a case seniority coincides with efficiency. But seniority of itself does not necessarily in all cases give the higher position to the man best fitted for it, since long years in the service will not train the thoughtless, careless man as well as a few years will the alert man. Railroad employees in all branches of the service strongly contend as a group for their seniority rights. This means that an outsider usually has a long waiting period for advancement into the best positions. Efficiency is becoming more the rule, but the old influences still prevail in some

departments, partly because standards of efficiency are rather indeterminate, largely because changes in a widespread system can not be wrought in a day. If favoritism could be abolished employees would not insist so strenuously upon their seniority rights.

Since the railroads have been subjected to public regulation they have appreciated the value of courteous treatment of the public. Accordingly they reward the courteous employees by promotion, and no longer tolerate a grossly uncivil one as they did in the early days.

Loyalty to the railroad organization is regarded to-day by railroad officials as the foremost requisite for those wishing promotion—a loyalty that places the railroad organization first, whether it be a question of public regulation or of labor unionization. Fairfax Harrison, president of the Southern Railway Co., has thus stated the case:

"There are three requisites for advancement in railroad service—loyalty, efficiency in your present job, and preparedness for larger responsibilities. Efficiency and preparedness for higher place go together, for that man will be most efficient in his present job who is not content with mere mechanical performance of his duties, but who has an intelligent understanding of them in their relation to the service as a whole and who has qualified to take over the duties and responsibilities of his immediate superior on a moment's notice."

WHY TAKE THE TRAINING?

It is however, a generally known fact among railroaders that few men in the lower positions have the chance to learn efficiently all the duties required of them in the next higher position. For example, a track workman rarely has the opportunity to make

out reports and payrolls, or even to do alignment sighting, unless he is favored by his foreman. By taking the training provided by the Federal Board he can learn to do this and other highly skilled work, and thus have an unusual opportunity for advancement. He could study civil engineering and become an engineer-maintenance-of-way.

Classes of Railroad Occupations

There are various ways of classifying railroad employees, but we shall use here a grouping suited to our purposes, based largely on physical and mental requirements and the training involved. We are not so much concerned with the several administrative departments—accounting, operating, traffic, etc.—as with the work done in different occupations. There is obviously a marked difference between the physical requirements for an office position and those for a position as railroad brakeman. On a basis of the requirements made upon the employee, railroad occupations may be grouped as follows:

1. Office or clerical work.
2. Shop work—repairing equipment.
3. Track work—repairing track and structures.
4. Train work—operating the trains.
5. Work conducing directly to train operation.

PLAN No. 963. OFFICE AND CLERICAL WORK

In railroad office and clerical work the requirements upon the employee are mainly mental. In this group we find the general and divisional officers—financial, legal, surgical, engineering, managing—telegraphers, train dispatchers and train directors, telephone operators, station agents, passengers and freight agents, station masters, and

all sorts of clerks—accountants, rate clerks, traffic clerks, etc. For these positions a man may qualify although he may have suffered from considerable physical disabilities, providing he is mentally alert and has some knowledge of railroading. The knowledge that a man should acquire or the training that he should take will, of course, depend upon the particular position he wishes to fill.

Let us consider some of the principal office and clerical occupations, so that you may be able to select the one that appeals to you. We may well begin with the telegraph operator.

PLAN No. 964. TELEGRAPHY AS AN OCCUPATION FOR THE DISABLED

Few physical disabilities will debar an intelligent man from becoming a telegraph operator. Poor hearing, the loss of both arms or of both eyes are handicaps that can not be overcome, but nearly any other disability can be overcome. The occupation rarely subjects a man to exposure to bad weather. Telegrapher's cramp and electric shocks are the chief occupational hazards to be guarded against.

The position of the operator is stimulating, even at a small station on a through line, since much of the important news of the day goes over the wires. Of course, he is bound to keep secret all such news, and there are through wires on which he can not listen in.

Telegraphic Apparatus

The instruments used consist of a key for sending messages and a relay or sounder for receiving messages. To install an outfit is a simple matter for anyone who is at all familiar with the action of an electric current, for the principle of operation is

merely that of breaking up the flow of current into dots and dashes in various combinations.

Training for Telegraphy

However, facility in transferring letters into dots and dashes and translating dots and dashes into letters is not so easily acquired. Only after much practice does the beginner form the habit of doing this readily. He must of course memorize the Morse alphabet, but, further than that, he must become so familiar with the dots and dashes that when he hears them in combination he thinks that he is actually hearing a word, not a certain number of dots and dashes. He must form the habit of thinking words in dots and dashes without thinking of the clicks, just as one reads a page without thinking of the separate printed letters that go to make up the words.

The operator needs further to acquire a rapid legible handwriting, so that he can write down rapidly the message as he receives it and never get very far behind the sender. Since, however, it is difficult for one to write as fast as an experienced sender can send, the operator must learn to retain in mind a number of words and phrases, so that when he is receiving messages sent rapidly he can copy behind the sender and catch up at breaks for new sentences and paragraphs, or at the end. Some operators have learned to receive messages, writing them out on the typewriter as they come over the wire. This is an accomplishment worth striving to attain, especially if one can not write legibly and at the same time rapidly.

The Telegrapher Must Learn More Than Mere Telegraphy

There are a number of other things that the

telegraph operator needs to learn, especially if he holds a position at a small station. He must learn a large number of abbreviations, so that he knows immediately what they mean. Some of these abbreviations are made up of the main consonants in the word, while others are simply arbitrary numbers. Sometimes these numbers refer to a printed form which he must use repeatedly. A knowledge of switchboards and cut-outs, of installation and renewal of batteries, and of care and adjustment of instruments is highly desirable and usually necessary. All operators must know the rules and regulations of the company and govern themselves accordingly, and they must be fully acquainted with signaling systems and appliances.

If the operator is located at a small station, he probably has part or all the work of the station agent to perform at some time. If he is located at a large station, there are emergencies when he may be called upon to do such work, so that he should become familiar with the work of the station agent. This, of course, means that he must become familiar with rates, both freight and passenger, must sell tickets, make out freight bills, and do railroad bookkeeping. The complaint most frequently made against schools teaching telegraphy is that the student is taught telegraphy and nothing else, so that when he takes employment he has to learn at once nearly everything connected with station work.

Hours and Wages of Telegraphers

Hours are generally eight per day, and wages are good, averaging around $1,100 or $1,200 per year for all operators, which means that the efficient employee who works regularly gets much more than $1,200. Employment is regular throughout the year.

Rarely does an operator send or receive for a long period of time without a break to rest. Most messages are ten-word ones, which means the transmission of probably not over twenty words, including names, addresses, and office data.

Will Telegraphers be Needed?

As to the permanency of the occupation, there is only the telephone that in any way threatens to make the telegrapher unnecessary. The limitations of the telephone are such, however, as to make that instrument supplemental to the telegraph. The telephone is, for example, more liable to get out of order, because the apparatus is more complicated, and when out of order it can not easily be put in commission again by the average operator. The telegraph lends itself readily to codes and a written record is usually made of messages sent by telegraph, while the telephone lends itself readily to conversation. Thus each has its own proper uses. The wireless seems to be better adapted to telegraph instruments than to the telephone, especially for long distances. There has been no practical device invented for relaying messages mechanically with the telephone, as can be done with the telegraph. Although the telephone has proved to be satisfactory in the direction of trains, and is being installed on the railroads rather generally, it is hardly probable that it will entirely displace the telegraph. However, it is to be noted that there is some possibility that the service may be flooded with telegraphers only partially qualified to do their work. Radio operators trained in the war can readily become telegraph operators and during the war many women have learned telegraphy. A disabled soldier or sailor entering this occupation should take supplementary

training for the position of station agent, so that he may in some measure avoid the competition of radio and women operators.

Disabled Soldiers Who Have Learned Telegraphy

By way of illustration a few cases may be cited of disabled Canadian soldiers who have taken training as telegraphers and entered successfully into this work. Returned soldiers whose former occupations had been that of farmer or farm hand have taken the training courses offered them by their Government, and have thus fitted themselves for this, to them, entirely new line of work. One farm hand, for example, disabled by stiffness of the left elbow, studied telegraphy and secured a position as assistant agent on the Grand Trunk Railway. Another disabled soldier, a former farmer, suffering from leg trouble, studied telegraphy and now holds a position as a railroad telegrapher at a salary of $95 per month. (Salaries paid telegraphers in the United States are considerably higher than in Canada.) Another farmer so disabled in the army that he had but little use of his left leg took a course in telegraphy and now holds a position as an operator paying $82.50 per month, with house, light, and heat free. Still another farmer, who lost his left arm in the army, after studying telegraphy secured a position as a wireless operator at $85 per month and board. If you have not lost your mental equipment and ambition, you can do as well as or better than these disabled Canadians have done.

Other disabled soldiers have taken training for telegraphy to enable them to get into an employment paying more than their former occupation and giving more regular employment. A waiter afflicted with

heart trouble, for example, a bricklayer who lost three fingers on his left hand and had wrist injured, a rubber-shoe maker afflicted with stiffness of the left elbow joint, each studied telegraphy, and each has secured a position on Canadian railways.

Old railroad men whose disabilities prevented them from returning to their former occupations have taken training for telegraphy, in which branch of railroading working conditions were better than in their old jobs. A locomotive fireman who had sustained a gunshot wound and lost the vision of his right eye and a finger from his left hand studied telegraphy and secured a position as a station agent. A lineman whose legs were too weak for his old position took both the commercial and telegraphy courses and now has a position as an operator at $88 per month. If you have had practical experience as a railroad man, the courses offered you by your Government will give you the training necessary to enable you to secure that higher position which you have often hoped you could get. Why do you not make your disability your opportunity for advancement? Now is the time to take the training and secure that promotion.

Line of Promotion for Telegraphers

An operator may be promoted to a position as train dispatcher, or as station agent, depending upon his interest and abilities and upon the available opportunities. Opportunities to become station agents are more frequent, because the number of station agents employed is much larger, and promotion in this line may be continued by transfer from a small to a larger station. Before passing to a consideration of the occupation of the station agent, we shall note briefly the position of the train

dispatcher.

PLAN No. 965. THE TRAIN DISPATCHER

The train dispatcher must be an expert operator and must have other qualifications which he may have acquired while working as an operator. He must understand the workings of the operating department; he must know the location of sidings and telegraph offices, the distances, grades, and track conditions between sidings and offices, and something of engineers, engines, and train loads. He must have a clear head and must not get confused nor trust to memory or guess as to location of trains. He must keep a record of the progress of all trains and refer to it constantly. He must have the ability to direct men in person or at a distance, since the operators are subject to his orders. It is absolutely necessary that he know thoroughly all the operating rules and regulations of the road. The position is one of great responsibility, especially on roads with heavy traffic on a single-track system. Since he must direct all trains on his division, the mental strain at times is considerable. But the hours are usually short, and the wages paid are high—the annual average being nearly twice that for operators.

The train dispatcher may advance to the position of chief dispatcher, whose duties include supervision of train dispatchers, and general operation of all trains. In emergencies his duties and responsibilities are especially exacting.

PLAN No. 966. THE STATION AGENT

In no one other position probably are working conditions so varied as in that of the station agent. He may be located at a small village on a branch line where he meets perhaps two trains a day and

performs all the work around the office from telegraphing to caring for the United States mail. Or he may be located in a large city, where his work is that of supervising a small army of employees. But whether he is in the smallest position or in the largest, he must understand the railroad's business as it relates to his work. He must understand rates, both passenger and freight; must know how to keep records and accounts correctly; how to make out freight bills and coupon tickets, even although he himself may not have to do this work; and he must know how to handle men. It is through him that the public comes most closely in contact with the railroad, and he can make or lose traffic for the railroad by the manner in which he meets customers or would-be customers. Courtesy in station agents is being prized more and more by railroad administrators. A popular agent is an asset, an uncivil one, a liability. The agent at a small station can obtain much business for the company through a knowledge of through rates and routes, although he must allow the shipper to choose the route. All station agents must be experienced operators on lines where the telephone is not used. They must be thoroughly familiar with railroad signals and with traffic rules and regulations. Even in a small place, the agent comes more in contact with the outside world than most of the other inhabitants of the village. His position is one of financial responsibility, since he handles large sums of money. Upon him devolves largely responsibility also for the safety of travelers and freight, since he plays a part in the directing of trains. He can save the railroad from losses in claims for lost and damaged goods, by seeing that names and addresses are marked clearly on packages, that goods are packed properly for

shipment, and that packages are handled carefully.

PLAN No. 967. STATION CLERKS, BAGGAGEMEN, AND OTHER WORKERS

At the larger stations, the work of the station agent is that of supervising a large number of clerks, baggagemen, and other workers.

Among these clerks are ticket sellers whose duties are to calculate rates and fill out coupon tickets with correct routings, and to sell local and excursion tickets. They must be very careful to make correct charge for the tickets sold. They make out detailed reports of the tickets sold and money received.

The head baggageman and his assistants receive and forward all baggage left with them, determine if there is any excess and collect the charges for excess. They issue duplicate checks for baggage left with them when the passenger presents his ticket and asks for the checks. They also give out baggage arriving at the station on presentation of the duplicate check issued at another office. The head baggageman must be able to handle men and direct them so as to avoid making mistakes, but he must usually be physically able himself to handle baggage.

In the freight department are rate clerks, who give information as to rates and classifications; billing clerks, who bill freight, enter weights, etc.; and other clerks, who attend to accounts, records, correspondence, and claims.

Disabled soldiers or sailors with good common-school education could, after short periods of training, fill any of these positions. Salaries average slightly less than $1,000 per year. For ticket sellers comparatively few disabilities are serious handicaps, except such as may be repellant to the traveling public, which does not usually like to be reminded of

accidents. Freight clerks have not even this condition to meet, and if they are not called upon to handle freight they will not be seriously handicapped by physical disabilities which would bar them from many occupations.

At important freight centers a considerable number of employees are directly engaged in handling freight, under the supervision of a freight-house foreman. This foreman has charge of the freight house, directs the placing of cars at the warehouse and the loading and unloading of freight, and is responsible for keeping records so that freight may be readily found. He must be able to handle men, and must know how freight should be packed and stored, both in the freight house and in the cars. He must be able to classify freight and to file properly all records relating to freight. He has usually been promoted from a position as checker, warehouseman, or trucker. Any disabled man who has held such jobs, if he is intelligent and can handle men, could with some training become a freight-house foreman. Poor sight or hearing would, however, usually be serious handicaps.

The freight checker has a position that pays better than that of the trucker—who is rated as an unskilled laborer. The freight checker checks the freight into and out of the freight house, warehouse, or car. He must be able to check consignments accurately, and should know the classes of freight.

At transfer points, a transfer agent performs duties similar to those performed in the positions just considered. He sees that shipments are properly transferred. He makes the necessary notations on waybills, and keeps a complete record of the transfer and of the cost incurred. He must understand loading and unloading freight and must be able to handle

laborers. Not infrequently he has been promoted from a position as agent at a small station. A disabled man with good sight and hearing, who can write, might be trained for this position.

PLAN No. 968. DIVISION SUPERVISORS

At division points on the railroads, there are a number of station and yard employees whose duties are supervisory. Among these employees are the station master with his assistant, the supervising agent, the yardmaster, with his assistant, and the train director.

PLAN No. 969. THE STATION MASTER AND HIS ASSISTANT

The station master directs the making up and dispatching of local passenger trains, receives and dispatches through passenger trains, and looks after the necessary shifting of cars in such trains. He sees that all these trains are provided with crews ready to take prompt charge of the train. He has general supervision over all employees about the station, and reports on neglect of duty by any of these.

The assistant station master has the same general duties as the station master and must have the same qualifications. The assistant works when the station master is off duty, or in the larger stations relieves the station master of part of his work.

These men must be courteous to the traveling public, and must have had experience in the operation of trains in the yards, so as to be able to direct train movements efficiently. They must have the ability to handle men and to make sound decisions quickly. The physical requirements are good health, sight, and hearing. Disabilities which would not prevent quick movement from place to

place would not be serious handicaps to well qualified men.

PLAN No. 970. THE SUPERVISING AGENT

The supervising agent has general charge of passenger, baggage, freight, and scale agents. He employs and supervises the employees who take care of the station grounds and buildings. He must possess executive ability, and must have had experience in the positions he supervises, to enable him to select properly qualified men, and to direct their work intelligently.

PLAN No. 971. THE YARDMASTER AND HIS ASSISTANT

The yardmaster has immediate supervision over yard employees and yard operation. On some railroads he has also supervision over the calling of train crews and the train seniority list. He is aided in his work by assistant yardmasters and by yard clerks. The assistant yardmasters' duties and qualifications are of the same general character as those of the yardmaster.

These men must see that cars are not unnecessarily delayed in passing through their yard. They must receive the waybills for cars arriving, and deliver these to the conductors taking charge of the cars when they depart. They must make records of all the transactions and fill out reports. They must be thoroughly familiar with the rules governing train operation and defining the duties of employees connected with train service. The yardmaster must see that all orders are properly given and executed. He must have good color eyesight and hearing, and be able to stand exposure to weather. He would not be seriously handicapped by the loss of limbs,

provided he could write out reports and make records and move quickly from place to place. A disabled trainman could take training for the position of assistant yardmaster and thus be in line for promotion to the position of yardmaster, although the seniority rule might prevent him from getting this promotion quickly.

PLAN No. 972. THE TRAIN DIRECTOR

The duties of the train director are to receive and transmit train orders for the movement of trains, from the train dispatcher to the train crews. Accordingly he must be an expert telegrapher or telephoner, have good color eyesight and good hearing, and be thoroughly familiar with the rules and regulations relating to the movement and signaling of trains.

PLAN No. 973. OTHER STATION AND YARD WORKERS

Under the station masters, yardmasters, and supervisors are a number of minor clerks, attendants, and laborers. But little skill is required of the laborers, whose work is largely physical and the wages paid them are the usual wages for unskilled labor. The duties of minor clerks vary so from station to station and so overlap that any detailed account of their services would be confusing. Some of these clerical positions might be suitable for some disabled men, and the training necessary is usually short. It must in fact generally be taken in the position itself for the special duties assigned in the given case.

PLAN No. 974. TRAIN CALLERS AND TICKET EXAMINERS

A disabled man with a good voice and memory might become a train caller at a large station. A disabled passenger conductor might become a ticket examiner, since his knowledge of tickets and of the various stations would be the sort of information required for this position; but the pay would probably be lower than that of conductors.

PLAN No. 975. OFFICE WORK

In the divisional or general offices the reports, accounts, and similar matters that come in from station agents are handled. There is the accounting division concerned with receipts and expenditures, most of which are for small amounts, and all of which must be totaled in various ways—a considerable task of itself. Expenditures must frequently be analyzed according to different regulations, and reports must be compiled for State and Federal commissions. Because of these requirements the railroad accountant must learn many things about railroad systems and the public regulation of railroads that another accountant does not need to know.

In the divisional and general offices a great deal of statistical work must be done. A number of clerks are employed in preparing exhibits for the rate or wage hearings, of which there are usually one or more in progress in some part of the country. Much of this statistical work is done in the traffic department.

PLAN No. 976. THE TRAFFIC DEPARTMENT

The traffic department is the rate-making and traffic-getting department of the railroad. In this department much correspondence is carried on; many letters are received, answered, and filed, especially in obtaining traffic. The answering of

inquiries of all sorts is in itself a big task. The traffic department considers the revision of old rates and classifications and the issue of new rates or special rates. Here is where individual rates, rate structures, and classifications are first formulated. The change of a rate structure is usually made only after an extended study of traffic conditions and of the probable effect of the proposed rate structure. The traffic department presents such matters to the various classification committees for action, and jointly with the traffic departments of other railroads in the territory covered it forms the traffic association and classification committees. It thus operates to affect rates on other railroads and it presents new rates and classifications to the Interstate Commerce Commission or to State commissions for approval. It must frequently prepare for hearings upon changes in rates and classifications. It draws upon the auditing and operating departments for much of the information upon which new rates are formulated.

There are two divisions to the traffic department, namely, the freight and the passenger divisions. The freight division makes studies of the commodities to be moved, of the competition the railroad has to meet, and of the charges that the traffic will bear without being diverted to other lines or routes. It adjusts claims for lost or damaged freight. It solicits business by keeping in touch with the shipping interests along its line or those who could be induced to use its line in connection with another road. For this purpose traveling freight agents are employed. These men must know rates, routes, commodities, and men. Their employment depends upon their knowledge of their business and their ability to meet and convince, for instance, the manufacturer that he

should ship over their line. In other words, they are salesmen of railroad service.

Who are Eligible for Traffic Department Service

Former railroad conductors or brakemen of a high degree of intelligence, who have been disabled in the war, may in some cases wisely elect to take training for service in the traffic department. Much of the information that a conductor or brakeman has learned in his old position will be of value to him. In the traffic department both officers and clerks must know how properly to bill freight, how to calculate both local and through freight rates, and how to route through freight over connecting lines. They must know the junctions where cars can be transferred and where they can not, and where less-than-car load shipments can be transferred without drayage. They must be familiar with the seasonal movement of freight and must know what commodities come from certain districts and with what regularity, in order to anticipate heavy freight movements, and have cars at points where they are most needed. The intelligent conductor or brakeman has already acquired much of this information. Freight conductors are well qualified for training as traffic men, traveling freight agents, terminal traffic men, assistant traffic managers, or even traffic managers. Former clerks in the traffic department also could take training and qualify for better positions.

The passenger division of the traffic department attempts to obtain extensive travel over its lines. Conventions, circuses, and all such attractions for crowds are noted and excursions provided whenever they seem to promise to be profitable. Such

excursions must be advertised, and this demands an advertising man in the department.

In large cities where many competing railroads center, city ticket offices are maintained from which solicitors are sent out to induce persons known to be planning a trip to travel on their respective lines. A disabled passenger conductor might qualify by training for a position in this division, and find that his past experience would be very helpful in the new position.

Those formerly in purely clerical positions, who have been disabled, may advantageously take courses in rates and rate making, and thus qualify for higher positions.

Previous Experience of Value for Other Office and Clerical Work

In other departments of railroad service, there are a large number of positions that former train, station, or track men who have been disabled could advantageously fill, utilizing their railroading experience, and taking training for the new positions. These disabled men would have to be men of intelligence and not too old to take up a somewhat different line of work.

Such men could, for example, learn accounting and would find their knowledge of train matters, track affairs, and station duties of value in helping them to understanding certain accounts. Auditors could do their work more efficiently if they understood more of the work in the various branches of railroad service.

Again, top-heavy engines would not be placed on tracks made up largely of curves, in the hope that the high drivers would give greater speed than could be developed from lower-wheeled engines, had the

responsible officials or their advisers understood more of track maintenance, especially in cuts in rainy weather. In one instance when high-wheeled engines were placed in service on a road the track men complained immediately, but it took a series of wrecks on curves to induce a change to safer engines.

The claim department could utilize men who have been "out on the road." Actual railroad experience would be of value to a young man about to enter the legal department of a railroad. A young railroad man inclined to legal affairs could take the training provided by the Federal Board, and thus make his disability a means of advancement to one of the highest paid positions on railroads.

The purchasing agent and his assistants could undoubtedly gain in efficiency by having in their offices men who have had actual experience in handling the materials that these agents must purchase. When to insist upon strict compliance with all specifications, and when in the case of certain specifications to make concessions, are matters that may involve large sums of money and in such matters the advice of men with actual experience in using the materials would be very helpful.

PLAN No. 977. AN ESTIMATE OF A RAILROAD GENERAL MANAGER

Percy R. Todd, Assistant to District Director and General Manager, Bangor & Aroostook Railroad, Bangor, Me., says:

"There always has been, and, in my judgment, always will be a demand in excess of the supply for the following classes of employees, particularly relating to office work, viz.:

"Stenographers.

"Tariff clerks (trained in the framing and

publication of freight and passenger tariffs in accordance with Interstate Commerce Commission rules).

"Freight claim clerks (trained in the handling of both overcharge and loss and damage freight claims).

"Waybill clerks (there has always been great difficulty in obtaining trained men to make waybills at stations).

"Telegraph operators.

"Expert railroad accountants.

"Clerks trained in valuation of railroads.

"In all of the above-mentioned lines, so far as my personal experience goes, there has always been a shortage and probably always will be.

"As to stenography, I consider it the very best medium through which any young man can make progress on a railroad, as it lifts him at once above the mass of clerks and gives him an individuality and a touch with executive officers which almost invariably leads to his promotion.

"In this connection I might add that the traffic manager of the New York Central Railroad, * * *, was at one time my stenographer when I was connected with the New York Central System, and rose from that position to be traffic manager of all their lines; the president of the Chicago, Burlington & Quincy Railroad, who died three or four years ago, started as a stenographer with the Michigan Central Railroad at Chicago.

"The general manager to-day of one of the New England railroads started as a stenographer with the same company, and I could give a great many more instances of what stenography has done for men who had the brains to back it up."

PLAN No. 978. SHOPWORK

For the second group of employments designated, shopwork, the physical requirements are higher than for office and clerical work, since shopwork generally calls for at least ordinary strength and eyesight. Shopworkers include general foremen, gang and other foremen, machinists, boiler makers, blacksmiths, carpenters, painters, upholsterers, electricians, air brake men, car inspectors, car repairmen, mechanics helpers, and apprentices. A number of men now employed in these occupations have suffered injuries to hands or feet, or have defective hearing. Foremen can perform their duties under disabilities that would be serious handicaps for workmen, but a foreman needs good eyesight.

Skill Required for Shopwork

Practically all of these occupations require considerable skill and general knowledge of railroad equipment. While the workmen have machines with which to perform many operations in the shop, still much handwork must be done. This is the case because repair work is varied, and the work must usually be done partly on the car or engine, sometimes out on the road. The machinist's work is generally heavy and greasy. Some of the carpentering and paint work is rough, as is that on box cars, while some, such as the cabinet making and varnishing of passenger coaches, is highly skilled.

Training

A skilled machinist or mechanic can learn to do railroad work very quickly after he gets on the job. Others must spend a period of apprenticeship to learn the trade. Quite a number of railroads have regular apprenticeship courses. Wood-working and metal-trade schools also give much of the training

required for railroad shop work. We give below a description of the occupations to suggest to the disabled soldier the training he will probably need, and to enable him to decide whether the occupations are suited to his disabilities.

Great Demand for Shopworkers

For the disabled soldier or sailor who is mechanically inclined, the railroad shop offers an opportunity for good wages and advancement. The depreciation of the great amount of mechanical equipment of a modern railroad is very large and railroads have not had in the shops for a number of years sufficient men to keep the rolling stock in good condition. The number of bad-order cars and locomotives has been large, and they have not moved out of the shops as rapidly as they should. The automobile industry has undoubtedly been a strong competitor for the mechanics who otherwise might have gone into railroad shops. Some railroads have attempted to provide themselves with sufficient machinists by training apprentices in considerable numbers.

PLAN No. 979. THE HEADS OF THE TWO DEPARTMENTS

The master mechanic has charge of the machine shop and the employees therein. Under him, are usually, shop foremen, roundhouse foremen, road foremen, and sometimes other supervisors. He may himself be under a superintendent of motive power, or directly under the division superintendent.

Usually on a par with the master mechanic is the superintendent of the car department, sometimes called a master carpenter, who has charge of car builders and painters, repairmen and inspectors,

cleaners and oilers.

The work of the two departments is not clearly differentiated to-day, since the introduction of the steel car has required mechanics for its upkeep rather than carpenters. Previously, the line was drawn at the wood and metal parts. The two departments attempt to keep the railroad equipment in running order.

PLAN No. 980. CLERICAL POSITIONS

In these departments are found also clerks who keep records and help in making reports and in correspondence. The storekeeper and his assistants are usually under the supervision of the master mechanic. Since none of the positions are essentially manual ones, they could be filled by disabled men having the necessary ability, training and experience. Experience in the lower positions is required to fit for any of the higher ones. For executive positions ability to handle men as well as the other qualifications are essential. For clerical positions the qualifications are chiefly educational.

In the railroad shops we find generally the following skilled workmen: Machinists, blacksmiths, boilermakers, sheet metal mechanics, pipe fitters, electricians, molders, and inspectors.

PLAN No. 981. MACHINISTS

Railroad machinists in small shops do all sorts of repair work, but in large shops they are frequently assigned to special work. A machinist may, for instance, work only at a large lathe truing up “flat” wheels or journals. Since power cranes are now used to set the work in place in the lathe, no heavy lifting is required. A disabled man can do the work if he knows how to adjust the lathe so that the wheels or

journals are machined properly. If he has good eyesight in one eye, one good hand, and can stand at the machine during working hours, his disabilities will not seriously handicap him. Another machinist may work on engine parts—for example, on cylinders, pistons, or cut-off valves. Use of power cranes for placing most of this work has reduced greatly the need for great physical strength on the part of the railroad machinist. However, those who are sent out on the road to help clear up wrecks must occasionally do heavy lifting.

PLAN No. 982. AIR-BRAKE MECHANICS

The air-brake man is a mechanic who installs and repairs the air-brake equipment of locomotives and cars. Much of his work consists in removing defective parts and replacing them with new properly fitted parts. As he must frequently work under cars and do a certain amount of rather heavy lifting, he needs both arms, good eyesight, and good hearing. He must also have good health. The loss of a leg would be a considerable handicap for installation work. A disabled air-brake man could easily train himself to become an air-brake test-room inspector. In such a position his knowledge and skill would count more than his physical condition. For this position he must be thoroughly familiar with all the parts and functions of the air brake; and be able to adjust valves and other parts quickly.

PLAN No. 983. THE BLACKSMITH

The railroad blacksmith must forge or weld light and heavy pieces for all sorts of railroad equipment. He may forge a steeple bolt for a hand car, cut and fit the parts for a crossing frog, set the steel tires on the drive wheels of a locomotive, or straighten a bent

driving rod. He must be able to read blue prints, and to take old, worn, and broken pieces as a guide to construct a new piece. He must be able also to do all sorts of welding and to heat large pieces properly. He must understand how to temper steel for the use to which it is to be put. His work thus requires technical knowledge and manipulative skill. But since power hammers and cranes are used on heavy pieces his work is not so heavy as formerly. The loss of one or two fingers, or of a leg, or of the sight of one eye, would not handicap a well-trained man. Poor hearing would not ordinarily be a serious handicap.

PLAN No. 984. THE BOILERMAKER

The boilermaker keeps in repair the locomotive and stationary boilers of the railroad. He must be able to retube, patch, overhaul, and construct boilers. Ordinarily his heaviest duties are to remove old leaky tubes from boilers and place in new ones, and to patch up or even renew the fireboxes. However, wrecks frequently cause him to take boilers apart and put in new pieces, so that he almost reconstructs the boiler. He must be able to read blue prints and use templates in laying off plates and angles. He must know how to punch, shear, and rivet the parts, and calk the boilers, and how to weld or cut pieces with an oxy-acetylene torch. The work is heavy and dirty, but good hearing is not essential and the loss of an eye is not a serious handicap. The boilermaker must, however, have strength and the use of both hands, although he may have lost a finger or two from either hand.

The work and qualifications of the steel-car repairer are not radically different from those of the boiler maker. The metal-car repair man also must be

able to drill or punch holes, to cut out broken parts of metal, replace them with new ones, and rivet them in, but his work is not so technical as that of the boiler-maker.

PLAN No. 985. THE ELECTRICIAN

With the installation of electric headlights and electrically lighted passenger cars the electrician's duties in repair shops have increased greatly in recent years. He must keep in repair the dynamos on locomotives and the dynamos and storage batteries on passenger cars. The growing use of the electric locomotive means that the demand for railway electricians is sure to increase. Repair of motors for these as well as for electric cranes used in a number of shops calls for armature winders in increasing numbers. Both technical knowledge and manipulative skill are required, but ordinarily the work is not heavy. Disabled men with good eyesight in one eye, with two arms and one good hand, who are able to move about easily, could do the work.

PLAN No. 986. INSPECTORS

Inspectors of boilers and of other parts of locomotives, and of the metal parts of cars, must know thoroughly the parts to be inspected. Usually they have had considerable experience in the repair of these parts. Frequently they must help to make the repair or must supervise the work when they find a minor defect in railway equipment at a location not convenient to the shop.

PLAN No. 987. CAR REPAIRMEN

Repairing or rebuilding of wooden cars is done by car builders or repairmen and painters. It is largely

carpenter work. These men must be able to remove any broken or damaged piece of a car, replace it with a new piece, and paint or varnish it. The builders or repairmen must be thoroughly skilled in the use of all hand carpentry tools and be able to use readily any of the woodworking machinery necessary to produce car parts. On passenger-car work, the repaired part must be finished nicely, and the whole painted or varnished so that the repair is not obvious. No such care is required for work on freight cars.

In addition to the men who work regularly in the shop, there are a number of men who must travel over the road and keep mechanical or electrical equipment in working order. These men must all have mechanical ability. Ordinarily, they must be physically sound, since they are exposed to weather and to danger from trains. Among these men are signal and interlocking maintainers, and signal inspectors. They must have both mechanical and electrical knowledge.

PLAN No. 988. TRACK WORK

In the third group of employments, included under the heading track work, a man needs physical strength and agility, good health, good eyesight, and good hearing. Without these, he is constantly in danger himself and may endanger the lives of others. Only the foremen may have physical disabilities, such as the loss of a hand or arm. All must have good health, since they are exposed regularly to all sorts of weather. All must have good eyesight, in order that they may do their work properly and avoid danger. Poor hearing would continually subject the man to danger from passing trains, from falling objects, or other sources of danger, since one who has poor

hearing would not generally hear or would misunderstand warnings of danger. A man on the track must be agile in order to avoid danger.

Work Requires Skill

Men in this group are frequently classed as unskilled, largely because railroads have employed for the work unskilled foreign laborers, but to do the work properly considerable skill is nevertheless required. Poorly tamped ties, "goosenecks," maul dents on the rails, and similar defects are evidences that may be found on many roads of unskilled work. Ability to drive a spike properly, so that the rail is held securely to the ties, is not quickly acquired.

Fence work, bridge work, cement work, and similar work, often performed by special gangs, require skill to be done rapidly and well.

Occupations

The main occupations in this group are track laborers, foremen and supervisors, bridge carpenters and foremen, fence-gang men and foremen, and other extra gang men and foremen, linemen and repairers, painters of sign posts and structures, structural iron workers and foremen, and concrete workers and foremen.

Conditions of Employment Unsuited to Disabled Men

In track work, only the positions of foremen or supervisors pay good wages, and only these could be suitably undertaken by disabled men.

The track laborer in the eastern and northern section of the country has to compete with the immigrant from Europe, in the South with the Negro,

in the West with the Mexican, and in the far West with the Oriental. Only a few workers on construction gangs do not have to meet this competition directly, because their work requires a skill that the foreigner does not acquire easily. But such work is very seasonal, being done for the most part during the summer and early fall. Wages are not high and working conditions usually are poor if not bad. Extra gang work, in this respect, is very little different. Section work, while allowing the men to have home life and thus have better living conditions, usually is seasonal and pays lower wages than is paid to other gangs upon track construction work. Bridge construction or repair work requires some skill and the wages are good, but the danger is considerable for even a physically strong and sound man. The painters of structures receive good wages, but their work requires climbing into dangerous positions. The lineman must frequently do climbing to repair wires, or to cut away limbs of trees thrown upon the wires by storms. Evidently, these positions are not suitable for the disabled soldier from three standpoints, namely, the seasonal character of the work, the danger to which it subjects him, and the relatively low wages paid on the average for the year. The position of timekeeper for large extra gangs is, of course, mainly clerical, but is undesirable since it is very seasonal. All track occupations are hazardous and accidents are frequent.

PLAN No. 989. THE TRACK FOREMAN

The duties of the track foreman are to supervise workmen, to teach green hands how to do the various sorts of work, and to make out reports on various matters ranging from the pay roll to a report of live stock killed by a train. He must be familiar

with the time of all trains at various points on his section, with the signals, with the degree of curves and the needed elevation, and with the use of the various appliances and tools used on a modern railroad. The section gang uses a large number of tools, and these must be kept in proper condition. Railway appliances are numerous, and the section foreman has supervision over these. Introduction of the motor car to take the place of the old hand car, has called for more mechanical skill on the part of the foreman. A disabled man could perform the usual duties of a foreman, if his disabilities did not affect his eyesight, hearing or health, but loss of an arm or a leg might increase the accident hazard, as, for example, in case an extra train caught the gang in a cut or out on a high dump with the hand or motor car.

PLAN No. 990. THE TRACK SUPERVISOR

The track supervisor usually supervises a number of section foremen. He must be an able trackman, so that he can recognize immediately the nature of a defect in the track as he rides over it on a train. He issues orders to track foremen for changes in location or character of work, handles reports from foremen on certain subjects, and himself makes out various reports. He portions out supplies and materials for the track under his supervision, and is held responsible for the condition of this track by the engineer of the maintenance of way. A disabled section foreman could with training qualify himself for a position as supervisor, but the vacancies in this position are not numerous, and railroads usually give preference to the physically sound men.

PLAN No. 991. TRAIN WORK

The occupations in group four—train work—are engineers, firemen, baggagemen, porters, brakemen, conductors, hostlers, switchmen, and motormen. For this fourth group there are many limitations upon disabilities which a man may have suffered and undertake work without endangering himself and others. In none of these jobs can a man's hearing or eyesight, or nerves, or heart be defective, and no one who is color blind can hold any of them. The loss of an arm would usually debar a man—even passenger conductors who have lost an arm are now infrequent. There are a few firemen and engineers successfully holding their jobs who have lost a leg, but a freight brakeman could hardly do his work if he were thus disabled. The loss of a hand generally unfits a man to be brakeman, fireman, or engineer.

The Occupations

There are three classes of engineers, firemen, brakemen, and conductors namely, those working in the yards, those on freight trains, and those on passenger trains. A yard engineer, fireman, or conductor may have suffered disabilities that the men in the freight and passenger service can not have without being handicapped in competition with normal men. In none of the positions do the duties permit of a large number of disabilities, or of very serious ones. All must pass rigid physical examinations—eyes are tested for color blindness as well as for other defects, and hearing must be excellent. All must pass a rigid examination in the rules and regulations, signals, schedules, and the road conditions.

PLAN No. 992. THE ENGINEER

The duties of an engineer are exacting. He drives

his engine over the track where there are curves, crossings, switches, and signals that he must constantly watch. He must recognize instantly the color of the numerous signals displayed at various points along the line. He must sound the whistle as he approaches crossings and other points. He must also note the running condition of his engine—for instance, whether the bearings are becoming too hot. When the engine stops for water he usually oils certain bearings. He must learn to apply the steam and adjust the reverse lever so as to give the maximum pulling power to the engine at one time, and to attain considerable speed at another time, in either case with due regard to the load he is pulling and the track he is running upon. He must, accordingly, learn where the track is good and he can make speed and where it is bad, so that he must slow down. In emergencies he must be able to close the throttle and apply the air almost instantly, or to reverse the engine. For this he needs both hands. His eyesight must be excellent and his arms, heart, and nerves good. Wages paid to engineers are high, averaging $2,000 a year, but the position is one of great responsibility, and it is one that few disabled men would be allowed to undertake.

PLAN No. 993. THE FIREMAN

The fireman must be physically strong. He must shovel coal into the firebox so that the steam pressure will be sufficient at all times for the pulling power of the engine, and yet not be “blowing off” frequently. He must watch the water level in the boiler and see that it does not get low. He must climb back over the tender when the engine takes water. He takes on coal at the coal chutes. On occasions he has to go forward to flag to protect the

train from in front. Where automatic bell ringers are not installed he usually keeps the bell ringing when the engine is doing work in yards near a crossing or where other men may be endangered by the engine. When the engine is running and he is not busy shoveling coal he is watching the track along with the engineer, but on the other side of the cab. He must especially watch when his side of the cab is on the inside of a curve. Since the fireman may in an emergency be called upon to perform the duties of an engineer, he is under the same limitations as regards disabilities as the engineer. The accident rate among firemen is high.

PLAN No. 994. THE BRAKEMAN ON PASSENGER TRAINS

The brakeman has various duties, somewhat depending upon the sort of a train on which he works. On a passenger train he calls stations, helps passengers on and off the trains, regulates the heating and lighting of cars, and sets switches. Sometimes this work is done by a porter. As a crippled brakeman would tend to give timid passengers a concrete example of what might result from a wreck or an accident upon the road, railroads have not wished to have disabled men fill this position. How they might deal with the disabled soldier is uncertain.

PLAN No. 995. THE THROUGH-FREIGHT BRAKEMAN

The through-freight brakeman sets switches when his train goes on a siding for another train, or his train picks up a car at a junction point, or sets out one. In such a case, he uncouples the train, air brakes, etc., throws the switches, and after the car

has been picked up or set out, couples up the train, makes the air brake connections, and tests them. He watches the train for hot boxes, and transmits signals from the conductor to the engineer. He must climb on and over freight cars, cross bridges, tracks, and switches. He needs to be sound physically.

PLAN No. 996. THE BRAKEMAN ON LOCAL-FREIGHT TRAINS

The brakeman on a local-freight train has no end of switching to do, or loading and unloading less-than-carload freight at small stations along the entire run. The physical demands made upon him are even greater than those made upon a through-freight brakeman. Disabled men should not undertake this job.

PLAN No. 997. THE CONDUCTOR ON FREIGHT TRAINS

The duties of the freight conductor, while lighter from the physical standpoint than those of the freight brakemen, are nevertheless so heavy that a disabled man is not usually wanted by railroads. At certain times he must do the same work as the brakeman does. He must walk over trains or tracks to get orders, or confer with the engineer. He must direct the picking up and the setting out of cars. He must keep a record of the cars in his train, of the ones set out, and of those picked up. He carries the way bills for the freight in his train. He must read and sign for all orders received for his train. His duties, while requiring more mental work than those of the brakeman, are still so heavy and dangerous that any physical disability would be a handicap to him.

PLAN No. 998. THE PASSENGER CONDUCTOR

The passenger conductor collects fares and supervises the passengers and train. He is responsible for the train orders as is the freight conductor. The physical requirements made upon him are normally light, but in emergencies, he needs to be physically sound. Formerly, passenger conductors who had lost fingers or even an arm or leg were frequent, but in recent years railroads have not wanted disabled men for this service, since they remind passengers of accidents. The passenger conductor needs to have a knowledge of trains and their time at meeting or crossing points, of the various sorts of tickets and script. He must make out various reports. If the railroads would place disabled men in this position, providing they were old railroad men who had been wounded in the war, this would be the best of all the positions in train work for an intelligent disabled soldier.

PLAN No. 999. YARD OCCUPATIONS

The train work in the yards consists of switching. The work of the yard fireman or engineer is perhaps somewhat less exacting than that of a fireman or engineer out on the line, but for the brakeman it is more exacting. The hostler is usually what might well be called an apprentice fireman, and so he must be as physically sound as the fireman or engineer. Yard conditions are so dangerous that disabled men would usually find their disabilities a handicap.

PLAN No. 1000. THE BAGGAGEMAN

The baggageman on trains needs to be physically strong, since he has to handle heavy trunks. He could sustain the loss of a leg or have too poor eyesight or hearing to qualify for other train work, if in emergencies he were not called upon to do the other

train work. Since he is so called upon he must be physically as sound as a brakeman. He has some clerical work to do. Sometimes he is a mail clerk, express messenger, and extra brakeman. Little knowledge or training is required to fill this position —a strong man of ordinary intelligence could learn to fill the position in a few days. He must know the stations and transfer points. Wages are about the same as for brakeman.

Work Conducing to Train Operation

In the fifth group of employments, including those conducing directly to train operation, are found the pumpman, the men on the coal chutes, the freight handlers, the crossing guardmen, and similar workmen. In this group, the requirements are good health, a fair degree of strength, and knowledge of the occupation.

PLAN No. 1001. THE PUMPMAN

The pumpman may have defective hearing, but must then have excellent eyesight, since he should notice engine trouble quickly if he can not hear it well. If his eyesight is poor, he should have good hearing. The pumpman needs to have some knowledge of boilers and steam pumps, but ordinarily his work is not heavy, even when he has to shovel all the coal for the boiler.

PLAN No. 1002. OTHER OCCUPATIONS

For men on the coal chutes, either poor eyesight or poor hearing, one or the other singly, is not a serious handicap, but good health is necessary as well as ability to climb over the sides of cars. The freight handlers need strong backs and good eyesight to read

names of boxes, etc. When motor trucks are used, the truckman ought to have some mechanical ability. The crossing guardman needs both good eyesight and hearing, but may have suffered the loss of an arm or a leg, even of both an arm and a leg. On the whole, the range of permissible disabilities for men in this group is greater than for those in groups three and four.

Training Required

Of all the jobs in this field practically the only one requiring any considerable knowledge or skill is that of the pumpman, and even for this position an ordinary man can learn all that he usually needs to know in a month on the job.

PLAN No. 1003. JOBS FREQUENTLY FILLED BY DISABLED MEN

With exception of freight handling, work in these employments has been given largely to men disabled in railroad service. For instance, a disabled brakeman is offered the job of switchman or crossing watchman; a fireman, that of stationary fireman, or engine watchman; conductors, that of flagman; and so on. Crew callers and lamp-room attendants are frequently disabled men. So generally has this policy been followed that the crossing watchmen, flagmen, and engine watchmen are commonly men who have been disabled. The positions are, however, not such as will appeal to the intelligent ambitious disabled soldier or sailor.

PLAN No. 1004. PART II. URBAN TRANSPORTATION—ELECTRIC RAILWAYS

Street railway operation furnishes rather regular

employment to men on the regular force. From this standpoint it is desirable for the disabled soldier or sailor. It is not seasonal to any marked degree, nor is it greatly affected by industrial depressions; and bad weather only increases the need for employees instead of lessening it as in many out-of-doors occupations. Few of the street railway employees are exposed to bad weather conditions, although the work is not so protected as in an indoor occupation. They are, however, exposed to dust from the streets and contagious diseases. All of the positions on street railways carry with them a high degree of responsibility, but the position of motorman is probably the one of greatest responsibility.

PLAN No. 1005. THE MOTORMAN

The occupation of the street car motorman is one that can be taken up by disabled soldiers and sailors. Those who have suffered merely the loss of part of the fingers on one or both hands, or of a leg, can operate a street car. A car can be operated by those who are physically unfit for heavy work, especially if the car is equipped with air brakes and the working hours are not too long. But those who have defective eyesight, poor hearing, or are subject to nervous trouble should not undertake this work. Those who have suffered from shell shock should not attempt to operate a car until they have fully recovered.

The work is light, but requires constant attention, especially under conditions of heavy traffic. The motorman must constantly watch the track to prevent collisions with automobiles or other vehicles whose drivers take hazardous chances in crossing the track. Men, women and children must likewise be watched and warned. The motorman must acquire skill in operating the controller so that he can start

the car off rapidly without causing the circuit breaker to break the current. He must learn to apply the air gradually so the car will not stop with a jerk or the wheels slide on the track. He must learn to estimate distances so that he can stop his car at the proper point. He must form the habit of never starting without a signal from the conductor.

The working conditions are suitable for disabled men. Stools are usually provided for the motorman, which he can use outside the congested district. Most of the cars have closed vestibules for bad weather. The working hours are irregular, but usually not over 10 in 24. Usually there are two work periods in a day, with a rest period of two or three hours between —the work periods come with the morning and evening rush of people to and from their work.

PLAN No. 1006. THE CONDUCTOR

The conductor's position makes fewer physical requirements upon him than that of the motorman. His position is, however, one of responsibility, and honesty is a prime essential. His duty is to collect fares, give proper change to passengers, and issue transfers. All his receipts must be turned over to the company. He must see that passengers are not endangered in any way, especially by the car starting too soon or the passenger attempting to alight before the car has stopped. Accordingly the conductor must have good eyesight and hearing. He may, however, have suffered some dismemberments, and he need not be physically strong. Courteous conductors are much in demand by street railways.

TRAINING

The training for the position either of motorman or conductor is generally conducted on the job. New

men are placed on a car with an experienced motorman and operate the car under his direction until they are able to operate a car independently. The period of training is usually short—a week to two weeks. Men so learning rarely receive pay. A number of companies make charges for the training, but refund amounts paid if the employee remains with the company a certain length of time.

Wages

Wages for motormen and conductors are approximately the same, and in 1917 ranged from 15 to 45 cents per hour, with average between 25 and 30 cents for the entire country.[20] Advances in the past year have probably raised this average to 30 cents or above.

[20] Bulletin of the United States Bureau of Labor Statistics No. 204.

Promotion

Men are usually promoted from the ranks of motormen and conductors to be inspectors or supervisors. They must have a thorough knowledge of operating conditions in the city, a knowledge that can be acquired only by considerable experience on the job as motorman or conductor making all routes in the city.

PLAN No. 1007. OTHER OCCUPATIONS

In electric street-railway operation, there are various other occupations, some of which require skilled workmen. The skilled workers include machinists, electrical workers, armature winders, carpenters, car repairers, linemen, track foremen, and inspectors. Since the other occupations are filled

with men who are unskilled, or who are taught on the job, we are not concerned with them, as the training is not such as the Federal Board could easily give. With exception of inspectors, the work of these men does not differ materially from that of the shop men and track men on steam railroads. These have already been described above. In the shop work there is opportunity for the disabled soldier or sailor who has defective hearing, as well as for those who have lost a hand or leg. The work is usually lighter than on steam railroads, but wages are generally somewhat lower; the greater number of employees receive from 24 to 29 cents an hour.

PLAN No. 1008. PART III. ROAD AND STREET TRANSPORTATION

In road and street transportation the main occupations are those of chauffeurs; proprietors and managers of taxicab concerns, livery stables, and transfer companies; foremen of livery and transfer companies; draymen; teamsters and expressmen; carriage and hack drivers; hostlers; and stable hands. The automobile is rapidly supplanting the horse and to such a degree as to affect the demand for labor in these several occupations, the demand declining in those dealing with the horse and increasing in those concerned with the automobile. Work in these occupations is not markedly seasonal, but is affected adversely by industrial depressions.

Equipment

If a person is in business for himself, his outlay for equipment ranges from $500 upward, but if he is an employee the equipment is furnished by the employer.

PLAN No. 1009. CHAUFFEURS

A chauffeur may drive a taxicab, a truck, or a car for a private family. He needs good eyesight and hearing, and must not have nervous troubles. Loss of fingers or of a foot might not handicap a man for this work. It does not usually require much physical strength. Men who have suffered from chest trouble are frequently auto drivers in the Rocky Mountain States. This occupation gives them out-of-doors work that is light, and in a good climate in fair weather is highly beneficial and desirable for such persons.

TRAINING

Auto drivers should have some mechanical training and aptitude so that they may be able to make adjustments and repair minor defects in their machines. They should learn the roads and routes in their territory and allow a good margin of safety either in loads or speed. No great amount of training is required, and the work is largely manipulative. There are a number of schools in which this occupation is taught. Hours, wages, and working conditions are far from being standardized the country over. If you are interested in this work, you should find out what conditions prevail in the locality in which you wish to work.

PLAN No. 1010. MANAGERS AND PROPRIETORS

Managers of taxicab companies must know the automobile thoroughly as well as the neighborhood from which they draw their trade. Only in a small concern does the keeper or manager need to be able to drive a car. It will, however, be advantageous at times if he can drive or repair a car. The greatest qualifications for success in this undertaking are ability and skill in handling men and money.

Although the rate of profit is usually large in the business, there are many “leaks” to guard against. The manager must know how to keep accounts accurately, or at least understand them and be able to see that they are properly kept. The work requires business ability rather than physical activity, and so can be done by disabled soldiers or sailors who have this ability. Courtesy is a valuable asset, since the manager must come in contact with the public. It is this contact that makes deafness a handicap, particularly where much business is done over the telephone.

Practically the same thing may be said of proprietors and managers of livery and transfer companies. The proprietors and managers must have business ability and know how to manage men. Disabled men with these qualifications can undertake this business if none of their disabilities will interfere with business dealings. The field for auto delivery is developing rapidly, and will give a permanent occupation to the man who has the necessary qualifications for success.

PLAN No. 1011. FOREMAN

Foremen of livery and transfer companies must have ability to handle men under conditions where immediate supervision is possible only a small part of the time. Accordingly, they must be able to judge what allowances should be made for loads, roads, horses, and equipment, or automobile in supervising drivers. Since the foremen must occasionally do the work of drivers, they must usually not be seriously disabled by loss of limbs, and since they must sometimes do the work of the manager they must not suffer from deafness.

Wages and hours are good on the average, but

vary greatly in the different localities.

PLAN No. 1012. DRAYMEN

Draymen or expressmen may be either teamsters or auto drivers. In either case, ordinarily they have a considerable amount of heavy lifting to do. The loss of an eye, or of fingers, or of a foot need not prevent anyone from doing this work if he is otherwise physically strong. Very little training is required for the teamster. He must learn the streets and business houses, and how to manage horses that are usually well broken. All of this is best learned on the job. Wages are a little above those of unskilled labor. For the auto driver training may be acquired largely in a school. Wages are higher than those paid to teamsters.

Carriage and hack drivers must have good eyesight and hearing. The work is rather unskilled, although the handling of spirited horses does require some special skill. Courtesy is a distinct asset. It should be noted that the demand for carriage and hack drivers is declining rapidly, and accordingly the disabled soldier should not elect this occupation unless he has the assurance of permanent employment from some responsible employer.

Hostlers and stable hands are usually classed and paid as unskilled laborers, and for most disabled men the work is unsuitable. A disabled man should not work around vicious horses, and in large stables there are always some vicious horses.

PART IV. WATER TRANSPORTATION[21]

[21] In the preparation of this part the following publications have been utilized extensively: “United States Department of Labor

Description of Occupations—Water Transportation," Reisenberg's "The Men on Deck," and "United Spates Shipping Board Emergency Fleet Corporation Hearings before the Committee on Commerce, United States Senate, 1918."

Water transportation may be considered from two standpoints, terminal and interterminal. Terminal transportation does not differ materially from transportation upon the rivers and canals. Interterminal transportation, whether on the Great Lakes or on the sea, is practically the same. In this place we shall, accordingly, deal with only terminal and ocean transportation.

PLAN No. 1013. TERMINAL TRANSPORTATION

Terminal transportation has to do with the loading and unloading of cargoes, and is usually heavy work that requires men with strong backs and little training. The men who supervise the laborers on the boats must have executive ability and a knowledge of boats, equipment, and harbors. The chief qualification of a captain of a barge, a scow, a lighter, or a covered barge, is ability to direct other men at the work of loading and unloading the vessel, of handling lines, and of shifting the boat, and ability to make minor repairs. On lighters and covered barges the captain tallies and signs up for the cargo received. The master steers the boat, gives orders to the crew, and signals the engineer for movement of the boat. He is responsible for the safety of the passengers and the crew. He must have keen eyesight and the ability to act quickly and efficiently in an emergency. He must be thoroughly familiar with the harbor and with harbor conditions. He supervises the pilot, if one is carried on the boat. On smaller boats, the pilot acts as master, and then his duties are the

same as the master's. The wheelsman is an assistant to the master, and performs part of the latter's duties. Deckhands sometimes act as wheelsmen, and may advance to that position, or higher—to pilot, captain, or master. The engineer is usually a man of considerable skill and experience and possesses a thorough knowledge of the machinery of the boat. He sees that the engine is properly cared for, oiled and kept in good working condition. He directs the work of his assistant, of the oiler who oils the machinery, and of the firemen. He receives his orders for the movement of the boat from the master.

Disabilities

Of these men, only those who supervise other men could have sustained serious injuries. None of them may have either defective eyesight or hearing. The loss of an arm would usually be a serious handicap, and also the loss of a leg would be such an inconvenience for most men in climbing on and about the boat as to be a serious handicap. In these occupations good opportunities for men seriously disabled are comparatively few.

Ocean Transportation

On board a large ocean liner is to be found a complete organization of officers, supervisors, clerks, and skilled and unskilled laborers. As a general rule, all of these men must be physically sound, and about the only disabilities allowable are the loss of fingers, of a foot, and perhaps of one eye if the remaining eye is very good. For men so disabled there is some slight opportunity for advancement. Only the clerical positions such as the purser, assistant purser, or freight clerk, can be filled by men who have lost a hand or leg, or who are otherwise physically unfit for

climbing about on slippery decks in a rolling sea. Wages paid during the war have been abnormally high.

Ocean Vessels Vary Greatly

There are two general classes of ocean vessels—sail and steam, steam vessels being in many instances equipped for sailing. In these two general classes there are, however, all sorts and types of boats and ships.

PLAN No. 1014. CREW AND DUTIES LIKEWISE VARY

The crew of a steam vessel has three departments—deck, engineer's, and steward's.[22]

[22] The United States Shipping Board has made the following announcement of free training for deck officers and engineers: "The United States Shipping Board is creating a new national fleet of merchantmen, controlled by the United States Government. The Shipping Board needs for these ships 4,000 new watch officers and 4,000 new engineers. Men of proper experience will be trained free of charge to take examinations for licenses in either branch of the service to fill these positions." The experience required ranges from two to three years at certain maritime occupations. You can learn more about this opportunity to get training by conferring with representatives of the Federal Board for Vocational Education.

The deck crew of a steamer depends upon the size and type of the vessel, and ranges from as low as nine on a small steamer to 972 on the *Olympic*, officers included. The average number of able seamen is about seven for ocean-carrying vessels.

The others are officers, ordinary seamen, deck boys, etc. It has been charged that boats frequently ship without any able seamen, and depend upon ordinary seamen and deck boys in emergencies.

Deck duty is varied and crowded with emergencies. “The sailor’s daily work in all kinds of vessels and weather, at the wheel, on the lookout, and on deck, teaches him to know the sea and how to work with it. His work with tackles, lines, and cables, in hoisting and lowering, trains his judgment of strains and distances.”[23] “The amount of gear and equipment used in the deck department on different classes of steamships varies greatly, but the difference is one of degree rather than of the kind.”[24]

[23] International Conference on Safety at Sea, p. 119.

[24] International Conference on Safety at Sea, p. 121.

PLAN No. 1015. NAVAL VERSUS MERCHANT MARINE CREWS

The crew and the work done on a merchant vessel are so different from those on a naval vessel that the disabled sailor would have much to learn in going from a naval vessel to a merchant vessel. One fundamental difference is this: The merchant vessel carries generally only about one-third the crew—ton for ton—that the naval vessel does. On a naval vessel the men work in groups; on a merchant vessel the man works as an individual and not in a group.

The crew of a large merchant vessel consists more or less of the following officers, seamen, and attendants: Master, chief mate, second mate, third officer, fourth officer, senior quartermaster, quartermaster, master-at-arms, chief steward, chief

second-class steward, chief third-class steward, chief engineer, first assistant engineer, second assistant engineer, third assistant engineer, junior engineer, deck engineer, leading fireman, oiler, electrician, carpenter, boatswain, able seamen, ordinary seamen, deck boy, water tender, lookout, purser, assistant purser, freight clerk, and bakers, chefs, cooks, buglers, butchers, cadets, storekeeper, and watchman.

PLAN No. 1016. THE MASTER OR CAPTAIN

The master has general supervision over the vessel, crew, and passengers. He has complete charge of the vessel at all times, but during a severe storm or other emergency he stands on the watch continuously day and night and issues the necessary orders. He is responsible for the safe navigation of his vessel. His responsibility extends to the management of the various departments as well as to the vessel and its care as a whole—for the safety of the lives of passengers and crew, and for the safe storage, carriage, and unloading of cargo. He must have a thorough knowledge of navigation, which subject he must have studied thoroughly, and in which he must have passed a rigid examination before he received his license as a master. He must likewise possess a legal knowledge of the laws governing right upon the sea and determining his duties as regards the ship and its passengers, crew, and cargo. Among his other duties are to keep the log properly and to inspect the ship regularly as to ventilation, warmth, and cleanliness. He must be the last man to leave the ship in case of disaster, and must do everything within his power for the safety of the passengers and crew. He must have received much of his training in lower positions upon the sea, but he must also have studied

navigation in some school or under some able master. He must have executive ability of a high order and be able to act efficiently in an emergency.

PLAN No. 1017. THE CHIEF MATE

Next to the master in authority and responsibility comes the chief mate. He shares with the master responsibility for safe and proper navigation of the ship. He is the chief executive officer and must organize and supervise the routine work of keeping order throughout the ship. He is held responsible for discipline. Under him is the master-at-arms, the ship's policeman, who keeps order among the crew and steerage passengers. His knowledge of the vessel, its equipment, stores, and complement of men must be thorough. He supervises the preparation and care of the holds, and the loading, stowing, and unloading of cargo. This is done under his personal direction or under another officer to whom he has delegated the duty. He sees that the cargo-handling gear is kept in proper working condition. It is his duty to inspect the lifeboats and have them kept properly equipped and in working order, and to hold regular lifeboat drills. The firefighting equipment is likewise in his care, and he must also hold fire drills regularly. His training and knowledge is very similar to that required of the master. Ordinarily he takes his turn with the third and fourth officers at a watch on the bridge.

PLAN No. 1018. THE SECOND MATE

The second mate stands his watch on the bridge, takes various observations, and gives orders to the quartermasters. On large liners he has complete charge of the navigating equipment, and is known as the navigating officer. When the vessel docks he

supervises matters at the after end of the boat. In general, he has charge of the after holds, the after cargo, and the after gears. Only in experience and degree of training do his qualifications differ from those of the chief mate.

PLAN No. 1019. WATCH OFFICERS

The third and fourth officers are watch officers. The fourth officer is frequently left in charge of the bridge in fair weather and under good conditions, and like the third officer takes observations, and gives orders to the quartermaster. The third officer has general charge of the forward holds, under the supervision of the chief mate. On some vessels, he is the signal officer and has charge of the care and use of the signal flag and other signaling equipment. Frequently he supervises the placing of the gangway and the embarkation of the passengers when the vessel docks. Both of these officers must have had instruction in navigation, and must be alert and attentive to duty.

PLAN No. 1020. THE CHIEF ENGINEER AND HIS ASSISTANTS

The chief engineer, the assistant engineers, the junior engineers, the deck engineers, the firemen, oilers, and electricians care for all machinery of the ship. The chief engineer stands no watch, but the assistant engineers do, and are responsible for all that takes place in the engine room and fireroom during their watch at sea. Under these assistant engineers are the junior engineers, one of whom is in direct charge during each watch of each of the firerooms, the engine room, and the auxiliaries. In port the junior engineers help the other engineers, the firemen, and the oilers in the repair, packing and

overhauling of the machinery. The chief engineer is held responsible for the proper functioning of the engines and boilers, the deck machinery, the electrical, refrigerating and sanitary equipment, and for all steam connections on the ship. He must see that the regulations of his department are carried out, that the engine and fireroom crews are qualified and conduct themselves with sobriety. At the end of each voyage he reports on these matters, and on the working of the machinery—its breakdowns and repairs, especially any exceptional one made away from port—the miles traveled, temperatures, and consumption of fuel. It is his duty to have the steamer properly coaled, both as to quality and quantity of coal. He must possess executive ability, and must have studied engineering in a nautical school or under a competent engineer for a period of years. The first assistant engineer has as his special duty the general charge of all boilers and machinery in the engine department. The second assistant engineer usually employs the fireroom crew and reports to the chief engineer on their qualifications and conduct. He has charge of the repairs and overhauling of the main engines and auxiliaries on the starboard side. The deck engineer supervises and keeps in repair the deck machinery, the steering gear, windlass engine, capstans, and the sanitary systems. The leading fireman has supervision over the firing of the boilers, the keeping of water in the boilers, and over the firemen, coal passers and water tenders. He personally tends a set of fires. On some boats he acts as interpreter of the orders of superior officers to the firemen who are foreigners and can not understand the orders in English. The oiler must keep all the engines clean and well oiled, and see that they are running smoothly and without undue

heat. The electrician supervises and keeps in repair the dynamo engines, the electric motors, and other electrical apparatus on the ship. The work of keeping the ship in working condition is usually done by the engineering department. There is, however, some work of repairing that is done by the carpenter, whose duties depend greatly upon the character of the ship. He is generally charged with the upkeep of masts and booms, the repair of wooden decks, and the opening and covering of the hatches.

PLAN No. 1021. THE BOATSWAIN

The boatswain, under the supervision of the chief mate, has active charge of the deck crew, and works the seamen at washing, repairing, and painting decks.

PLAN No. 1022. ABLE SEAMEN

Since all officers must have served as able seamen, the required duties of the able seamen are worth noting in detail. “While on board ship in port, the able seaman is occupied with cleaning, painting, repairing, and overhauling. When the vessel is at sea, the able seaman washes decks and the outside of deckhouses, slacks off exposed gear when shrinking too tight in damp weather, and tightens it again when it becomes too lose in dry weather. When a storm comes on the able seaman closes all open hatches, ports, etc., and lashes down all movables on deck or stows them away.” The ordinary seaman does the same work as the able seaman, so far as his training and ability will permit. The deck boy is simply an apprentice seaman.

“The man who expects to be known as an able seaman on a steamship must know the use of rigging screws, fids, marlinspikes, serving mallets, the palm

and needle, calking tools, and most of the carpenter tools; the mixing of paints and colors; how to obtain strong leverages with bars, ropes, tackles; how to brace with wedges and shores; besides knowing the various knots and splices; and to worm, parcel, serve, and seize, with rope and wire; and must be able to hold up his end of a job when it comes to climbing and working in places where both armhold and foothold is difficult. He must know the lead line, not only its marks but how to use it to get correct sounding when the ship is in close quarters, the night dark, and the sea heavy, whether he stands in a smother of sea on a low freighter or far up the side of an immense liner. The compass, of course, is a familiar object to him, but he must know how to use it, how to steer the ship under all conditions, what to expect and how to meet it when he is steering across a current as well as with it or against it, through the swift rush of a narrows, passing at close quarters in and out of the suction of another heavy ship under speed, with the wind light or strong from any direction, heading into a heavy sea, taking it on either bow or quarter or abeam, under check or full speed, rolling and pitching heavily, or running before it, when a blunder may mean total loss of ship with lives and cargo. The man at the wheel must know his work, what to expect and how to meet it instantly, in calm or storm, daylight or dark, in clear weather or in fog. The man who learns to be a reasonably good helmsman in even three years is an exception, because, regardless of the aptitude of the individual, the personal knowledge of varying conditions, different ships and how they act under differing circumstances, familiarity with the various steering gears, can only be gained through experience necessarily covering a good deal of time. The steam

steering gear, rendering less physical strength necessary and making possible the handling of larger ships, requires greater skill than the old hand method, which permitted the man at the wheel to feel the increasing or decreasing rudder pressure and thus warned him of just how the ship was acting.

"Prepared paint is seldom brought on board ship. The raw material is put on board and is mixed according to needs by the able seaman. Graining, filling, varnishing, and lettering is done as well as ordinary flat painting. Sailors become sufficiently skilled at this work to qualify as journeymen painters on shore. The deck crew cleans all outside parts of the ship, except the funnel, from the masts and booms to the deck houses, decks, and sides of the ship."[25]

[25] International Conference on Safety of Life at Sea, pp. 124-125.

Hours of Labor

The hours of labor for workmen are: On deck, two shifts (watch and watch) 12 hours each; in the engine room three shifts of 8 hours each. In emergencies the hours are greatly lengthened.

Wages

Following is the wage scale which has been established during the war. In 1915 wages were about half the amounts here given:

Sailors and firemen, $60 per month; coal passers, $50 per month; oilers and water tenders, $65 per month; boatswain, $70 per month; carpenters, $75 per month; overtime pay for cargo work 50 cents per hour, and for ship work 40 cents per hour. The bonus for going into the war zone was 50 per cent of the

wages, the wages and bonus to continue until crew arrive back in the United States; $100 compensation was paid for loss of effects caused by war conditions. Board and quarters are of course provided in addition to the wages.[26]

[26] United States Emergency Fleet Corporation Hearing before the Committee on Commerce, United States Senate, pp. 854-857.

Training

Seamen are required to have three years' experience at sea to receive able seamen's certificates. Vessels differ greatly to-day and conditions and duties abroad are so radically different, while the voyages to various parts of the globe subject seamen to so many varied emergencies, that a long training at sea is necessary to make an able seamen. It is the rule for seaman to change from ship to ship.

There are training schools for seamen. During the war the school at Boston gave intensified training for six to eight weeks, then placed the learner on a boat at sea, and after about six weeks he qualified as an ordinary seaman. For a man to get his "sea legs" requires this long a period. "It takes some time for a man to get himself so accustomed to the sea he can walk along the deck without holding himself fast to something when the vessel is rolling and pitching."

Safety

The seaman is exposed to bad weather conditions, accidents, and disease. The mortality rate among seamen is very high—much higher than among some occupations commonly thought to be extra hazardous to life and health. English mortality

statistics show that the death rate among seamen is far greater than among miners and railroad trainmen. Since it is a dangerous calling for men sound in limb and body, it is, accordingly, very undesirable in general for disabled men.

PLAN No. 1023. THE LOOKOUT

The lookout has a position of responsibility. Stationed in the crow's nest or on the forecastle, he watches for everything that comes in sight, and especially for things that might damage the ship, such as derelicts, icebergs, submarines, and on-coming steamships. When he sights anything, he reports it immediately to the bridge, either by shouting, speaking tube, telephone, or telegraph. He must have keen eyesight and attend strictly to duty. A disabled soldier or sailor with these qualifications, and whose disabilities do not prevent his climbing readily, or holding himself in position in stormy weather might qualify for this position.

PLAN No. 1024. THE PURSER—A POSITION FOR DISABLED SOLDIERS

A far better position for the disabled man is that of the purser, or assistant purser. The purser is a treasurer, accountant, and chief clerk on the ship. Money and valuables may be deposited with him by the passengers for safety. He acts as a sort of cashier for the passengers and crew in changing money and cashing traveler's checks, etc. He keeps the wages account of the crew, and is present when the crew is paid off. He collects or supervises the collection of all tickets, and checks these against the passenger list as soon as practicable after the vessel has sailed. He is responsible for the manifests, bills of health, clearance papers, and cargo. He should know

everything about the passengers and cargo. Although the master must record in his log any death aboard, the purser must get the details for his own report and for the master's log. He supplies information and encourages entertainments among the passengers. He should be able to speak the languages of the countries at which his ship comes to port. He should possess tact and be courteous to the passengers.

The freight clerk has a position, that for the freight is somewhat similar to that of the assistant purser for the passengers.

PLAN No. 1025. CHIEF STEWARDS

Chief stewards have positions corresponding closely to those of a large hotel, sanitarium or similar institution. They must have business and executive ability, and are held responsible for the comfort and service of passengers in matters of sleeping quarters, food, heat, and ventilation. Under them are the chef, cooks, and numerous other attendants. Each of these occupations has the characteristics of the same occupation as followed on the land. Upon chief stewards devolves the further duty of purchasing in advance of a voyage in proper quantities the supplies needed.

It should be added that if a disabled soldier or sailor is qualified for any of these positions, he will generally find work on land preferable to work on board a ship.

Other Positions in Water Transportation

A large number of office positions corresponding to those in railway service exist at the leading ports. Disabled sailors could qualify for these and find their former experience of value.

PLAN No. 1026. OCCUPATIONS IN NAVY YARDS

ACKNOWLEDGMENT

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Perhaps you have been on a ship when she was in the yard. In that case you have some notion of the various jobs that are carried on. Perhaps you have seen in one part of the yard a ship under construction on the ways, and have seen and heard the riveters, bolters up, chippers, and calkers at work. Perhaps you have been in the shops and have seen the boiler makers, the sheet-metal men, the machinists, the jointers at work. In short, perhaps you already have a pretty good idea of the different kinds of work that are carried on in a navy yard, but would like to know more about it.

Perhaps you never were in a navy yard, or if you were, you were too busy to notice what went on. In that case you may be still interested in knowing how many different trades are carried on in a navy yard, and how they are carried on. In either case if you followed a trade before you entered the service, if you learned a trade while you were in the service, or if you intend to take advantage of the opportunity offered to you by the Federal Board for Vocational Education to take further training in your trade or to take training for some new trade after your discharge, you may be interested in finding out what a navy yard is, what trades are carried on, how they are carried on, what their requirements are, what a man must do to qualify for a navy-yard job, what

sort of working conditions he would work under, what the chances of promotion would be, how much pay he could get, and, in general, whether there is anything in navy-yard employment that appeals to you and that you would want to try to get into.

This pamphlet gives you some general information about navy-yard employments, and tells you how you can get more detailed information if you are interested in finding out more about opportunities for navy-yard employment.

General Working Conditions

If you go to work in a navy-yard you get an eight-hour day, with Saturday half holidays from June 15 to September 15. You can be granted 30 working days leave of absence each year without loss of pay during such leave, but it would be lawful to allow you pro rata leave only after you have served 12 months or more. During the second year of service you could be allowed 60 days leave with pay, 30 days at any time during the year and 30 days at the rate of $2^1/_2$ days a month as earned from the beginning of the service year. After two years of service you could get 30 days' leave per year, at the rate of $2^1/_2$ days per month. Should you be injured in the usual course of employment you would be entitled to receive compensation under certain conditions.

Stability of Employment

Of course, during the war navy-yard work has been rushed and a large number of extra men have been taken on, but under ordinary conditions, such as existed before the war and will exist after the war, navy-yard work is pretty steady, and if you are a good man when you are once employed you are

likely to hold a steady job. Should you be laid off on account of lack of work, you can get your name on a furlough list for reinstatement.

As a civil-service employee, you can not be discharged at the whim of your superior, but only for cause.

Rates of pay will average well with those paid for similar work in private concerns, and there is little danger of loss of employment through the concern going out of business.

All of these conditions make employment in navy yards desirable from the standpoint of holding a steady job when you are once employed.

What Are The Health Conditions in Navy-Yard Employment?

The list of navy yard trades and occupations show you that the general health conditions in the different shop trades are about the same as in the same trades anywhere. Since most navy yards have been established for a good many years many of the shop buildings are not up to modern-shop standards, especially as regards lighting, but new buildings are constantly being erected that are much better than the old ones. The yard trades are mostly carried on in the open air, which might be a very desirable thing if you need outside work for your health, and could stand the heat in summer and the cold in winter.

As a general rule few if any of the navy yard trades and occupations would be rated as extra dangerous to health on account of dust, dangerous gases, etc.

Chances for Promotion

If you are employed as a laborer or at work that requires no mechanical skill or trade knowledge you

can not be promoted, but you can, as can any one else enter open competitive examination for higher positions. With the trade and technical knowledge that you now have, or that you can secure through training with the help of the Federal Board for Vocational Education you will not have to take jobs of that kind. Without such knowledge and training, however, these are the only sort of jobs that you could get.

If you start in a position that requires some mechanical skill or trade knowledge, such as an apprentice or helper, you can secure promotion in several ways. If you have rendered six months' satisfactory service you may, if the head of your department requests it and the commanding officer approves, be promoted to a position in the artisan group, upon passing the tests of fitness required by the Civil Service Commission.

If you are employed as an artisan promotion to such positions as foreman, leading man, quarterman, etc., is open to you if you possess the necessary qualifications.

How to Apply for Work in a Navy Yard

In applying for a job in a navy yard you do not "go to the gate" or to a superintendent or a boss, as you would if applying for work in a private concern. All employees in navy yards are employed under the civil service rules. Under these rules when there is a vacancy it is filled by offering the job to the individual whose name stands highest on what is called the eligible list. The way to get in line for a navy yard job is, therefore, to get on the eligible list with as high a rating as possible. As a disabled sailor or marine you have a special advantage here as is explained later.

Getting on The Eligible List

For detailed official information as to just what your qualifications must be and just how you must proceed to secure a place on the eligible list for employment in navy yards you should secure a copy of Instructions to Applicants for Employment at Navy Yards and Naval Stations. Probably you can get a copy from your vocational adviser, or you can write to the United States Civil Service Commission, Washington, D. C. Probably you will want to get some explanations from your vocational adviser and you should take the matter up with him.

The following will give you a general idea of how individuals for navy yard appointments may proceed to get their names on the eligible list for their trade or occupation. Your first step is to apply for examination for a civil-service rating. At nearly all yards and naval stations there are labor boards that receive applications for employment in the yards to which they are attached. (The "instructions" already referred to will give you exact information on this point.) If men are needed or are likely to be needed, arrangements will be made to determine your qualifications and rate you. In general, if you are applying for examination and rating as an artisan (as you probably would be), you would be rated on your experience, your training, and your physical ability. If your physical ability is affected by your services in the Navy or the Marine Corps, it is the understanding of the office of the Federal Board for Vocational Education that wherever a soldier, sailor, or marine has been disabled in the war and desires employment in any occupation in a navy yard or shipyard under the jurisdiction of the United States Government, the question of his physical ability to discharge the duties of the position properly will be passed upon

individually for each case. Should the Civil Service Commission determine that, notwithstanding his handicap, he is able to do the work of the position in a satisfactory way, any general rule or regulation regarding disability now in operation under the rules of the commission will not apply.

Therefore, if you are a disabled soldier, sailor, or marine interested in navy yard occupations, you should first communicate with representatives of the Federal Board for Vocational Education regarding your case. These representatives are to be found at the central office at Washington, D. C., or in one of the district offices given at the back of this pamphlet. You do not have to pass written examinations, but your rating is determined by the values given to your training, physical ability, and experience as stated by you under oath and verified by the examining board.

If your rating is over a certain number your name is placed on the eligible list. The higher your rating the nearer your name to the top of the list. When vacancies occur appointments are made from the top of the list down, and appointees are notified when and where to report for work.

How Previous Training, Experience, and Education Help

If you have already had some experience in a navy yard occupation that you wish to follow you are at a great advantage. For example, if you worked in a machine shop or in an office before you entered the service, the time that you would need for training for similar work in a navy yard would be greatly reduced—the more you know the more time you can save. If you learned something about the job during your service, this experience, also, will enable you to shorten your training.

The more education you have the better off you are—in the first place a man with a good education stands a better chance for promotion, and the better his education the better man he is on his job. A high-school education, for example, would help you very much in office work and in the shop trades. If you can read drawings and blue prints, you can easily learn to read the special sort of blue prints that are used in navy yard work, and this will enable you to shorten your training period. A knowledge of geometry will help you very much in a number of shop trades, such as sheet-metal work and mold-loft work. If you know how to make mechanical drawings you can greatly shorten your training time for work in the drafting rooms. The more mathematics and drawing you know the better your chance of securing promotion to some form of supervisory work.

If you have followed an occupation that is somewhat like one of those carried on in navy yards you have a great advantage. Suppose, for example, you were a structural-steel man, or an electrician, or a house plumber, or house carpenter, or stenographer, you already know a great deal about these occupations, and you have only to learn what you do not know about these jobs as they are carried on in navy yards. In order to do this you will not need to take as much time for training as you would if you were entirely green.

In all these ways and in many others any education, training, or experience you may have had in trades or occupations will help you very much, either in shortening the time that you would have to take for a training, or in enabling you to train yourself for a higher grade of work.

Educational Requirements for Navy Yard Trades

You have some education and you will naturally be interested in knowing how much general education a good man must have in the different navy yard trades and occupations. Through your vocational adviser you can get a copy of Aids to Employment Managers and Interviewers on Shipyard Occupations with Descriptions of Such Occupations issued by the United States Shipping Board, Emergency Fleet Corporation, which will give you considerable information along this line. The following may give you some general ideas of the amount of education that a man would need in the different sorts of trades and occupations.

In general you can not have too much education for any navy yard jobs. The more education you have the better workman you will be, the better your chances for promotion and, in general, the greater your opportunities. So do not be afraid of knowing too much. On the other hand, if you have had only a common-school education, or even less than that, you need not feel discouraged, not only because many of the men now making good on their jobs have had only a limited school training, but because, with the approval of the Federal Board for Vocational Education, you can secure such additional general education as you may need to equip you for the work that you wish to do.

Most navy yard occupations require only a common-school education. That is, if you can read, write, and speak English, and can do ordinary work in arithmetic, you probably have as much general education as most men in these occupations were able to secure before they went to work. Such occupations as draftsman, tracer, electrician,

patternmaker, and a few others, especially office work, call for some high-school education.

In addition to the general educational requirements the different trades vary in the amount of technical training required. In many trades, such as, for example, that of the machinist, patternmaker, coppersmith, boilermaker, or plumber, a man must be able to read drawings and blue prints, and to follow specifications. This is true of many of the shop trades. In many of these trades a man must be able to make necessary calculations in connection with his work. In some cases a man must have special knowledge about the particular kinds of material that he works on, such as brass, steel, copper, and so on.

You should consider carefully what technical training you require for the sort of work you intend to follow, remembering that the opportunity to secure this technical training is a part of the offer for training made to you by the Federal Board for Vocational Education.

How May Training for Navy Yard Occupations Be Secured?

Suppose that you have decided that navy yard work looks good to you and you intend to take training for some sort of navy yard work. You have consulted with your vocational adviser, have "taken stock" of yourself, and have selected the particular sort of work that you would like and think you can do best; and have your application approved. How can you secure the training that you need? There are several ways:

1. The Federal Board for Vocational Education can arrange for you to take your training in a navy yard or in a shop, under the instructions of a competent

employee who knows that occupation. This man will train you on the job.

2. If you want training in such work as drawing or mathematics, you can be placed in a school where these subjects are taught as they apply to the work for which you are taking training.

3. It may be possible for you to put part of your time into shop training and part into school training.

4. If you need more general education, the Federal Board for Vocational Education will arrange for you to get it, either in day or evening schools, or will even provide a special instructor to teach you.

No matter what your handicap or disability may be or what training you lack for the navy-yard occupation that you wish to follow, the Federal Board for Vocational Education will stand behind you and do all that it can to help you to make good. Other men in your situation have made good. You can. Let the Federal Board for Vocational Education help you to be a better man on the job than you were before, or a good man on a better job than you had before.

What Training Can Do for You in Navy-Yard Occupations

If you wish to take up any navy-yard occupation you can, by taking advantage of the opportunities for taking training that are offered by the Federal Board for Vocational Education, decidedly better your chances of getting a job and of getting a better job.

In the first place, if you are handicapped, you can, by taking special training, equip yourself so that you can hold down a great many navy-yard jobs that, without training you could not do at all. A great many jobs like those carried on in the shops and offices of navy yards have been successfully held

down by men who had lost a hand, an arm, or a leg, and who had taken special training so that they could overcome their handicap.

Aside from this special training, if you are interested in navy-yard employment, the training that you can secure will enable you to get a better job than you otherwise could. For example, perhaps you followed some trade similar to some navy-yard trade before you entered the service. You did not know all about that trade—there are always some things that a fellow does not know about his trade. For example, you might have worked in a shop where the foreman could read the blue prints and you could not; you can take training in blue-print reading. Perhaps you could not lay off work; you can learn to do it. Perhaps there were some machines that you did not know how to run, or certain jobs that you did not know how to do; you can take training on these machines and on those special jobs. Perhaps you are well up in your trade, and would like to become a quarterman or leading man but need to know certain things about the job; you can take training for that, so that you can get yourself in line for promotion.

If you did not know anything about a trade before you entered the service, but learned something about some trade or occupation while in the service, you can complete your trade training. For example, suppose that you learned something about pipe fitting, or electrical work, or machine-shop work, or sail making, or yeoman's work while you were in the service; you can complete your training so that you will have the entire trade at your command; and you can not only get the shop training, but you can also get whatever drawing or other technical training a first-class man in that trade needs to know.

If you never had any trade or think that some navy-yard trade would suit you better than the one you followed before you entered the service, you can take training for that new trade.

In any case, if, in order to take the training that you desire, you need to take some general school training, such as arithmetic or English, you can take that training in addition to the training for the work itself.

These are only a few examples of the possibilities for training for navy-yard jobs that are open to you through the Federal Board for Vocational Education.

If you are interested you should, of course, take your plans up with your vocational adviser and secure the necessary approval.

In any case carefully consider if, through training, you can not either hold down a job that you could not hold down now, or fit yourself for a better job than you could hold down with your present knowledge and skill; that is, see if you do not think that out of all the different kinds of training open to you, there is some training that will help you to secure or hold down a better job in a navy yard than you could without the training.

If you can secure the approval of the Federal Board for Vocational Education for the particular sort of training that you desire, almost any sort of training is open to you.

Handicaps and how to Overcome Them

If you have a certain kind of disability, what is your chance in navy-yard occupations? Perhaps you have lost a leg or an arm or an eye; does this cut you out of any chance to work in a navy yard? It certainly does not. For example: if you have lost an arm, the number of jobs that you can do with one

arm and an artificial arm are surprising; you can take training so that you can do almost any sort of clerical work or work in the drafting room. You can operate almost all machine tools in the machine shop. You can do shorthand or typewriting work.

If you have lost a leg you can learn to fill almost any position in a navy yard that does not require climbing or too much standing and walking. You can do almost any sort of clerical work as well as anybody else; you can operate almost all sorts of machine tools; you can do all sorts of assembling work, pattern making, and work in the drafting room.

If you have lost both legs, with artificial legs you can learn to fill almost any position where you can sit at your work. You can do this in the drafting room; in nearly all clerical positions; in many inspection jobs. There are many other jobs, such as work in the sail and rigging loft, in the tailor shop, and in the machine shop, where you can sit at the work.

If you have lost one leg and one arm you can still fill a number of positions; with an artificial arm and leg you can take training so that you can do about as well as a man with both legs and one arm. If you were right-handed and lost your right arm, you can be trained to use your left arm just as well. Even with one arm and both legs gone you can learn to fill almost all clerical positions, many jobs in the machine shop, many inspection jobs, and work in the drafting room.

The loss of an eye will not bother you at all; and if your hearing is partially or wholly destroyed, you can still learn to fill many positions in the shops where instructions come to you in the form of drawings.

Of course, the particular positions that you can fill

depend on just the sort of an injury that you have sustained, and you should consult your vocational adviser about your own particular case; but if you are interested in navy-yard employment, you are not necessarily out of it on account of such injuries as are mentioned above.

What Sort of Work is Done in Navy Yards?

As a part of the work of the Navy, ships must be refitted, repaired, and overhauled, new ships must be built, and all sorts of material, equipment, and supplies must be manufactured and kept ready for use.

To provide for this work Congress has established navy yards and naval stations at various points on the coast which are a part of the Navy and are operated under its control.

These navy yards do a great many different sorts of work. Ships are sent to them for overhauling, alterations, and repairs. They serve as supply depots for all sorts of equipment, much of which is often made in the yard shops. In a number of the larger yards various sorts of naval vessels are built.

A navy yard carries on so many different kinds of work that it offers opportunities for employment in a great many trades and occupations. Some of these occupations are carried on in the open air. Some call for the operation of various machines turning out a standard product, while others deal with alteration or repair jobs. In some lines of work a man can sit or stand at this job, while in others he is continually moving about.

Besides the trades themselves a navy yard carries on a certain amount of office work, offering opportunities for employment in such work as stenography, typewriting, various kinds of clerical

work, storekeeping, and mechanical, ordnance, and structural drafting.

Occupations in Navy Yards

If you are interested in looking into opportunities for employment in navy yards, you naturally want to know about the different occupations and something about the conditions under which they are carried on. The following descriptions of the more important kinds of work will give you a general idea of the different jobs and if you wish to secure further details about any particular line of work you can get them through your vocational adviser.

A navy yard operates a number of shops in which different trades are carried on. These "shop" trades are carried on in the same general way as in the same sort of shops anywhere. The same processes, tools, and machines are used.

In addition to the "shop" trades there are a number of occupations that are carried on outside of the shops and are shipbuilding trades, engaged in building ships and repairing them.

There are, speaking in a rough way, "shop" trades and "yard" trades. There are also, of course, certain office occupations as in any business, and a number of special occupations such as those of timekeepers, truck drivers, and tool-room keepers.

In addition to the trades and occupations mentioned above, navy yards employ a number of men in general maintenance and construction work, and in keeping up the plant and equipment, such as tracklayers, pile drivers, masons, and bricklayers.

PLAN No. 1028. SHOP TRADES

THE DRAFTING ROOM

Drawings and blue prints are prepared here. Drafting rooms are usually well lighted and heated. The work is carried on at drawing tables and men can either sit or stand. As a rule work in the drafting room does not require a great deal of walking or standing at the work. The force usually consists of draftsmen of various grades, tracers, detail draftsmen. A blue-print room is usually connected with the drafting room where attendants on the blue-printing machine are employed. A few stenographers and clerks may be employed in connection with the work of this department.

PLAN No. 1029. POWER PLANT

Here steam and electrical power are developed for the general use of the yard. Work in a navy-yard power plant is no different from work in any power plant. Among the men employed are engineers of different grades, switchboard attendants, dynamo tenders, firemen, and water tenders. Engine and dynamo rooms are usually well lighted and heated and give comfortable working conditions. The fireroom is usually very hot, and the work is more or less hard and uncomfortable. Steam engineers are highly trained men and usually have to hold a license. They usually have served an apprenticeship in the fireroom.

PLAN No. 1030. MACHINE SHOP

Here all sorts of metals are worked, largely with machine tools. Machine shops are generally closed in so that the workmen are protected from the weather and are usually more or less heated. Much of the

work requires standing, though workmen can often sit down at intervals while watching a piece of work on the machine. Since most of the work is done on power-driven machines and shops are usually provided with lifting and handling devices for heavy parts, work in the machine shop requires skill and intelligence but does not, as a rule, require heavy physical exercise.

Men employed include bench hands, machine hands, men who are familiar with the operation of one or more machine tools, machinist helpers and machine fitters (the latter put together machine parts and are able to fit, scrape, and ream, where necessary to secure tight, loose, and running fits), and all-around machinists or men who can operate all kinds of machine tools, fit parts on the bench, and erect or assemble all parts on the floor. A good machinist must be able to read all sorts of blue prints and drawings and must be able to make the necessary calculations for the various jobs.

Among the chief machine tools used are planers, boring mills, shapers, lathes, millers, drill presses, so-called “automatic machines” of various kinds, wet and dry grinders, and radial drills. These machines are of different sizes, according to the work to be done on them. In navy-yard machine shops some of the work is very heavy and the machines are very large.

PLAN No. 1031. BOILER SHOP

Here such fittings as boilers, condensers, smokestacks, and feed, filter, and fresh-water tanks are constructed from plates of sheet steel riveted together. These plates are got out from patterns or templates.

A boiler shop is usually closed in from the weather.

Among the men employed are blacksmiths, acetylene and oxy-hydrogen operators, layout men, men to operate various special machines for bending and flanging the plates, machinists, riveters, shippers, and calkers, drillers and reamers.

A good boiler maker must be able to read blue prints and lay out his work either on paper or metal.

PLAN No. 1032. BLACKSMITH SHOP

Here all sorts of blacksmith work is carried on. The shop is usually inclosed, but owing to smoke from the forges is generally kept more or less open, so that it is not usually warmer than the weather outside.

Among the tools used are steam or compressed air hammers, oil furnaces, large coal furnaces, forges (coal or gas), cranes for handling heavy work, dies, sledges, and hammers.

Much of the work is generally carried on by angle smiths who work angle iron, usually from wooden patterns called templates, and blacksmiths who work on all sorts of light machine and hand forgings. Smiths are aided by helpers. Much of the work is heavy and calls for considerable physical exertion and requires practically continuous standing. Some of the lighter work in a blacksmith shop is of a higher grade and calls for wide experience, good judgment, and close observation. Such work is that of the tool dressers, the spring makers, and the die hardeners or temperers.

PLAN No. 1033. PATTERN SHOP

Here are constructed wooden patterns from which

castings are to be made. Pattern shops are usually well protected from the weather and afford comfortable working conditions. The men employed are pattern makers and pattern makers' helpers.

As a rule, each pattern is completely made by one pattern maker. Much of the work is done with hand tools and often requires very fine and accurate work. A pattern maker must not only be able to do good work at the bench, but must be able to read blue prints and make his own "layout."

Among the machines commonly found in a pattern shop are wood-turning lathes, band saws, circular saws, jig saws, planers, sanders, and drills.

Work in the pattern shop requires considerable walking and standing. It is generally light, since only infrequently is it necessary to handle heavy pieces.

PLAN No. 1034. JOINER SHOP

In the joiner shop are constructed all sorts of high-grade wood fittings such as desks, instrument cases, and companion ladders. The work does not differ from that in any joiner shop.

Employees include joiners and helpers. A good joiner must be able to read drawings and blue prints and when necessary he must be able to lay out his work on paper.

Among the common machines used are planers, handsaws, circular saws, mortisers, and tenoners.

As a rule the joiner shop is protected from the weather and the work is not heavy. The work often requires considerable standing and walking.

PLAN No. 1035. PIPE SHOP

Here all plumbing and pipe-fitting work is done.

The shop is usually inclosed and protected from the weather. The work requires considerable walking and standing, much bending, reaching, and stooping. In repair and construction work a great deal of work has to be done on the ship in all sorts of places and often under very difficult working conditions.

Plumbers, pipe fitters, and helpers are employed. A good pipe fitter must be able to read blue prints and drawings and must know how to make various calculations such as figuring out lengths of pipe on various jobs.

PLAN No. 1036. FOUNDRY

All castings are made in the foundry. The shop is usually more or less open to the weather, and the work requires a good deal of walking and standing.

Among the men employed are molders, who place the patterns in the sand, and make the sand molds into which the melted metal is poured; cupola furnace tenders, who operate the furnace in which the iron is melted; and foundry shippers, who clean up castings. In addition, helpers and laborers are employed.

PLAN No. 1037. COPPER SHOP

All sorts of fittings made of sheet copper, as well as a great variety of copper pipes and connections are constructed in the copper shop. In much of the work the copper has to be shaped by hammering. There is also much work in the bending of copper pipes of all sizes. The shop is usually protected from the weather. In many cases men who work in this shop also install the fittings in the ship. Coppersmiths and helpers are employed. In some

shops most of the work is done by hand and in others a number of machines are used. A good coppersmith must be able to read blue prints.

The work requires considerable walking about and much of it is hard, as it requires the use of heavy hammers.

PLAN No. 1038. SHEET-METAL SHOP

Products of the sheet-metal shop include such articles made from sheet-iron as tanks, lockers, ventilating cowls, and wire work. The shop is usually well protected from the weather. The work requires considerable standing and walking. A number of machines are usually included in the equipment. Sheet-metal workers of different grades are employed and also helpers. A good sheet-metal man must be able to read blue prints and must be able to lay out all sorts of work.

PLAN No. 1039. GALVANIZING SHOP

Metal fittings are covered with zinc to prevent rusting. As a rule but few skilled men are employed for this work which is done mostly by laborers. Work is practically carried on out of doors on account of fumes due to the acid used. It requires walking and standing.

PLAN No. 1040. ELECTRICAL DEPARTMENT

This department installs and repairs all electrically operated equipment, including light and power lines. It also installs and repairs the electrical equipment on the ships that are built or are under repair. The work must be done all over the yard and everywhere

on the ship. It requires much walking and climbing, much of it exposed to weather conditions. Very few machines are used, practically all the work being done with hand tools. A good electrician must be able to read all sorts of drawings and wiring diagrams.

Different grades of electricians, such as armature winders, storage-battery electricians, and men who make a specialty as, for example, of some special part of the work on telephones, are employed with helpers.

PLAN No. 1041. RIGGING LOFT

Here work on steel and manila rope and cables is carried on. Cables are spliced and all sorts of servings and fancy rope work are got out, such as man ropes, tiller ropes, and hammock clews. The rigging loft is usually protected from the weather. Much of the work, such as knotting and splicing, can be done sitting down. Practically all the work is done with hand tools.

PLAN No. 1042. MOLD LOFT

Here the plans of a ship under construction are laid out from the blue prints and patterns and wooden patterns, or "templates" for bending, cutting, and punching the steel parts of the ship are prepared. It usually is an inclosed building with a special floor large enough to lay out any part of a ship full size. The work in the mold loft requires almost constant standing, and kneeling or sitting on the floor. Loftsmen of different grades are employed. Loftsmen must be able to read all sorts of drawings and blue prints as they come from the drafting room and lay

out the different parts on the mold-loft floor with great accuracy.

OUTSIDE TRADES, OFFICE WORK, AND MISCELLANEOUS OCCUPATIONS

In addition to the regular shop trades there are a number of trades carried on in the yards and on ships in the open air and other employments in navy yard supply departments and offices. These employments have to do mainly with the construction of ships, repair work on hulls, maintenance of the plant, distribution of supplies, and other miscellaneous services.

Following is a brief description of the more important of these occupations.

PLAN No. 1043. SHAPING, BENDING, AND CUTTING STEEL FRAMES AND PLATES

This includes the work of shaping and bending steel beams (frames), cutting plates to proper sizes, bending them, and punching them for the rivet holes. The work is generally carried on in shops that are roofed over, but sometimes open on all sides. It is hard and requires standing practically all the time. Heavy machines, furnaces, and hammers are used. Among the men employed are angle-smiths, furnace men, frame benders, punchers, shearers, drillers, countersinkers, and sometimes acetylene operators.

PLAN No. 1044. RIVETING, CHIPPING AND CALKING, DRILLING, AND REAMING

On construction and repair work these occupations are all carried on in the open air. Riveting is usually carried on by gangs, consisting of a riveter, a holder-

on, a heater, and sometimes a fourth man called a passer. The steel plates of a ship overlap and are held together by rivets which are passed through holes in both plates and headed up while hot. Riveting is usually done with pneumatic riveters or "guns" operated by compressed air. The riveter operates the gun on one side while the rivet is held in the hole by the holder-on, who has various tools that he uses for this purpose. The heater tends a small portable furnace in which the rivets are heated, picks them out as needed and sticks them in the holes or gives them to the passer. Sometimes he tosses the hot rivet directly to the holder-on. This work must be carried on out of doors in all weathers. The work of the riveter is hard, as he must handle the gun with from 100 to 150 pounds of air pressure in it and must work in all sorts of positions. The holder-on works under about the same conditions. Both jobs require men of strong physique. The heater has a somewhat easier job and boys are often employed for this work. Before the plates and other parts can be riveted or drilled and reamed they must be held fast in place. This is done by the use of bolts and nuts set up hard with a wrench. This work is also hard, and the working conditions are the same as in riveting and drilling and reaming.

Sometimes holes have not been punched where they are required, and they must be drilled. Holes as punched are often not exactly in line and must be reamed out before the rivets can be driven. This work is commonly done with machines driven by compressed air or electricity, handled by one man and a helper. It takes considerable strength to control the machine, and the general working conditions are about the same as in riveting.

There are many parts of a ship where joints must

be made tight—that is, they must be calked. It is also often necessary to cut plates and other steel parts. This work is done with an air machine very similar to the air gun used by the riveter and is known as chipping and calking.

PLAN No. 1045. SHIP FITTING

The ship fitter gets out all sorts of wooden patterns (templates) for steel plates and other parts. Sometimes he makes his pattern directly from measurements taken on the ship, especially in repair work. A fitter may lay out the work directly from the drawing (blue print). The work is carried on mainly out of doors, calls for much walking and climbing, especially in repair work on ships. Ship fitters of different ratings and helpers are employed.

Among other navy-yard occupations are those of outside machinists, who install and adjust machinery on the ships; painters, who paint the woodwork and the steel; ship carpenters, who do all the work around the ways on which ships are built and launched; crane operators, who handle the steel and carry it from place to place; and locomotive firemen and engineers, who operate the small locomotives used for hauling material inside of the yard.

PLAN No. 1046. SUPPLY DEPARTMENT SERVICE

In order that ships and shops may be supplied, a navy yard operates what amounts to a huge department store—the supply department. Every conceivable article that goes to the general equipment of a ship, from drinking glasses to launch engines, is kept in stock and given out on order. For the shops great quantities of all sorts of stock, pipe, fittings, copper, lead, bronze, steel and so on, are carried, ready for distribution. In one yard alone the

stock is valued at $50,000,000.

Since the supply department buys, fills orders, and delivers, it offers opportunity for employment in practically the same occupations as any large department store.

For each class of stock storekeepers are employed. A storekeeper must know every article by sight, stock marks, and the location of the bin or shelf where it is stored. He must keep track of the stock on hand and see that it is kept up. A storekeeper may be promoted to assistant manager and possibly to manager of a division.

The supply department offers employment also in such clerical occupations as checking, billing, and accounting, and, as in any large department store, truck drivers, packers, box makers, and other workers are employed in the delivery department.

PLAN No. 1047. OFFICE WORK

In addition to the trades and occupations carried on in the construction, repair, and maintenance work of the navy yard, there are a number of office and clerical occupations. In general, these occupations are carried on in the same manner as in the office of any business concern. The special forms and methods of doing the office work that are followed in the navy yard must, of course, be learned. These occupations include stenography, typewriting, filing, bookkeeping, cataloguing, general clerical work, library work, messenger work, telegraph and telephone operating, and various lines of special work.

Miscellaneous Occupations

The navy-yard list of occupations includes, also, a considerable number of miscellaneous occupations

not mentioned among the regular mechanical "shop" and "yard" trades. Among these are glassworkers, glass molders, lens grinders, and instrument makers. In connection with work in the yard and on the buildings, a certain number of brick and stonemasons, pavers, house carpenters, dock builders, cranemen, house plumbers, stonecutters, and gardeners are employed.

PLAN No. 1048. CONDITIONS OF EMPLOYMENT IN NAVY YARDS

If you are interested in the possibility of working in a navy yard you will want to know something about the demand for men in each line of work done in the different yards, the wages paid to each class of workers, and other conditions of employment.

Demand for Labor

Navy yards and naval stations vary greatly in the amount and kind of work done and so vary in the number of men employed and in the different occupations carried on. The yards at Boston (Charleston), Mass.; Brooklyn, N. Y.; Norfolk, Va.; League Island, Philadelphia; Bremerton, Wash.; and Mare Island, Cal.; do all sorts of construction and repair work, and employ the largest working force in the greatest variety of occupations. The Washington Navy Yard, or Naval Gun Factory, does no shipbuilding and not much repair work. Its equipment and labor are practically entirely employed in making naval guns and all sorts of ordnance supplies so that it employs no men in shipbuilding and but few on repair occupations. The naval torpedo station at Newport, R. I., is almost wholly confined to the manufacture and assembly of torpedoes and torpedo appliances. Most of the other

yards generally carry on only repair work and refitting, and employ men in most of the ordinary trades and occupations. At present there is little or no demand for regular navy-yard occupations at Pensacola, Fla. Of course, in all yards the working force is increased or decreased according to the amount of work that is going on in the yard. Naval stations employ fewer men and offer chances in fewer trades than do the navy yards proper.

In general, navy yards employ in the shops more men in the metal trades than in the woodworking trades. In the shops more machinists are likely to be employed than any other class of workers. Relatively few persons are employed in the offices in clerical work. The Norfolk, Boston, and Philadelphia Navy Yards offer more opportunity in these lines than any of the other yards.

In the yard trades the number of men employed depends largely on the amount of shipbuilding going on. Where shipbuilding is going on the greatest demand is for riveters, bolters up, chippers, and calkers, and drillers and reamers. Compared with the number of men employed in these trades relatively few men are employed in the mold loft, and in such occupations as crane operators, locomotive crane operators, firemen, and locomotive engineers.

As already stated, in addition to men employed in the regular yard, shop, and office trades, navy yards employ men in a number of other trades, such as those of stone and brick masons, house plumbers, stone cutters, switchmen, pavers, and upholsterers. Under ordinary conditions the demand for men in such occupations is small. Glassworkers, lens grinders, instrument makers, and other special classes of workers would only be called for in a yard where instruments were made and repaired, such as

the Washington Navy Yard or the naval torpedo station at Newport, R. I.

PLAN No. 1049. INSIDE AND OUTSIDE WORK

If you are interested in securing employment in a navy yard or in taking training for a navy-yard trade, you may want to consider the condition under which you would work. You may feel that you would wish to work entirely under cover, or you may prefer to work more or less in the open air. Different navy-yard occupations vary greatly as to whether they are carried on entirely in shops, partly in shops and partly in the open air, or entirely in the open air. In some trades and occupations a man's work is located at one definite place, and in others it may be anywhere in the yard. The following statement will give you an idea as to ordinary working conditions in a number of the more important navy-yard trades:

Inside, under the best conditions.—Such occupations as all sorts of office work, stenography, typewriting, bookkeeping, clerical work, work in the drafting room.

Inside, under good conditions.—Such occupations as machine shop, pattern shop, jointer shop, rigging loft, mold loft, power plant work, and inside jointing and finishing.

Inside, under some protection.—Such occupations as blacksmith shop, foundry work, plate-shop work, galvanizing, and frame bending.

Occupations requiring both inside and outside work.—Such occupations as boiler shop, general outside painting, outside machinist, carpenter shop, electrical work, outside rigger, pipe shop, sheet-metal shop, copper shop, and ship fitting.

Occupations carried on entirely outside.—Such operations as reaming, riveting, bolting up, chipping,

and calking, ship carpentry, stone masonry, and bricklaying.

Tools and Machines Used

In the regular trades such as jointer work, sheet-metal work, coppersmithing, boiler making, pattern making, etc., the tools and machines used are practically the same as would be used in these trades anywhere. A man who had earned these trades in any good shop would have no particular trouble in working in a navy yard shop so far as tools and machines go.

In the machine shop the tools and machines are about the same as in any large shop, but since a navy yard machine shop often has to handle large parts, there are usually a number of very heavy machines included in the equipment. Much of the work must be got out with great accuracy. In a general way it may be said that a navy yard machine shop does more work in brass, bronze, aluminum, etc., than is common in the ordinary run of machine shops.

In the trades carried on outside the shop, especially those connected with hull construction and repair, a number of special tools are used. These tools are in general easily moved about. Many are operated by compressed air, but some of them are sometimes operated by electricity. For this purpose most yards have a compressed-air system through that part of the yard where work of this kind is carried on, so arranged that the different machines can be readily connected up by hose lines. A few examples of the sort of tools used in these trades may be given:

Riveting gangs use compressed-air tools for heading up the rivet (air guns), and often for holding it while it is driven (air jambs).

Reaming and drilling machines are usually operated by compressed air, chipping and calking tools work in the same way. In all these machines the operators hold the machine so as to guide the tool, but the compressed air furnishes the actual power.

For such jobs as acetylene welding and cutting, a special outfit is required.

In mold loft work and ship fitting, only the simplest woodworking tools are used, such as hammers, saws, prick punches, and light air or electrically driven drills.

In punching, shearing, and bending plates, special heavy power-driven machines are used which the operators control.

In office work the equipment does not vary from that of any office. According to the sort of work called for, there are typewriters, adding machines, filing cabinets, etc.

PLAN No. 1050. CLASSES OF WORKERS EMPLOYED IN NAVY YARD

The work of a navy yard is carried on by a civilian force under the general direction of naval officers. Excluding office and clerical occupations, this force is graded into the following classes: Foremen, quartermen, leading men, artisans of different grades, helpers, apprentices, laborers. A brief description of each of these classes follows:

Foreman.—A foreman is usually the head of a division or of a shop. He usually has under his jurisdiction groups of men generally working in different occupations.

Quarterman.—A quarterman usually has under his supervision more than one group in the same occupation. He is in line for promotion to foreman.

Leading man.—A leading man usually has under his

supervision only a few men in the same occupation. He is in line for promotion to quarterman.

Artisans.—These are skilled workmen in the various trades. They are graded according to their knowledge and skill in several classes, such as first, second, and third class.

Helpers.—Men who work with artisans to assist them in their work are classed as helpers. Their work is such as may give some training in the trade with which they are associated.

Apprentices.—Young persons are employed as apprentices to learn trades. After sufficient training they may become artisans.

Laborers.—This class of workers are not supposed to possess any special skill or trade knowledge, and except under certain special conditions they are not eligible for promotion.

Wages for Different Grades

On the whole, higher wages are paid on the west coast than elsewhere. Foremen are paid according to the character and amount of work that they supervise. According to the present regulations a quarterman draws $2.88 per day more than the maximum pay of his occupation or trade. A leading man draws $1.44 per day extra pay over the highest pay of his trade. The wages of a man in the artisan group will vary according to his class and his particular trade or occupation. One of the highest paid trades is heavy forging at $11.84 per day. One of the lowest paid trades is that of glass workers, who receive $3.04 per day. On an average, a first-class artisan's pay will run from $5 to $7 per day.

Helpers get from $4.32 to $5.12 per day. Apprentices in trade from $2.88 to $4.32, according to their class. Mechanics detailed for certain special

work, such as inspecting or planning, get certain additional allowances.

In the unskilled occupations (laborers, stevedores, janitors, etc.), wages range from about $3 to $5.50 per day.

Pay on Entrance and Afterwards

When a man starts in the head of his department causes such tests to be made as he deems necessary to determine his status in his trade or occupation, and rates him provisionally as to pay. The final rating as to pay is made within two weeks from the date of appointment. All mechanics who are rated as first-class are carried at the maximum rate of pay.

The following list gives the more important trades and occupations for which men are employed in navy yards (except office occupations), and also gives the maximum rates of pay according to the latest information:

Daily Wage Schedules

Schedules of daily wages for navy yards and naval stations effective first pay period practicable after receipt.

	East coast.	West coast.
GROUP I.		
Attendants, battery	$4.64	...
Attendants, powder factory	5.36	...
Hodcarriers	...	$4.40
North Atlantic and Great Lakes	3.92	...
Charleston, Pensacola, Key West and New Orleans	3.12	...
Janitors	...	4.16

North Atlantic and Great Lakes	3.68	...
Charleston, Pensacola, Key West and New Orleans	2.88	...
Laborers, common	...	4.16
North Atlantic and Great Lakes	3.68	...
Charleston, Pensacola, Key West and New Orleans	2.88	...
Stable keepers	...	4.16
North Atlantic and Great Lakes	3.68	...
Charleston, Pensacola, Key West and New Orleans	2.88	...
Stevedores	4.32	4.64
GROUP II.		
Apprentices:		
First class	4.32	4.32
Second class	3.84	3.84
Third class	3.36	3.36
Fourth class	2.88	2.88
Sewers, first class	2.40	2.40
Sewers, second class	2.08	2.08
Sewers, third class	1.76	1.76
Sewers, fourth class	1.44	1.44
Boys or girls	2.32	2.32
Hammer runners:		
Heavy	5.12	5.12
Others	4.64	4.64
Helpers:		
Blacksmiths', heavy fires	5.12	5.12
Blacksmiths', other fires	4.32	4.64
Boilermakers'	4.32	4.64
Coppersmiths'	4.32	4.64
Electricians'	4.32	4.64
Flange turners'	5.12	5.12
Forgers', heavy	5.12	5.12

General	4.32	4.64
Laboratory	4.32	4.64
Machinists'	4.32	4.64
Molders'	4.32	4.64
Ordnance	4.32	4.64
Painters'	4.32	4.64
Pipefitters'	4.32	4.64
Riggers'	4.32	4.64
Ropemakers'	4.32	...
Sheet-metal workers'	4.32	4.64
Shipfitters'	4.32	4.64
Shipsmiths', heavy fires	5.12	5.12
Shipsmiths', other fires	4.32	4.64
Woodworkers'	4.32	4.64
Holders on	4.80	5.12
Oilers	4.64	4.96
Primer workers	3.68	...
Rivet heaters	4.00	4.48
GROUP III.		
Angle smiths:		
Heavy fires	7.68	7.68
Other fires	6.40	6.40
Armature winders	6.40	6.40
Blacksmiths:		
Heavy fires	7.68	7.68
Other fires	6.40	6.40
Boatbuilders	6.40	6.88
Boilermakers	6.40	6.40
Bolters	4.64	4.64
Boxmakers	4.80	4.80
Brakemen	4.96	5.28
Butchers	4.48	4.48
Cable splicers	6.40	6.40
Calkers, wood	6.40	7.52

Calkers and chippers, iron	6.40	6.40
Canvas workers	6.08	6.08
Carpenters, house	6.40	6.88
Casting cleaners	4.64	4.64
Cementers	4.80	4.80
Chainmakers	7.04	...
Chauffeurs	4.40	4.40
Coopers	5.60	5.60
Coppersmiths	6.88	6.88
Cranemen, electric	6.40	6.40
Cupola tenders	6.40	6.40
Die sinkers	7.04	7.04
Divers	12.00	12.00
Drillers, pneumatic	5.44	5.44
Drillers, Press	5.12	5.12
Electricians	6.40	6.40
Chronograph	6.72	...
Radio	7.44	7.44
Storage battery	6.88	6.88
Engineers	6.40	6.40
Locomotive	5.76	5.76
Nonhoisting donkeys and winches	5.60	5.60
Farriers	5.44	5.44
Firemen	4.64	4.64
Locomotives	4.00	4.16
Flange turners	6.88	6.88
Forgers:		
Drop	6.40	6.40
Heavy	11.84	11.84
Foundry chippers	4.64	4.64
Frame benders	7.20	7.20
Furnacemen:		
Angle work	5.12	5.44
Foundry	5.12	5.44

Heaters	5.12	5.44
Heavy forge	6.08	6.08
Other forge	5.12	6.08
Open hearth	5.12	5.44
Galvanizers	5.04	5.04
Gardeners	4.16	4.16
Glass molders, optical	4.80	...
Glass workers, optical:		
Fine	4.32	...
Rough	3.04	...
Handymen	4.96	...
Instrument makers	6.88	6.88
Joiners	6.40	6.88
Ship	6.40	6.88
Ladlemen, foundry	5.12	5.44
Leather workers	5.52	5.52
Lens grinders, telescope	6.40	...
Letterers and grainers	6.16	6.16
Levelers	4.64	4.64
Loftsmen	7.20	7.20
Machine operators	4.96	4.96
Machinists	6.40	6.40
All around	6.40	6.40
Electrical	6.40	6.40
Floor or vise hand	6.40	6.40
Masons:		
Brick	6.88	6.88
Stone	6.88	6.88
Mattress makers	4.88	4.88
Melters	5.52	5.52
Electric	8.56	8.56
Open hearth	8.56	8.56
Metallic cartridge case makers	5.76	...
Millmen	6.40	6.88

Modelmakers, wood	6.40	6.40
Model testers	5.44	5.44
Molders	6.40	6.40
Steel casting	6.40	6.40
Oakum spinners	3.76	3.76
Operators, gas torch	6.08	6.08
Ordnancemen	5.60	5.60
Painters	5.92	5.92
Applying bitumastic compositions	6.40	6.88
Patternmakers	6.88	7.52
Pavers	5.76	5.76
Pile drivers	6.40	6.40
Pipe coverers	6.40	6.40
Pipe fitters	6.40	6.40
Plasterers	6.88	6.88
Plumbers:		
House	6.40	6.40
Ship	6.40	6.40
Polisher, buffers, and platers	6.40	6.40
Pressmen, armor plate	8.56	...
Punchers and shearers	5.12	5.44
Railroad conductors	5.12	5.44
Riggers	5.92	5.92
Riveters	6.40	6.40
Rodmen	4.40	4.40
Ropemakers	5.12	...
Sailmakers	6.08	6.08
Sandblasters	4.96	4.96
Saw filers	6.40	6.40
Sheet-metal workers	6.40	6.88
Shipfitters	6.40	6.40
Shipsmiths:		
Heavy fires	7.68	7.68
Other fires	6.40	6.40

Shipwrights	6.40	6.88
Steelworkers	6.40	...
Stonecutters	5.76	5.76
Switchmen	4.96	5.28
Tank testers	6.88	6.88
Toolmakers	6.88	6.88
Trackmen	4.56	4.56
Upholsterers	5.44	5.44
Water tenders	4.64	4.96
Welders:		
Electric	6.56	6.56
Gas	6.40	6.40
Wharf builders	5.76	5.76
Wheelwrights	5.28	5.28
Wire workers	5.04	5.04

Where Navy Yards and Naval Stations are Located

Navy yards are located as follows: The Portsmouth Navy Yard, at Portsmouth, N. H.; the Brooklyn Navy Yard, at Brooklyn, N. Y.; the Boston Navy Yard, at Charlestown (a part of the city of Boston, Mass.); the League Island Navy Yard, at Philadelphia, Pa.; the Washington Navy Yard or Naval Gun Factory, at Washington, D. C.; the Portsmouth Navy Yard, at Portsmouth, Va. (close to Norfolk); the Mare Island Navy Yard, at Vallejo, Cal. (on San Francisco Bay); the Charleston Navy Yard, at Charleston, S. C.; the Bremerton Navy Yard, on Puget Sound, Wash. (near Seattle), and the Pensacola Navy Yard, Pensacola, Fla. (aeronautic station at present).

Naval stations are located at Newport, R. I.; Key West, Fla.; and New Orleans, La.

Other naval establishments are: Naval proving grounds, at Indian Head, Md.; naval training station, at North Chicago, Ill.; the Naval Academy, at Annapolis, Md.; the naval magazines at Iona Island, N. Y., and Lake Denmark, N. Y.; and the depot of supplies, United States Marine Corps, Philadelphia, Pa.

Naval stations are also maintained at the Philippine Islands, Cuba, Guam, and Samoa, but no attempt has been made to give any information about them in this monograph.

LEATHER WORKING TRADES

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PLAN No. 1051. SHOEMAKING

Modern Shoemaking a Machine Process

Modern shoemaking is practically a machine process. There are machines for cutting the various parts of the shoe, for sewing together the upper and the lining, for lasting the upper, for channeling the insole and the outsole, for sewing together the insole upper and welt, and for sewing the outsole to the welt. There are also machines for leveling the sole, for placing a smooth edge on the sole and heel, and for burnishing the sole, its edges and the heel.

Many of these machines are leased out to shoe manufacturers on a royalty basis. Patterns, lasts, and similar equipment may be made in the factory or purchased from factories that make a special business of producing these articles. A few hand tools are used in the factory, such as knives for cutting leather and threads, pinchers for pulling nails, and brushes for pasting certain parts. Ordinarily the workers who use these tools are not highly skilled, the only noted exception being that of the cutter who cuts by hand the vamps or other upper parts of the shoe.

Machine Shoemaking Highly Specialized

In the shoemaking industry, there is great division of labor, and accordingly, the amount of skill or technical knowledge required of the workers in many

of the shoemaking operations is so little that it may be acquired in a few days or weeks at the most.

However, a few of the occupations require both manipulative skill and technical knowledge, and call for the quick exercise of sound judgment. These are the occupations that pay well. Training for them is necessary. The period of training, of course, depends in any case, partly upon the person taking it. But in general, there are two groups in which the skilled occupations fall, namely, those requiring less than a year's training and experience to make a thoroughly competent operator, and those necessitating a year or over. Roughly, those who receive less than 50 cents and more than 40 cents an hour fall in the first group, while those receiving 50 cents or more an hour come in the second group.

Wages, Hours, and Working Conditions

In 1918, according to unpublished figures of the Bureau of Labor Statistics, for the highly skilled operators the hourly wage ranged from 43 to 62 cents. In this range, the following occupations were covered—Goodyear welters receiving the highest, channelers the lowest, and the others in a descending scale intermediate wages: Goodyear welters, rough rounders, edge trimmers, heel trimmers, Goodyear stitchers, edge setters, machine pullers-over, heelers, turn sewers, bed-machine operators, hand vamp cutters, hand-method-lasting-machine operators, hand pullers-over, machine side lasters, hand turn lasters, McKay sewers, machine vamp cutters, vampers, hand side lasters, heel scourers, channelers.

The hours of labor are somewhat dependent upon the occupation, with the general average for the whole country about 55 hours per week, which usually means a 10-hour day with a Saturday half

holiday. For some factories, hours in a few occupations are nine per day for six days in the week, which makes a 54-hour week.

For the highly skilled operator, the shoe industry is a desirable occupation in peace times and will continue to be so in the future. With the growth of population and the higher standards of living comes an increased demand for shoes of the better sort, which means that greater skill must be employed in their production than in those of the coarser sort. While the work in the shoe factory is somewhat seasonal, the slack season comes in the summer time, when other occupations are open, and when the worker may frequently engage in gardening during the time he is not busy in the factory. The busy season comes in the fall and winter. The work is all performed indoors.

Disabilities

The shoe industry can not use all classes of disabled men, but those it can use, if well trained, will find in it a desirable occupation. In general the disabilities that will bar a man from engaging in this occupation are the loss of eyesight, the loss of both legs, or of both arms, nervous afflictions, and weaknesses that prevent a man from standing at his work or from doing it rapidly. For some of the work, the use of both hands is highly desirable, and the loss of certain fingers from a hand would tend to be a handicap. Good eyesight, steady nerves and dexterity of motion are essentials in shoe workers. Good hearing is not highly important to the well trained. For the man who has lost a hand, there are devices, such as certain forms of hooks that could be used, for instance, by the machine cutter to operate the arm to the machine. Pincer-like devices may be used for

other work. An artificial leg of a certain type may be obtained for a man who has lost a leg, and this will enable him to stand without undue fatigue.

Promotion

There are two ways in which advancement in these occupations may be secured. A worker who learns rapidly may advance from a less skilled to a more highly skilled occupation. For instance, he may advance from a position as a turn sewer to one as a Goodyear welter, and thus receive approximately a 25 per cent advance in wages. Or a workman with the ability to direct others may become a foreman and thus obtain higher wages. With this ability and a general knowledge of the industry, or high skill at some of the occupations, he might become an instructor, or, with sufficient ability and education, he might go into the office.

Training for Office Positions

A knowledge of the processes in the shoe factory is a highly desirable qualification for the office force, and even for the clerical force of a factory. In the offices are found about 15 to 20 per cent of all the employees of the entire factory. A disabled soldier or sailor who has previously worked in a shoe factory, could, by taking the training offered by the Federal Board, qualify for a position in the business offices. Or he could take a course in salesmanship, and go "out on the road" to sell the shoes. Thus he could turn his past experience in the former occupation to profit, and make of his disability the means of promotion instead of a handicap.

Previous Experience and Additional Training

If a disabled soldier has had some experience in the shoe factory, he will find this of value. He might, for example, take training to become a designer. The change in fashions in shoes necessitates new lasts and patterns, and every new style means work for the designer. The work requires training, but does not call for much physical exertion. To do this work, one must have some facility in mechanical drawing, and so must understand the principles of geometry. Such work is stimulating. Not all factories do their own designing and pattern making, but in such cases designs and patterns must be obtained from concerns that specialize in such work. This profession, however, can absorb only a limited number of additional men.

Schools and Training

There are now well-established schools for teaching the shoemaking operations. Until recently the schools were private, but there are now schools in Massachusetts maintained at the public expense. Some factories, especially the nonunion ones, train the workers in the factories at the work, or in factory schools. In some cases, the workers in a factory "pick up" the knowledge and training required for the better-paying positions. For such workers the unskilled occupations serve as an apprenticeship to the skilled ones. This method, however, is not the most desirable one, since it does not always present opportunities to get the best and quickest training.

PLAN No. 1052. OCCUPATIONS THAT PAY WELL REQUIRE TRAINING

There are two general classes of workers in shoe factories—one made up of machine workers, who

must use judgment and skill in their work, and are therefore the better paid; and the other made up of machine tenders whose main requirement is speed in doing some routine task. Since we are concerned only with the occupations that require training and which pay more than the wages of unskilled workmen, we shall discuss only the skilled occupations. Workers in these occupations may be grouped into three general classes: First, those who sew together difficult parts of the shoe; second, those who cut the leather to form; and, third, those who last the shoe.

PLAN No. 1053. OPERATORS WHO SEW TOGETHER DIFFICULT PARTS OF THE SHOES

The Goodyear welter receives the shoe on the last; the upper has been tacked temporarily to the insole and trimmed smoothly, and the insole has been channeled or lipped for the stitches. He takes a long narrow strip of leather—the welt—and places the shoe in the welting machine so that the insole, upper, and welt are sewed through at one operation by means of a curved needle. The stitch is made almost horizontal to the bottom of the shoe, and the welt lies closely to the upper nearly all around the shoe in front of the heel seat. The welt is also somewhat irregular, but the welt beater straightens out the welt so that is stands out properly for the outsole.

The work of the welter is not so simple as it may seem. He works with a very complicated machine, and he must be able to make readily all the necessary adjustments. He must know almost by intuition that the thread is working properly. He must be able to tell at a glance that the shoe has

been lasted correctly. He must know at once whether the welt furnished is suitable for the type of shoe he is to place it on. He must guide the welt on accurately. If he does otherwise, not only is time lost, but a leather part or parts are ruined. He must be so skilled that he can place the welts on a pair of shoes at the rate of a pair a minute.[27]

[27] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

The Goodyear stitcher receives the shoe with the outsole cemented on the shoe, the channel cut, and the lip of the channel turned back. He places the shoe to his machine so that the welt and outsole are sewed together all around the shoe in front of the heel. The seams are made in the channel of the outsole, so they may later be covered by the lip. The stitcher must be able to stitch about 37 pairs of shoes, on the average, per hour for the working day. At this speed, considerable skill is required to hold the shoe so that the curved parts are sewed around properly.[28]

[28] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

The turn sewer performs a task somewhat similar to that of the Goodyear welter, but he does not attach a welt. He receives the shoe lasted, wrong side out. The outsole is, of course, now in the position of the insole on the Goodyear shoe. As in the Goodyear shoe, the channeling for the stitch is the same, but in addition, the outsole has been grooved, or a recess cut, so that a shoulder is formed around the outer edge of the sole in which the lower edge of the upper rests. The turn sewer sews through the lower edge of

the upper and the shoulder on the outsole. The seam is buried in the inside channel. The process of sewing is performed on a machine that sews with a curved needle and nearly horizontal to the sole. Historically, the Goodyear welting process was a modification of the turn-shoe process of sewing the sole and upper together.

The McKay sewer receives a McKay shoe with the sole cemented on and channeled and the last withdrawn from the shoe. He sews through the sole, the lower edge of the upper, and through the insole. The seams thus appear on the inside of the shoe. This is clearly a simpler operation than that of the Goodyear welter.

The vamper sews the vamp to the quarters, or upper part of the upper. Since the vamp is curved and must be fitted to a rounding form, this operation is not so simple as flat sewing and so is paid for at a higher rate per piece.

PLAN No. 1054. OPERATORS WHO SKILLFULLY CUT THE LEATHER TO FORM

The rough rounder receives the shoe with the outsole cemented or tacked on to the upper part. He places the edge of the sole to the machine so that the edge of the outside and welt is cut to a uniform distance from the upper all round the outsole. In the same process his machine cuts an oblique channel in the outsole for the seam which is to bind the welt and outsole together. The work of the rough rounder requires strength and steady nerves, since he must hold the edge of the shoe against the cutting parts. He must know how to adjust his machine quickly for the various sorts of shoes, and must be able to place a uniform edge on over 900 pairs of shoes in a ten

hour day.

The edge trimmer receives the shoe in the rough finished form. He holds the sole against a set of revolving cutters which trim the sole smoothly to the desired shape all around the sole. He must do this work carefully and not cut the upper or the stitches and at the rate of thirty-five pairs an hour.[29]

[29] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

The heel trimmer receives the shoe with the heel nailed on firmly and the top lift in place. First, he holds the heel against a set of rapidly revolving cutters, which cut away the heel so that is has a smooth even contour from the sole to the top lift and all around the outside. Then he holds the sole part of the heel against another set of revolving cutters which trim the sole part off to conform in outline with the upper. He must exercise great care in this operation so as not to cut the upper. He must handle shoes at an average rate per minute of nearly three pairs, or 1,500 pairs or more in a nine hour day.

The heel scourer receives the shoe after the heel has been trimmed to shape. He holds the heel against a rapidly revolving wheel covered with sandpaper. This process gives the heel a smooth finish. A heel scourer must be able to smooth the heels of nearly 1,500 pairs of shoes in a ten hour day.[30]

[30] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

The channelers cut the channels in the outsoles of McKay and turn shoes and in the insoles of welt shoes, so that the seams may be buried in the leather. The channeler holds the shoe to the machine

and guides the sole so that all but the heel is channeled.

The vamp cutter cuts out the vamp—the lower and most important part of the upper. It must be cut out of the best leather and be free from defects or flaws. Accordingly, the cutter must lay the pattern or die on the side of leather so as to avoid any imperfections in the hide. If he is a hand cutter, he draws a keen-edged knife closely around the outer edge of the pattern and thus cuts out the vamp. If he is a machine cutter, he brings the arm of the cutting or dinking machine down on the die, which cuts out the vamp. The vamp cutter must judge quickly and accurately as to the quality of the leather and how to place the pattern or die, so as to obtain the greatest number of good parts from a side of leather.

PLAN No. 1055. LASTING THE SHOE REQUIRES SKILL

The machine puller-over receives the assembled upper part of the shoe on the last. The insole, counter, and toe box are in place, but the edges of the upper have not been drawn over the insole and fastened. This is the operation that he must perform. He must watch that the upper is properly centered on the last, and that the machine pincers pull the leather in evenly over the last, and if not even, he must make adjustments by means of levers until it is even. Then he presses a foot lever that causes the machine to tack the upper to the insole at various points.

The bed-machine operator is also known as the toe and heel laster. He usually works on welt shoes. He lasts the upper in around the toe so that the leather is smooth on the outside. His machine draws a series

of wipers or friction pullers over the edge of the upper until the toe conforms smoothly to the last. He then tacks and wires the edges at the toe so that they will be held temporarily until they can be sewed by the welter. He performs a similar process with the heel, but he tacks the edges of the upper to the heel permanently. Both the heel and toe are tacked down permanently in a McKay shoe. The bed-machine operator handles on the average nearly a shoe every minute during the day's work.

The hand-method lasting-machine operator usually works on a McKay-made shoe. The upper has already been tacked on the insole by the puller-over, but is now drawn around the last and insole, a part at a time, by means of pincers on the machine. As each part is drawn evenly and closely to the last and insole, a tack is driven into the insole and clinched by means of a metal plate on the bottom of the last. This process is carried on around the entire insole of the shoe. This work is similar to a combination of the processes performed by the side laster and bed-machine operator on welt shoes.

The work of the hand puller-over is to put the counter and toe box in place and pull the lower edge of the upper over the last and insole so that the upper is in the proper position on the last. He does a combination of the work of the assembler for the pulling-over machine and of the machine puller-over.

The turn laster lasts the turn shoe either by hand or machine, and in a manner similar to the methods by which a welt shoe is lasted, except that the parts are placed so that when the shoe is turned, they will be in their proper position. For instance, the counter is placed on the outside of the upper, but inside the lining. The lining at the heel is not lasted, but is cut off and turned back. The shoe is then sewed by the

turn sewer. The turn laster now pulls the lasts and turns the shoe right side out. He fills the depressions in the central fore part of the shoe and the shank by inserting fillers coated on the under side with glue. He then returns the lasts to the shoes, reversing the right for the left—since the shoes have been turned—and pounds the shoe until it has the proper shape and is entirely smooth.

The side laster, by means of hand pincers, draws the upper leather to the last at the outside and instep and over the insole, so that it is tight and no wrinkles are left. He then fastens the edge with tacks. He does this at the rate of about a pair of shoes to the minute.[31]

[31] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

The heeler takes the shoe and a heel already built up but lacking the top lift, and places the shoes on a metal last or jack. He sets the heel in place and presses a foot lever that causes his machine to drive the nails into the heel and clinch them in the insole. The nails on the outside of the heel are left protruding to a height of about half the thickness of the top lift. On these nails, he sets the top lift, which has received a coating of cement, and the machine presses this down over the projecting nails. He must be skillful enough to perform this operation accurately at the rate of over 100 pairs of shoes per hour.[32]

[32] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

The edge setter holds the sole to a machine which polishes the edge by means of a series of hot

vibrating irons which fit the edge of the sole. He must handle shoes at the rate of about a pair every minute during the working day.[33]

[33] Rates of operation are calculated from the tables given on pp. 166-169 of Bulletin No. 232 of the U. S. Bureau of Labor Statistics.

PLAN No. 1056. SHOE REPAIRING

In shoe repairing to-day we find all stages of development, from the purely hand methods to the factory methods. The shops that use the old hand methods are usually small and the owner is generally the only worker, although a few shops have two or three workmen. The shops that use machinery extensively are larger and frequently employ a number of workmen. Between the two extremes are shops of varying equipment and size. This variation of conditions makes it possible for a disabled man to fit into this business by taking a training and choosing the machines and methods adapted to his disabilities. Some man in a shop that uses machines must have considerable mechanical ability. In the shop that utilizes hand methods, some one must know much of hand shoemaking—in fact, be able to perform all the processes. In either shop there is opportunity for profit for the man who can make, either by hand or machine or by the two methods combined, an entire shoe for those persons whose feet are deformed or crippled, so that they can not wear factory-made shoes.

Machinery, Tools and Equipment

The outlay for a shop in any case is not large. The machines are leased as a rule. The number of tools needed for a workman in either the shop that uses

hand methods or the shop that utilizes machinery is not large. The principal tools found in any type of shop are hammers, knives, chisels, lasts, pincers, awls, and needles. No great quantity of supplies need be kept on hand. Practically all shops have machines for sewing uppers. Many have the machinery for sewing on soles. These are probably the most frequently used machines. Practically all of the machine repairing is sewing rips and placing on new outsoles. Heels are largely rebuilt by hand, or replaced by new rubber heels put on by hand.

Repairing Shoes a Paying Business

In shoe repairing, there are slack and busy seasons. Slack seasons come in fair weather and busy seasons in bad weather. If certain work can be allowed to accumulate in the busy seasons, the work may be distributed throughout the year, since there are rarely long intervals of unbroken fair weather. The busy shoe repairer has a remunerative business. If he is able to do a high class of work, he can charge accordingly, and can take other work as a sort of "filler" for slack times.

A Desirable Occupation for a Disabled Man

As a rule, the repair shop offers the disabled man better working conditions than the factory. There is not the monotony of the single process. He can adapt his speed of work better to his physical condition, one day with another, in the repair shop than in the factory where he must not delay or check the regular progress of the shoes through the different processes. The disabled man can usually work at several things in the repair shop. For instance, the one-armed man could nail on heels or soles by hand or sew rips in uppers. By means of certain appliances, the man who

has lost a hand could do practically any process in the shop. The man who had lost both legs could work on hand work at a shoemaker's bench. He could nail on rubber heels, or build up run-down heels, make hand patches, and do similar work.

PLAN No. 1057. OTHER LEATHER-WORKING TRADES

Other articles than shoes are made of leather, but these are usually more simple than shoes, and require less skill in their making. Some of these articles are hand made, and others are machine made. A few of the processes necessitate both technical knowledge and skill, but the number of men employed in such occupations is comparatively small.

In the making of leather itself, few if any of the occupations are suitable for a seriously disabled man, since work in the tannery is usually wet and heavy.

In the leather industry there are, however, a few skilled occupations other than those discussed above. These include expert harness makers and saddlers, harness repairers, trunk and bag workers, and belt men.

PLAN No. 1058. THE HARNESS MAKER AND SADDLER

The harness maker and saddler must have a thorough knowledge of leathers and of their treatment. He must know how to lay out leather and cut it economically with due regard to the purpose for which it is to be used. For instance, where flexibility is more important than mere thickness or weight, he must select the proper piece. He must be able to adjust and repair the machinery with which

he works. As a saddlemaker, he must be able to read blue prints or understand drawings or sketches, and to make patterns or cut the leather according to the specifications.

PLAN No. 1059. THE HARNESS AND SADDLE REPAIRER

The harness and saddle repairer must have a general knowledge of both harness and saddle making. He must be able to make the leather parts of the harness or saddle by hand, and be able to sew by hand as well as by machine. He must be able to take care of his machine and make all adjustments and minor repairs. He must understand the various sorts of leather, and how to cut leather economically. He must be skilled in the use of the tools of the trade.

Other Skilled Occupations in the Leather Industry

Of the other skilled workers, the belt man must know especially how to cement leather and how to treat it so that water or steam will not affect its use as belting. The trunk and bag workers must have the necessary knowledge of how to cut leather economically, its nature and uses according to grades, and how to sew and shape it for the various articles.

Disabilities not a Bar to Success to These Soldiers

A former porter, who suffered from varicose veins below both knees, and a bricklayer, troubled with rheumatism and lumbago, as the result of exposure, were trained in shoe repairing and are now successfully engaged in that work. A former farm

hand, who was afflicted with epilepsy, took a course in shoe repairing and is now employed in a shop at higher wages than he formerly received as a farm hand. A teamster who sustained an injury to his spine, overcame that handicap through a course in shoe repairing, which enabled him to become a partner in a shoe-repairing business. A farm hand, who suffered from pleurisy and pneumonia, a farmer, who had his tonsils injured, and a carpenter, who received a shrapnel wound in the chest, were all enabled to go into business for themselves and make a financial success of it, through a retraining course in shoe repairing. A blacksmith, with diabetes mellitus, took a combined course in shoe and harness repairing and has now a successful business of his own. If you like to handle leather, you will like to make or repair shoes, to make or repair harness, or to make other leather goods. Surely some of these offer you an occupation where retraining will enable you to overcome your handicap, if not afford you advancement.

PLAN No. 1060. GENERAL FARMING

ACKNOWLEDGMENT

This monograph was prepared by Dr. Walter J. Quick, Special Agent of the Federal Board for Vocational Education, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board. Acknowledgment is due to E. H. Thomson, Acting Chief, and Dr. E. V. Wilcox, Agriculturist of the Office of Farm Management, United States Department of Agriculture, for suggestions and data, also to Dr. John Cummings, of

the Research Division, for editorial assistance.

General farming is not intensive, but is diversified farming. It is the production of crops of a relatively nonperishable nature which have a wide market, and of the production of live stock and live stock products, in addition, with considerable attention to the production on the farm of food and food supplies for the farm household.

More Farmers Needed

Agriculture as developed in the United States gives employment directly to nearly 15,000,000 persons, who with their families more or less engaged in agricultural work make up a total agricultural population of from fifty to sixty million. But more farmers and better farming are urgently needed now.

Even before the outbreak of the war agricultural production had not kept pace with the increase of our population, and immediately after war was declared men on American farms responded to the call for man power to operate mines, build ships, make ammunition, and carry on the many other urgent war industries. Then the dire need for farm labor manifested itself, and the demand for wheat, corn, meats, sugar, fruits, cotton, and numerous other agricultural products increased. This demand will not diminish, now that the war is over. On the contrary, the world is looking to the agricultural production of the United States to alleviate the suffering which exists in the devastated countries of Europe liberated from war without adequate means of immediately resuming agricultural operations.

Our army of agriculturists must be recruited to its full strength, and your enlistment in this army will help to make possible operation of American farms to their full capacity.

Recent statistics show a total of over 800,000,000 acres in farms, of which nearly half are classed as unimproved. A large area is prairie land already clear. But you would be especially interested in the improved farms, located, as many of them are, in the vicinity of your former home, where an interest would be felt in you and encouragement given you on every hand. A large proportion of our farm acreage is unimproved and is not employed even as pasture land. It is a deplorable fact that so many farms are idle or only running partly farmed. But that fact is *your* opportunity. The Federal Board for Vocational Education will train you for any agricultural line of work you may elect, and farmers, in every State, handicapped by insufficient labor on account of the war, are anxious to render assistance in making you efficient. Your training course may be advantageously finished on the farm, or in the garden or orchard, and may be mutually advantageous to you and to the owner.

There are three factors which should largely influence the choice of your vocational line of training—first, former employment and experience; second, your own desire; and third, the degree of your disability. If your former occupation was in any way connected with agriculture, and you desire to return to it, the third factor, disability, unless very serious, hardly needs consideration.

Even if you were not engaged in agricultural pursuits before the war, you may well ask yourself if it is not wise now to take advantage of this opportunity to enter upon a healthful rural life? The labor is wholesome and will strengthen you physically, constantly decreasing your handicap.

You may not have had the opportunity before, but it is now yours to realize the dream of a contented,

independent life in God's big out-of-doors.

The farm offers many opportunities, so many, in fact, that you can not fail to find suitable employment. Remember that the world is clamoring for food and looking to us to supply the increased demand. You may be inclined at times to be discouraged on account of your disability, but a brave determination is half the battle toward success in any line of agricultural work.

It is with a sincere desire to extend sympathetic helpfulness that you are advised to consider the adoption of some line of agriculture, general farming it may be, for your vocational training. Later you may find some specialty in agriculture which is to your liking and suited to your changed condition. You may be hesitating because of your disability. You *can* "come back" and will, with a convincing pride that will be admired by your old friends and relatives. Come to the country and you will find your place.

PLAN No. 1061. FARM OWNERSHIP POSSIBLE

Federal loans are now available on long time, and since the establishment of Farm Loan Banks by the Government, agriculturists have borrowed for use in farming about $140,000,000 in 18 months. Government farm loans can be secured for improvements and equipment as well as for aiding in buying land.

Much is being planned for your encouragement and to assist you in your determination to overcome your physical handicap on the land which you may aspire to own. Even before the war, with no idea of providing for returning soldiers, California had initiated a scheme for enabling men to acquire

ownership of land and develop farms by establishing community settlements under State law and direction. In Virginia, notably, and in some other States, under State incorporation laws, community or group settlements in which the farm owners "carry on" co-operatively are proving attractive and successful. The day of small farms and orchards is at hand, and these mean better homes and living conditions, and an occupation in which the whole family may become interested as co-workers.

In no other field of employment can you find such diversification and opportunity for developing side lines as in the broad field of agriculture. Many of these side lines are specialized branches of farming, such as orcharding, small fruit growing, gardening, beekeeping, and poultry raising. These specialties will be considered in separate monographs, but it may be noted that the general farmer may and usually does, engage more or less extensively in several specialties.

Work Is Varied and Changes With the Seasons

The field of agriculture is large and covers many lines of activity. In the different branches wholly different kinds of work must be done, and the work changes from season to season. In general farming, for example, in the spring comes preparation of the land by clearing, plowing, harrowing, disking, rolling, and planting; through the summer, growing crops must be cultivated and given other attention; and in the late summer and fall comes harvesting, which is begun with the fall-planted winter crops by midsummer harvesting of the small grains and hay.

Live Stock

Handling pure-bred stock requires a variety of

interesting work. As profitable general farming nearly always includes live-stock production, more or less work is required in this branch. The horsepower of the place must have attention; barns must be kept in order, feed and fodder prepared and sometimes fed out to cattle and sheep in pasture and much care must be given to hogs if brood sows are kept. Other profitable side lines are followed on almost every farm and are frequently specialized, as with pure breeds of cattle, hogs, sheep, goats, rabbits, and hares.

PLAN No. 1062. HORTICULTURE

The farm orchard, though it may be for the use only of the owner and his tenants, must be properly handled, pruned, and sprayed. Garden truck, berries, and small fruits must have early and constant attention. In commercial orcharding trees of different varieties are now frequently interplanted, such as apple, peach, and apricot. In the different seasons the fruit grower is occupied with the various employments of pruning, cultivation, spraying, thinning, gathering, storing, and marketing. Summer, fall, and winter varieties may be grown, the latter to be sold as the big crop and stored by the buyer, or by the orchardist himself, to supply the markets through the winter and spring, or even until they compete with next year's summer apples in the market. Various side lines of labor naturally accompany orcharding, such as growing small fruits and berries, and some farming, possibly trucking, between the rows in young orchards. Bees, poultry, and swine are not only profitable, but help in keeping the ground clear of insects, and in other ways.

PLAN No. 1063. BEEKEEPING

Bees not only produce honey, but render service in promoting crop farming through fertilization and by aiding in the control of parasites. Beekeeping is most interesting and exceedingly profitable, and while usually managed as a side line with orcharding, or some other branch of farming, it may be made so profitable and conducted on such a large scale as to be a business in itself. Many retired professional men devote themselves to it, as the work is light and is done only in spring, summer, and fall, when the weather is inviting for outdoor work. One Indiana man is reported as having a $20,000 honey crop this year.

PLAN No. 1064. DAIRYING

Possibly no occupation has more possible lines of interest and is more adapted to your condition than dairying. The handling, feeding, care, and management of the herd and calf nursery, and in cases of pure-bred herds, the study of pedigrees, blood lines, and breeding are all most interesting, as are also the scientific milking, handling of dairy products, and marketing. The dairy occupation of butter and cheese making, as well as the feeding of live stock for meat, and much other work continue through the entire year. The agriculturist, if a specialist, can conduct a small dairy and can co-ordinate, for example, butter making or other lines with his specialty, thus enabling him to run his “agricultural factory” the year around.

PLAN No. 1065. OTHER FARM SPECIALTIES AND TRADES

Other branches of farming require active all year employment, and, though too numerous to mention here, attention should be called to forestry, the nursery business, large poultry projects, the growing of rabbits, hares, birds, and pigeons on large scale, and the production of medicinal plants, now receiving so much attention because of the war's interference with production abroad. All these occupations call for much labor of a frequently changing nature. They are interesting and provide opportunity for selection of employment suited to your disability.

Hauling products to the station or, if near enough, to the market demanding a fresh supply of fruits and green vegetables is one line of work. The truck farmer operating large fields of potatoes, onions, and other crops not requiring placement daily on the market finds a great variety of work to be done and usually carries on one or more side lines. One of the most successful combinations of specialties includes raising poultry, growing small fruits, and keeping bees, but one making a specialty of any one of these branches would unquestionably develop profitable minor lines which would give employment when the main line did not supply it.

Small trades or manufacturing may accompany your farm project, as you will find time for these in rainy weather and in winter. In many localities the broom corn, grown between the rows of early potatoes, or as a regular crop, may be made into brooms on the farm in the winter. Crates, boxes, and barrels for fruit and vegetables are to be made, and buildings, fencing, and gates demand attention. During much of the dormant season of the year, in many sections of the United States, land is most advantageously plowed, prepared, and planted to

winter grain and other crops in some sections up until Christmas. Other land is simply broken (not harrowed), to be in readiness for early spring preparation, and in order that it may improve more rapidly under winter rain, sunshine, freezing, and thawing, natural processes which release plant food and kill insect life and fungus development.

Products

To enumerate what workers in the numerous agricultural occupations produce in their varied general farming operations, with rotation of crops, varying in different sections, to enumerate the meat products derived from properly handled live stock, the minor crops of garden, orchard, truck, and berry patches, and the various specialties of horticulture, poultry, and bees, not to mention "specialty farming" products, would fill a book. In fact, the reports and statistical data on agricultural products and their importance to the sustenance and clothing of the population, as well as to industry, fill many books annually. To enumerate these products would be but to remind you of the foods on your tables, of every article of clothing which you wear, and of many raw materials of the world's industries.

Work for All

General farming provides work for those of all ages, from the youngest children with their "chores," up through every member of the family to the farmer himself, who must be general manager for directing his own labor and that of all who are associated with him. There is work for the weak as well as the strong, for the disabled as well as for the fit.

Out of Doors

The year around, considering all occupations in agriculture, probably 75 to 90 per cent of the work even in winter is out-of-door work. Very little is done in shops or factories; more is done in dairy buildings and in cheese and butter making factories; there is some indoor work in animal feeding, minor manufacturing, blacksmithing, and making farm repairs, and probably more indoor work might advantageously be undertaken. More shop and repair work, such as is now taken to the town, might be done on the farm. But agricultural work is and must always be largely outdoor work, and it is on that account particularly healthful and enjoyable.

North and South, East and West

Agriculture in some form is coextensive with the area of the United States. There are the crops suitable for and produced in the North and the South, the East and the West, varying according to the length and warmth of the seasons of growth, and as influenced by soil, climate, rainfall, and adaptability to different plants and operations.

Agriculture a Machine Industry

Inventive genius has given us a tool, an implement, or a machine for every purpose in the new agriculture of to-day. America produced nearly 35,000 farm tractors in 1916, 62,742, in 1917, and 58,543 in the first half of 1918, a total of 150,955 in 30 months, yet the demand for them is so great that the Department of Agriculture is seeking a plan for equitably distributing them throughout the States. Better and greater crops are produced by modern methods, and production per man has been greatly increased. This introduction of implements and machinery has made it possible for disabled men to

take up many lines of farming with every prospect of success.

PERMISSIBLE AND DISQUALIFYING DISABILITIES FOR AGRICULTURAL OCCUPATIONS

If you determine that it shall be so, your disability, whatever it is, will become a serious handicap in farming, as well as in any other employment. But you do not need to make up your mind that way. If you determine that it shall not be a handicap, you can find employment in agriculture, in which you can become 100 per cent efficient.

Your disability is only one condition, and it is probably not the most important condition to be taken into account in making up your mind what branch of farming you can best take up. But considering the disability alone, without taking account of other things, such as, for example, past experience in farming or in other work, certain agricultural employments may be designated as difficult for men with certain disabilities.

Few, if any, disabilities are absolutely disqualifying for any given employment in all cases. Men with all sorts of disabilities have in fact undertaken successfully all sorts of work. It may nevertheless be helpful to designate for each of the principal agricultural employments those disabilities which seem generally to constitute serious handicaps.

With exception of a few disabilities, such as total blindness, loss of both arms at the shoulder, and serious paralysis, it will be found that disabilities do not generally disqualify men for any considerable number of agricultural occupations, and that without exception even of these serious disabilities there is

suitable employment in agriculture for every disabled man.

To save space in making up the following table of disabilities, the so-called “disqualifying” rather than the “permissible” disabilities have been designated for each employment. It should be borne in mind that where one or two or a dozen disabilities are designated as “disqualifying” this designation by implication indicates all other disabilities as permissible, and that a list of permissible disabilities would in fact be interminable.

For convenience in making up the table of disqualifying disabilities, a “Key to Disabilities” has been prepared, in which the principal typical disabilities are classified as injuries to the head, body, arms and hands, legs and feet, and miscellaneous disabilities. By reference to the Key each disability is identified by a letter and a number. “A” disabilities, for example, are injuries to the head, and “B” disabilities injuries to the body; “A1” is blindness in one eye, “A2” blindness in both eyes, “B1” abdominal wound, “C1” amputation of one or more fingers, and other symbols are to be interpreted accordingly.

In the chart showing disqualifying disabilities agricultural employments in different branches of farming are listed, and for each employment certain disabilities are designated as disqualifying. In the case of the “general farmer,” for example, the disqualifying disabilities designated are “A2, 5, C9, D9, E12” which by reference to the Key are to be read “blindness in both eyes, deafness in both ears, amputation of both arms at shoulder, amputation of both legs at the hip, and serious paralysis.” As regards other occupations, a similar interpretation is to be given to the chart.

Neither the list of disabilities in the Key nor the list of occupations in the chart is exhaustive, but the lists are perhaps sufficiently detailed to serve as a general guide for the disabled man in choosing one or another branch of farming as most suitable for him.

PLAN No. 1066. KEY TO DISABILITIES

A. *Head:*
1. Blindness, one eye.
2. Blindness, both eyes.
3. Bronchitis, asthma, hay fever.
4. Deafness, one ear.
5. Deafness, both ears.
6. Injury.

B. *Body:*
1. Abdominal wound.
2. Gastritis.
3. Heart trouble.
4. Hernia.
5. Injury ribs, collar bone, etc.
6. Intestinal trouble.
7. Kidney trouble.
8. Lung trouble.
9. Spinal trouble.
10. Stomach trouble.

C. *Arms and hands:*
1. Amputation, one or more fingers.
2. Amputation, one hand, either arm.
3. Amputation, both hands.
4. Amputation between wrist and elbow, either.
5. Amputation between wrist and elbow, both.
6. Amputation, elbow and shoulder, either.

7. Amputation, elbow and shoulder, both.
8. Amputation at shoulder, either arm.
9. Amputation at shoulder, both arms.
10. Ankylosis of fingers.
11. Ankylosis of wrist.
12. Ankylosis of elbow.
13. Ankylosis of shoulder.
14. Injury.

D. *Legs and feet:*

1. Amputation, one or more toes.
2. Amputation, one foot, either leg.
3. Amputation, both feet.
4. Amputation, between ankle and knee, either leg.
5. Amputation, between ankle and knee, both legs.
6. Amputation, between knee and hip, either leg.
7. Amputation, between knee and hip, both legs.
8. Amputation at hip, either leg.
9. Amputation at hip, both legs.
10. Ankylosis of ankle.
11. Ankylosis of knee.
12. Ankylosis of hip.
13. Injury.

E. *Miscellaneous:*

1. Cancer.
2. Chronic appendicitis.
3. Eczema.
4. Epilepsy.
5. Gas Poisoning.
6. Inflammation of veins.
7. Malaria.
8. Nerve wounds.
9. Neurasthenia.

10. Palsy.
11. Paralysis, partial.
12. Paralysis, serious.
13. Rheumatism.
14. Shell shock.
15. Tuberculosis.
10. Varicocele.

Why Take Training?

Because it is necessary. Even if you grow up on a farm, you can learn to farm better than your father and your grandfather farmed. Something new in farming is discovered every day—new methods of treating soils, new methods of growing old crops, and new crops that can be grown profitably on old farms, new methods of planting, cultivating, and harvesting, and a thousand other new things that save labor, time, and money, improve products, secure better markets, and generally make farming profitable. If you have lost a leg or an arm you will need special training to accustom you to work with artificial appliances, and you may find it advantageous, even if you grew up on a farm, to take up some new line with which you are not familiar, some line in which your handicap will not be a handicap. But, especially if you have been disabled and have never farmed before, you will need training to make you a successful farmer in spite of your handicap. The Government will provide just that sort of training you need, and will help you find out what that training should be.

Overcoming Your Disability

You may be without practical farm experience. Never mind that. Go after it, and with vocational training you will get it.

The most serious disablements, even the loss of two members, even blindness have not prevented efficient application to some of the many agricultural specialties. Some disabled farmers have deemed it unwise to undertake work in the field because of amputation of both legs, or even the loss of one, not realizing that a sabot which will prevent sinking in the ground may be adjusted to an artificial leg, making it possible to travel with comfort over plowed or soft soil. Besides, we now have the tractor, and implements with such light draft as to permit of riding even if using horsepower. You can "come back" at some sort of farm work as many other men have done.

Devices to Beat the Handicap

Special tools and implements and certain appliances for the handling of agricultural machinery have been used by disabled men most successfully, and are being suggested by the inventive genius of the disabled themselves. You may benefit thereby in your effort to return to civil life as an efficient and self-supporting man.

Educational Requirements

You who have grown up on a farm have acquired a practical education that is invaluable. Of course school training and even advanced courses are valuable and will greatly assist you, but it is our desire to impress you with the fact that you can succeed though your schooling has been meager.

Technical Training

Either with or without agricultural experience you will find in the agricultural colleges and high schools

opportunity for advanced study. The agricultural colleges report gratifying increase in the application of city-bred boys for courses. If you are a city boy you will have no handicap of undesirable or old-fashioned ways of farming to overcome, which are often difficult to eliminate. Books, specific knowledge, and scientific training rightly applied mean efficiency and success.

Method of Training

Methods of training will of necessity vary with the vocational course adopted. There will be training in various specialties, and opportunity for making yourself proficient in more than one line of work. Following your primary training you will be given opportunity to engage in practical work. After completing your course and returning home, you may continue your training in a local agricultural high school, or in special classes, such as are now being formed in numerous locations. Instructors can always be secured for special classes meeting in the evening or on two or three afternoons each week in the winter time when activities on the farm are at a minimum. These classes and the lectures secured now and then have been the inspiration to many to take regular agricultural courses in high schools or in State colleges, and you may thus arrange to take advanced technical training.

What You Will Learn in Training

You will be given opportunity to learn the essential things in the line you have chosen, and taught ways and means of overcoming your handicap. The extent of the course as to training and also its duration will depend solely on your needs and desire. The more you undertake the more you

will accomplish and the greater will be your efficiency and your ability to go "over the top" as an agriculturist, or as a specialist in some selected line.

PLAN No. 1067. IS THERE A DEMAND FOR LABOR?

The demand for efficient farm labor is second to no other labor requirement in the world, even in ordinary times. You may be assured that the opportunity for permanent employment is excellent. State agricultural colleges can not supply the demand for farm managers, herdsmen, dairymen, orchardmen, and men who have studied the production of small fruits and vegetables and have had practical experience in these lines. The agricultural colleges give special courses in forestry, floriculture, poultry raising, beekeeping, and other lines, and those who have taken even short winter courses easily find employment at advanced wages.

Others Have Made Good

Many disabled men are following agricultural pursuits. Before the war we had examples in hundreds of men with only one arm or one leg who were farming successfully, and reports from Italy, France, England, and Canada inform us that hundreds of disabled boys, retained and readjusted, are now successfully adapting themselves to agricultural work.

Getting back home to work again should be, and doubtless is, your greatest ambition, hence the importance of reaching your decision at the earliest possible moment and applying for the training which will be provided for you.

On arriving at your home you will find the attitude

of your old friends, your own family, and your former employers all that you could possibly expect in their desire to assist you. The disposition of your fellow workmen will be to give you every encouragement and to lend a helping hand whenever and as long as you need it. They will take a justifiable pride in you and your determination to be a man among your former fellow men in civil life, and to help produce for the world the food which will prevent in some measure hunger and starvation in the war-afflicted countries, and will provide adequately for our own needs.

Opportunity for Advancement

In agriculture you will win out in proportion as you develop efficiency. You will be your own master, and will achieve your own advancement. You may reasonably expect to acquire independence for yourself and for your family. The good farmer normally improves his condition from year to year. Only the poor farmer fails, and the way to avoid failure is to take the training that will make you a good farmer.

More Training if You Need It

If, perchance, you have taken insufficient training and desire more instruction after you first try out on the farm, you will be permitted to return for that. If you reach the conclusion that you desire training in another of the many agricultural branches, or in any other line, the Federal Board for Vocational Education has the courses in readiness and will gladly give you further opportunity of re-educating yourself.

What if You Do Not Take Training?

The matter of training is up to you, and so also will be your occupation and success in life. You may succeed without training, but you are more likely to do so if you have been retrained and readjusted to the new conditions which will confront you in earning a livelihood. You have been too much a man "over there," too brave and too ambitious to do your part, to do otherwise now than exhibit by a manly endeavor your ability to come back to the noble position of an efficient, self-supporting, and respected citizen of the United States.

PLAN No. 1068. WHAT THE FARMER SHOULD KNOW.—TOPICS OF VOCATIONAL INSTRUCTION AND TRAINING FOR DIFFERENT BRANCHES OF FARMING

Farming is not a vocation. It is rather a thousand different vocations. No man can in the course of a lifetime engage in all of these different vocations, and no one farm is suitable for the development of every branch of farming.

For the individual farmer operating a given farm the vocational problem is partly one of individual preference on the part of the farmer, but it is largely one of developing to the best advantage the natural and acquired resources of the farm itself, which may be large or small, especially suitable for growing field crops or garden crops, for stock raising or dairying, for orcharding or small-fruit growing, or for some combination of these branches. On some farms the farmer will most profitably become in a greater or less degree a specialist—a corn or cotton planter, a dairyman, a stock breeder, a fruit grower, or a truck gardener. But in other cases his farm may be suitable for general farming. It may embrace a

garden, an orchard, pasture land, and cultivated land suitable for field crops. Even in such cases the general farmer will, however, probably select certain specialties among those for which his farm is well adapted. The specialty farmer, on the other hand, will probably develop side lines not necessarily associated with his specialty, producing at least his own vegetables, fruit, poultry, eggs, milk, and butter for home consumption.

The general farmer must know how to care for his animals, how to prepare the soil for his crops, how to plant, cultivate, harvest, and rotate his crops. The specialty farmer must acquire a fund of technical knowledge pertaining to his specialty. For the fullest development of their farms, in accordance with their individual preferences, no two farmers perhaps will require precisely the same sort of training. There is a fund of information relating to breeds and types of animals, feeds, propagation, diseases, pedigrees, and other matters that is of special interest to the stock breeder and of comparatively little interest to the beekeeper. But nearly every farmer should know something of the care of animals, and many farmers who do not propose to become apiarists will wish to know enough of the care of bees to enable them to keep a few hives.

In the following chart the topics of instruction and training of special value in the different branches of agriculture are indicated. In proportion as a farmer engages in one or more of these branches, the training which will be of value to him will be determined by the requirements of the several branches in which he engages. In determining upon a specific course of training in individual cases, past training and experience, personal preferences, capacities and disabilities, and future prospects as

regards character and location of farm to be operated and other conditions of future employment will naturally be taken into account.

CHART SHOWING SCOPE OF TRAINING FOR DIFFERENT BRANCHES OF AGRICULTURE

GENERAL FARMING

Selection of feed crops and stocks.
Planning crop areas and rotations.
Maintenance of stock with minimum purchases.
Maintenance and improvement of soil fertility.
Farm management and accounting.
Production of supplies for family consumption:
  Vegetables, fruits, berries, poultry.
  Eggs, meat, milk, butter, cheese, honey, etc.
Stock feeding for market.
Sale of surplus products.

STOCK RAISING

Breeds and types of animals.
Selection of stock.
Points in judging animal merits and defects.
Breeding principles.
Blood lines.
Prevention and control of diseases.
Feeding and watering:
  Balanced rations.
  Selection of feeds.
  Determination of amounts to be fed.
  Times and methods of feeding.
  Water supply.
Pasturing.
Improvement of soil and pasture.
Buildings for shelter and housing:
  Size, number, character, sanitation, and care of buildings.

Keeping records of mating, breeding, pedigrees, feeds, costs, incomes, etc.
Improvement of herd or flocks.
Marketing.

DAIRYING

Breeds of animals.
Sanitation of barns, sheds, cows, milk room, utensils, clothing, and hands.
Cooling and handling of milk.
Bacteriology—souring milk, ripening cream.
Food value of milk products.
Testing.
Feeds.
Keeping records.
Maintenance of herd.
Marketing.

POULTRYING

Broods and types of poultry.
Breeding principles.
Hatching problems:
  Selection of eggs.
  Use of incubators.
  Care of chicks and brooders.
  Construction and adaptation of houses, and pens.
  Sanitation of houses, pens, and yards.
  Pests and diseases.
  Feeds.
  Fattening and dressing poultry.
Marketing.

TRUCK GARDENING

Kinds of gardens:
  Kitchen.
  Market.

Truck.
Varieties of vegetables and plants.
Breeding and propagation.
Garden planning with reference to topography, surface drainage, and economy in cultivating and harvesting.
Soil treatment:
Adaptation.
Propagation.
Fertilization.
Preservation and improvement.
Cultivation.
Irrigation.
Pests, insect and fungus.
Spraying.
Buildings for team, implements, tools, crops, fresh vegetables, surplus fertilizers, seed, and supplies.
Implements and tools.
Marketing, storage, and canning.

ORCHARDING

Varieties of trees.
Propagation of soil.
Interplanting.
Root and branch pruning.
Culture.
Propagation of trees.
Spraying materials and apparatus.
Grafting and budding.
Transplanting.
Diseases and pests—prevention and control.
Side projects—berries, bees, poultry, and pigs (for economical use of land, fertilization of flowers, control of pests, etc.).
Canning, packing, storage, and marketing.

SMALL FRUIT GROWING

Selection of varieties.
Plant breeding and propagation.
Planting, replanting, and terracing.
Rotation.
Fertilization of soil.
Diseases and pests—prevention and control.
Spraying materials and apparatus.
Side projects—kitchen garden, poultry, bees, pigs.
Marketing, storage, canning.

BEEKEEPING

Importance for cross fertilizing clover, fruit trees, berries, garden plants, and many farm crops.
Hives.
Taking honey.
Care of bees:
  Swarming.
  Dividing colonies.
  Wintering.
  Prevention of diseases.

CROP FARMING—SPECIAL

Selection of crop or crops, taking account of topography, climate, soil, etc.
Selection of seed.
Equipment—use of tractors.
Planting, cultivating, and harvesting.
Providing labor for cropping and harvesting.
Character of buildings required.
Farm management and accounting.

LANDSCAPE GARDENING

General layout of property.
Location of buildings.
Selection and inspection of shrubbery, trees, flowers, and vines.

Lawns—how made, kept, and improved.
Roads and walks.
Fencing and gates.
Parks and civic centers.

FARM MECHANICS

Blacksmithing—maintenance and repair of tools, implements, and machinery.
Carpentering—construction, maintenance, and repair of houses, barns, sheds, pens, coops, silos, fences, and gates.
Cement work—construction, maintenance, and repair of foundations, cellars, chimneys, walks, and posts.
Machine operating of farm tractors and other machinery.

SCIENTIFIC SPECIALTY WORK

Chemistry—application in analysis of soils, feeds, fertilizers, and products.
Botany—application in plant breeding, propagation, and culture.
Entomology—application in prevention and control of diseases and pests.
Scientific specialty work in connection with farm drainage; hygiene; building construction, lighting, heating, and ventilation; soil maintenance and improvement; and farm accounting and management.

Chart Showing Disqualifying Disabilities for Specific Agricultural Occupations

Farmer, owner, or tenant, inactive, none.
Farmer, general, A2, 5, C9, D9, E12.
Farmer, grain, A2, 5, C9, D9, E12.
Farmer, stock, A2, 5, C9, D9, E12.

Farmer, small, A2, 5, C9, D9, E12.
Farmer, truck, A2, 5, C9, D9, E12.
Farm manager, A2, 5, C9, D9, E12.
Farm superintendent, A2, 5, C9, D9, E12.
Farm foreman, A2, 5, C9, D9, E12.
Farm mechanic, A2, B9, C3, 5, 7, 9, D3, 5, 7, 9, E12.
Farm seed specialist, A2, E12.
Farm hand (workers), A2, B9, C7, 9, D7, 9, E12.
Farm tractor operator, A2, B3, C3, 5, 7, 9, D7, 9, E4, 9, 10, 11, 12.
Farm truck driver, A2, 5, B3, 4, 9, C3, 5, 7, 9, D3, 5, 7, 9, E4, 9, 10, 11, 12.
Farm blacksmith, A2, B3, 4, 9, C3, 5, 7, 9, D3, 5, 7, 9, E4, 10, 11, 12.
Grape grower, owner, none.
  Vineyardist, A2, C9, D9, E12.
  Helpers, A2, C9, D9, E12.
Orchardist, owner, none.
Orchard superintendent, A2, C9, D9, E12.
Orchard sprayer, A2, C7, 9, D9, E12.
Orchard pruner, A2, C3, 5, 7, 9, D3, 5, 7, 9, E12.
Orchard planter, A2, B9, C3, 5, 7, 9, D9, E12.
Orchard thinners and pickers, A2, C3, 5, 7, 9, D3, 5, 7, 9, E10, 11, 12.
Orchard tractor operator, A2, B3, C3, 5, 7, 9, D3, 5, 7, 9, E4, 10, 12.
Orchard truck driver, A2, 5, B3, 4, 9, C3, 5, 7, 9, D3, 5, 7, 9, E4, 9, 10, 11, 12.
Small-fruit grower, none.
  Superintendent, A2, 5, C9, D9, E12.
  Cultivators, A2, C9, D9, E12.
  Pickers, A2, C3, 5, 7, 9, D9, E12.
  Planter, A2, B9, C3, 5, 7, 9, D9, E12.
  Sprayer, A2, C7, 9, D9, E12.
  Tractor operator, A2, 5, B3, C3, 5, 7, 9, D7, 9, E4, 9, 10, 11, 12.
  Truck driver, A2, B3, C3, 5, 7, 9, D3, 5, 7, 9, E4, 9, 10, 11, 12.
  Salesman, A2, 5, E12.
Animal husbandman, owner, none.

Manager, A2, C9, D9, E12.
Accountant, A2, C3, 5, 7, 9, E12.
Correspondent, A2, C9, E12.
Stock inspector, A2, C3, 5, 7, 9, D9, E12.
Stockman, A2, C3, 5, 7, 9, D3, 5, 7, 9, E12.
Sheep breeder, A2, C9, D9, E12.
Shepherd, A2, C3, 5, 7, 9, D3, 5, 7, 9, E12.
Flock master, A2, C9, D9, E12.
Swine breeder, A2, C9, D9, E12.
Swine herdsman, A2, C3, 5, 7, 9, D3, 5, 7, 9, E12.
Cattle herdsman, A2, C3, 5, 7, 9, D3, 5, 7, 9, E12.
Cattle breeder, A2, C9, D9, E12.
Horse breeder, A2, C9, D9, E12.
Horseman, A2, 5, B3, C3, 5, 7, 9, D3, 5, 7, 9, E4, 12.
Barn man, A2, C9, D9, E12.
Trainer, A2, 5, B3, C3, 5, 7, 9, D9, E4, 9, 10, 11, 12.
Groom, A2, C9, D9, E12.
Veterinarian, A2, 5, C9, D9, E12.
Veterinarian assistant, A2, B3, 4, 9, C3, 5, 7, 9, D3, 5, 7, 9, E12.

Dairyman, owner, none.
Dairy manager, A2, E12.
Herdsman, A2, C3, 5, 7, 9, D3, 5, 7, 9, E4, 12.
Milkman, A2, C9, D9, E1, 3, 4, 12, 15.
Milkers, A2, C3, 5, 7, 9, D9, E1, 3, 4, 12, 15.
Tester, A2, C3, 5, 7, 9, E1, 3, 10, 11, 12, 15.
Butter maker, A2, C3, 5, 7, 9, D3, 5, 7, 9, E1, 3, 4, 12.
Cheese maker A2, C3, 5, 7, 9, D3, 5, 7, 9, E1, 3, 4, 12.
Deliverers, A2, B9, C3, 5, 7, 9, D3, 5, 7, 9, E1, 3, 4, 9, 12, 15.
Machinist, A2, C3, 5, 7, 9, E12.
Feeders, A2, C7, 9, E12.
Cleaners, A2, C7, 9, E12.
Laborers, A2, B9, C7, 9, D7, 9, E12.
Tractor operator, A2, B3, C3, 5, 7, 9, D7, 9, E4, 9, 10, 11, 12.

Truck driver, A2, 5, B3, 4, 9, C3, 5, 7, 9, D3, 5, 7, 9, E4, 9, 10, 11, 12.

Nurseryman, owner, none.
Business manager, A2, 5.
Office help, A2, 5.
Cultivators, A2, C9, D9, E12.
Shipping clerk, A2, E12.
Nursery chief, A2, 5, E12.
Nursery foreman, A2, 5, E12.
Packers, A2, C7, 9, D7, 9, E12.
Workers, A2, B9, C7, 9, D7, 9, E12.
Tractor operator, A2, B3, C3, 5, 7, 9, D7, 9, E4, 9, 10, 11, 12.
Truck driver, A2, 5, B3, 4, 9, C3, 5, 7, 9, D3, 5, 7, 9, E4, 9, 10, 11, 12.

Gardener, market, owner, none.
Gardener, kitchen, A2, C9, E12.
Gardener, market, A2, C9, E12.
Gardener, landscape, A2, C9, E12.
Gardener, cultivators, A2, C9, E12.
Gardener, pickers, A2, C3, 5, 7, 9, D9, E12.
Gardener, manager, A2, 5, C9, D9, E12.
Make-up market man, A2, 5, C3, 5, 7, 9, D9, E12.
City market man, A2, 5, E12.

Poultry keeper (specialties—squabs, ducks, geese, turkeys, game birds, exhibition poultry):
Owner, none.
Poultry manager, A2.
Poultry feeder, none.
Poultry workers, A2.
Egg handler, A2, C3, 5, 7, 9, E12.
Incubator specialist, A2, C3, 5, 7, 9, E12.

Beekeeper, owner, none.
Apiarist, A2, C3, 5, 7, 9, E4, 10, 11, 12.
Helpers, A2, C3, 5, 7, 9, E4, 10, 11, 12.

Trucker (specialties—cabbage, head lettuce, onions, potatoes, seeds, celery, etc.):
Owner, inactive, none.
Owner, active, A2, C9, D9, E12.
Truck manager, A2, 5.

Gardener, A2, C9, E12.
Cultivators, A2, C9, D9, E12.
Workers, A2, C9, D9, E12.
Make-up marketman, A2, C3, 5, 7, 9, D9, E12.
Floriculture (specialties—roses, etc.):
Owner, none.
Cultivators, A2, C9.
Florist, A2.
Market clipper, A2, C3, 5, 7, 9, D9.
Salesmen, A2, 5.
Cannery:
Canner, owner, none.
Manager, A2, 5.
Accountant, A2.
Dealers, A2.
Packers, none.
Broom maker:
Manager, A2, 5.
Makers, none.
Packers, none.
Basket maker:
Manager, A2, 5.
Makers, none.
Packers, none.
Wicker cultivators, A2, C9, E12.
Wicker workers, none.
Meat curing, A2, 5, C3, 5, 7, 9.

PLAN No. 1069. OCCUPATIONS IN THE ELECTRICAL MANUFACTURING INDUSTRIES

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Thousands of men are now employed in the electrical manufacturing industries—in the shops and

factories where electrical machines, devices, and equipment are made. The number of workers so engaged must, it is believed, increase materially in the future because of constant expansion in the applications of electricity. For illustration, consider the extent to which electric welding, electric-motor drives, electric heating and electric lighting are now utilized as compared with the use which obtained 10 years ago. Or again, consider the devices using electricity in the household to-day—vacuum cleaners, motor-driven washing machines, electric stoves, sadirons, and many others—as compared with the number in use a few years ago. The demands of electric communication, also, require an army of workers for the manufacture of telephone apparatus alone.

The ever-extending use of devices which utilize electrical energy means that there must be to supply them a corresponding enlargement in the manufacture of such electrical equipment as generators, switchboards, and transformers. Electrical manufacturing companies must, it would seem, expand rapidly, and for this reason the opportunities which they offer should afford excellent prospects for disabled soldiers who have had previous training in, or who have a liking for this field of endeavor.

The purpose of this monograph is to indicate briefly the opportunities presented in those occupations which are peculiar to electrical manufacturing. Electrical machinery and device factories often embrace foundries, paint shops, pattern shops, blacksmith shops, tin and press shops, and other shops, in which are performed certain processes necessary for the production of the electrical product in which that concern specializes.

But in so far as the vocations are concerned, the work of the men following the occupations of these shops is not materially different from that of mechanics following the same vocations in similar shops in other industries. The general requirements of a mechanic in a machine shop are about the same whether the machine shop is part of a harvester factory or of an electrical machinery factory. Hence in this monograph will be treated only those manufacturing vocations which are wholly electrical. For convenience they have been grouped into the following classifications:

Engineering and drafting.
Coil winding and taping.
Coil impregnating and painting.
Coil placing and connecting.
Assembling.
Inspection and repair.
Testing.

By way of preface, it may be pointed out that there are certain general features of the situation which confront a disabled soldier, which should be examined carefully by him before he makes a break for a job.

Consider the Future and Plan Accordingly

The tendency of the average man is to base his actions only on conditions which confront him now. He does not think about the conditions which he may have to face ten or fifteen or twenty years hence. Before you take a job think about how it is going to work out as you grow older. What will you be doing when you are 40 or 50 years of age? It is possible to make definite plans for the future and follow them consistently and the disabled soldier should weigh very thoughtfully the opportunity for

schooling and training without cost which the United States Government through the Federal Board for Vocational Education is prepared now to offer him. Statistics show that on the average a man with some theoretical training has ultimately a greater earning capacity than another man of equal ability but without such training. Every disabled soldier who for any reason has not been able to become posted in the elements of the calling which he wishes to follow, should avail himself of the chance now presented to him to get such training as he needs.

Discuss the Situation With a Federal Board Adviser

Just how and where training may be obtained without cost you may learn by talking with the vocational adviser of the Federal Board for Vocational Education. The adviser may, also, because of his experience in this special work, be able to assist you in selecting the calling for which you are best fitted, and at which you can most certainly succeed. The training need not necessarily be obtained at a technical school.

Electrical Manufacturing Companies Maintain Training Courses

Training courses are conducted by many companies for their employees, who are sometimes permitted to attend on the company's time. Often the training given in these courses is of great value, enabling the student to increase materially his earning capacity. Some of these training courses have been in operation many years and are now highly developed, thoroughly organized, and very effective. In them both theoretical and practical instruction are given.

Employment Departments

A number of the electrical manufacturing companies operate employment departments, which render valuable service to prospective employees. Such departments study carefully each man's qualifications and endeavor to place him in the job for which he is best suited. Obviously, it is to the interest of both the employer and of the employee that the employee shall follow a line of work for which he is best fitted.

Constancy of Employment

Under normal conditions the demand for electrical equipment of all sorts is very steady, and this tends to insure continuity of employment. Furthermore, practically all of the electrical workers in the electrical manufacturing industry require special training, and for this reason employing companies use every means to insure continuous employment for each worker so that their organization may not be broken up. Finally, the call for electrical equipment will probably be exceptionally heavy in the immediate future to provide for reconstruction needs. All of these features tend to insure stability of employment.

Mutual Benefit Features

Many companies maintain associations, supported largely by the companies and partially by the employees themselves, whereby medical attendance and monetary benefits are afforded in time of sickness. Some of the concerns have building and loan associations through which employee members can borrow money at low rates of interest for the construction of homes.

PLAN No. 1070. ENGINEERING AND DRAFTING

Although the engineering department and the drafting department in an electrical manufacturing concern are usually distinct organizations, the drafting division commonly operates under the direction of the engineering department. In the engineering department are developed the designs and specifications for the electrical apparatus which the company produces. The engineers make the computations, prepare—ordinarily in the form of a sketch—the preliminary design for the device, and write out the specifications for its production. This information is submitted to the drafting department, which completes finished detailed drawings. Often a draftsman who matures a design or directs the work of a squad of junior draftsmen must be an engineer. Although a technical-school training and a number of years of experience are necessary for any man who is to assume responsibility for electrical design or drafting, there are frequently opportunities for those who have had comparatively little training to start in as assistants or helpers.

High-School Course Essential

While it was formerly the practice of many concerns to accept in their engineering departments only college graduates, it has been found that many of the tasks do not require or justify this training. For reasonable progress in design engineering, the candidate should, however, have at least the equivalent of a high-school education. As noted above, some companies maintain training courses or schools, in which high-school trained apprentices are given, on the company's time and without cost to them, courses covering the essentials of design engineering along special lines.

First Duties and After

Under the direction of an experienced engineer the beginner will probably undertake first the making of computations for designs already under way or the checking or reckoning of data from curves of tests which have been made on apparatus which the concern has built. The beginner is often called upon also to plot graphs from values which are at hand or which he himself reckons. As the candidate develops efficiency, he may be expected to assume responsibility for the design of certain parts of machines or devices. Then, later, after a number of years of experience and study, he may become sufficiently conversant with the principles and processes involved to undertake the design of equipment on his own responsibility.

Only a man who is of a studious temperament is fitted for a vocation of this character, because to be successful at it one must study both in and out of working hours. The worker must become familiar with the principles of electricity and magnetism, and be competent to make such calculations as are required to the end that available material shall be utilized in proper proportions to provide desired results and performance in the machine being designed. However, the essentials of this theoretical training can be obtained by any man who is competent to handle formulas, and who is willing to devote a reasonable amount of time to study. While mathematical processes are the tools of an electrical designer, a good mathematician is not necessarily a good designer. To be a good designer, the individual must have also a practical temperament and an eye for proportions. He must be able to design a device so that it will give maximum results at minimum cost and upkeep expense.

Design Engineering is Almost All Desk Work

Although the designer must sometimes work over a drafting board, or go to parts of the shop where machines are either in process of construction or under test, design engineering is largely desk work. Any man who can see, think, and write may, assuming that he has the requisite temperamental and educational qualifications, develop into a designer. Loss of hearing is not by any means an insurmountable handicap.

Salaries and Hours

Engineering department employees practically always receive their compensation on a weekly or monthly salary basis. Beginners who have not had a college education may receive from $60 to $80 per month at the start. After some experience, which equips them for working without constant supervision, they can expect from $80 to $125 per month. Ultimately, salaries will be determined wholly by the capacity of the individual and may range from $2,000 on up indefinitely. Often designers conceive patentable ideas which, if practicable and adopted, may result in substantial salary increases for them. The usual day is eight hours, but in some shops the engineering department works only seven and one-half hours.

In the Drafting Divisions

For drafting in the engineering department the qualifications are somewhat similar to those for design engineering. Draftsmen are, however, ordinarily not so well informed or so well paid as engineers and frequently an able man is promoted from drafting to engineering work. When a man starts at drafting, if he has had no experience, his

first task is likely to be that of tracing—he copies, in ink, on a sheet of transparent tracing cloth, a drawing which was made in pencil on drawing paper by a draftsman. In thus tracing a design, he can become familiar with many of the mechanical principles of the devices, and also with the drafting-room and machine-shop practices of the concern which employs him. By observing and asking questions he can learn much. After he has become a proficient tracer, he may be required to "work up" dimension drawings from rough sketches, or to design minor details. Thus he can progress, step by step, until his accumulated experience enables him to perform the work of an experienced draftsman. A man who has had previous drafting experience may not have to start in at the bottom, but may begin with such work as he is qualified to undertake.

To enable him to become a good draftsman, a man should be able to see well, and he should have the use of both hands. One hand or even both hands may, however, be artificial. Men who have had previous shop or electrical construction experience, but whose disabilities disqualify them for further rough work, may adopt the vocation of design draftsman with entire success.

Many draftsmen with the equivalent of only a common-school education have been able by application and attention to business to advance themselves very satisfactorily. On the other hand, the equivalent of a high-school education with an elementary knowledge of algebra, trigonometry, mechanics, heat, and the other scientific subjects involved, is of very material benefit. If a man's education is deficient he can often correct this by attending a night-school.

Draftsmen ordinarily receive weekly salaries. A

beginner in a drafting department with little or no previous experience may expect from $50 to $70 per month at the start. A competent design draftsman will receive probably from $100 to $200 monthly. Some receive considerably more. The work is wholly indoors and over a drafting board.

PLAN No. 1071. COIL WINDING AND TAPING

In many electrical devices, coils of insulated copper wire-magnet or armature windings of one sort or another are required. Consequently a large number of coil winders are employed in most electrical factories. Coils are usually wound on forms in accordance with specifications prepared in the engineering department. The “form,” upon which the coil is thus wound, is clamped on the head of a winding lathe operated by power. In this form is a groove, in which the convolutions of the winding are wound. The groove is of such size that it insures the correct number of turns in the coil so that the finished coil shall be of correct dimensions. When the attendant presses a treadle, power furnished by a belt causes the form to revolve, and insulated copper wire from a spool mounted on a rack is guided by the attendant and wound into its place in the groove. After the required number of turns, the form is removed, and the coil is taken from it by the attendant who then starts winding the next coil. Frequently it is necessary to produce a large number of identical coils. Where this condition obtains, automatic devices of one sort or another, to reduce manual effort and to render the processes automatic in so far as possible, may be employed.

Types of Coils

Some of the different sorts of coils wound in the different factories are: Field coils, armature coils, transformer coils, and magnet coils. Coils of different types may range in size and weight from a few inches long and a few ounces in weight to a couple of feet and several hundred pounds.

Conditions of Employment for Coil Winders

The work on some coils requires little physical effort and may be done by young women, but where the wire from which the coil is wound is of relatively large diameter or where the winding is intricate men are employed. Some lifting is necessary, and the use of both hands is essential. The loss of one eye, of a leg or foot, or of hearing is not a material detriment. The work is wholly indoors. Coil winding is often piecework, sometimes under a premium system and sometimes not. The trade is not generally unionized. The usual day is nine hours, although an eight-hour day prevails in some localities. A coil winder may expect to receive from $14 to $22 per week.

PLAN No. 1072. COIL TAPING

Wrapping a band or strip of cloth or tape around coils which have been wound as described above is known as “coil taping.” Where the coils are of small weight, little physical effort is involved, but where they are large and heavy it is necessary that they be lifted to a bench or vise, on which they are held while being taped. In some factories the lifting and placing of coils is done by laborers. Young women do most of the taping.

PLAN No. 1073. EMPLOYMENT FOR THE BLIND

Often hundreds of coils of identically the same size, shape, and construction are to be covered. Then the tapers become so adept that they can do the work without looking at it. For this reason taping affords an opportunity for men who have lost their sight. Experience has shown that where they are given the proper preliminary training the blind can compete on equal terms with others. Certain electrical concerns have given this fact careful consideration.

Wages and Hours for Coil Tapers

The coil taper may expect to earn from $12 to $20 a week. Often this is piecework and under a premium system. The work is wholly indoors. Some shops work eight hours, but a nine-hour day is the rule.

PLAN No. 1074. COIL IMPREGNATING AND PAINTING

After the coils have been wound, and before or after they have been taped, they must usually be impregnated or saturated with an insulating compound. The last process in finishing the coil ordinarily consists in painting it.

In impregnating, the coils are placed in a large steel cylinder, which is then hermetically sealed by bolting its removable top fast to it. With a power pump the air is exhausted from this cylinder. The impregnating compound—a sort of waterproof paint or varnish—is then forced in and is caused to permeate every interstice of each coil. The

compound is then pumped out of the cylinder, and the impregnated coils are removed. To render them waterproof, some coils are painted with a brush instead of being impregnated, but before painting they are heated in a drying oven, which drives out all moisture. Where the coils are light in weight, little physical effort is required, but where they are heavy considerable exertion may be necessary, although cranes and hoists are usually provided.

Shop Training Necessary

Proficiency in work of this character must be acquired in the shop. The beginner starts as a helper, and as he accumulates experience, he may be promoted to a squad boss. Ultimately, assuming that he has proper qualifications and experience, he may become a foreman.

Conditions of Employment

The work is wholly indoors, under temperatures which, although not excessively high, may be somewhat above normal. The odor of the solvents and materials used in insulating and painting is offensive to some, but does not appear to affect others.

Qualifications

This work can be handled by men having minor physical defects. The loss of one eye or one leg will not disqualify. The loss of an arm or hand would not be an insurmountable obstacle provided the member is replaced by an artificial one.

Wages and Hours

Wages are often paid by the piece under a

premium system. A helper may expect to receive from $12 to $17 a week, an experienced man from $16 to $24, and a foreman from $22 to $37. Usually the day is nine hours, but may be eight and a half. The work is wholly indoors. The trade is seldom unionized.

PLAN No. 1075. COIL PLACING AND CONNECTING

After the coils have been wound and impregnated or otherwise treated, they are arranged in place on the iron cores of the electrical machines under construction which have been designed to receive them. The placing of a magnet coil in an assembled device which requires but the one small coil involves but little skill and labor. But the arranging, placing, and connecting of the large number of armature coils which are necessary to complete an armature winding of a direct-current or alternating generator or motor requires considerable skill, experience, and ingenuity. The connections in such cases may be quite complicated.

Connections between coils are effected by soldering together the ends of the copper conductors. However, the man who makes these connections need not be competent to plan for himself the scheme of connections, inasmuch as he is supplied with a diagrammatic blue print from the engineering department. This indicates how the coils should be connected. He must be competent to read and understand this print. On all but the simplest machines and devices the coil placing and connecting is done by men.

In some shops coils are placed in the armatures by

one group of men and are connected by another group who receive slightly higher pay.

Conditions, Wages, and Hours

Ordinarily physical ability involving the use of both hands is required. The loss of one eye, or of a leg or foot, or of hearing is not a material detriment. Usually the men work standing at benches. The work is all indoors. The day is usually nine but sometimes eight hours. A helper may expect to receive from $10 to $18 per week, a journeyman from $18 to $24, and a foreman from $25 to $40 per week. Some shops are unionized, but most of them are not. This is often piecework on the premium system.

Training

The elements of these vocations are taught in some trade schools, but most of the individuals now following the work obtained their knowledge through actual experience in a factory. It requires several years of shop training to become thoroughly proficient. A man may start as a helper and gradually acquire the skill necessary to place himself in the journeyman class. He has always ahead of him the possibility of a foremanship.

PLAN No. 1076. ASSEMBLING

After all of the components of an electrical machine have been produced in the different departments of the factory, they are sent to an assembling department for arrangement into the finished product. The coils are usually in place in and connected on each separate component. But the different members must be bolted or otherwise

fastened together as required. The rotating members —armatures or rotors—must be mounted in the bearings, and such electrical junctions made between them as may be necessary. Then the machine is made ready for operation and test.

Where the device is small and simple the work of assembling is correspondingly uncomplicated. It then involves little physical effort and may be done by young women. But where motors or generators, transformers, or similar equipment of capacities of from 5 horsepower up are to be handled, men are required for the work. The assembling department affords a good starting place in the factory for a man who has had some electrical experience. While much of the work requires no theoretical training, a man who already has, or who acquires through study, a knowledge of the theoretical elements involved, will be able to progress accordingly.

Qualifications, Training, and Expenses

Ordinary physical qualifications are necessary. Some lifting is required, although cranes are usually provided for handling heavy pieces. The work can be learned only in the shop, and often a man must have gained experience in the particular factory in which a certain device or line of devices is manufactured before he becomes proficient in their assembly. An individual without previous experience may start in as a helper. Later he may develop into a skilled assembler and may look forward to the position of foreman. In large factories there are many foremen in the assembling department. Each foreman has direction of the assembly of a certain type of apparatus.

Wages, Hours, and Conditions

A helper may expect to receive from $12 to $17 per week, a skilled assembler from $17 to $22, and a foreman from $25 to $35. Frequently this is piecework under a premium system. The work is usually nine but is in some shop eight hours. This vocation is not as a rule unionized. The work is indoors.

PLAN No. 1077. INSPECTION AND REPAIR

After electrical equipment has been assembled, it is inspected for defects before it is submitted to an electrical operation test such as is described below. Such inspection may comprise not only a checking of the dimensions and quality of the mechanical parts of the machine, but may also involve qualitative electrical tests. These are made to insure that there are no faults in the insulation, or misconnections in the windings. Frequently these inspection tests are applied before the component tested leaves the department in which it was made. Thus coils are tested to insure that they contain no short-circuits or crosses before they leave the winding department. Complete armatures are likewise subjected to an insulation test in the department where they are wound; a voltage considerably higher than that which will be imposed on the machine after it is in actual operation being connected to the armature temporarily by the tester. This high voltage is obtained from the secondary winding of a step-up transformer.

The mechanical inspection is made with micrometers, scales, gauges, and calipers in the same way as is the inspection of any machine-shop product. Checks for the proper connection of the

coils in a machine can be made by standardized methods.

Training

Inspectors of special and complicated apparatus are usually men who have "worked up" and received all of their training in the shop, because this is the only way in which adequate training can be acquired. But for the routine inspection of small parts little if any special training is necessary. Theoretical training is not essential, but it is desirable. A man without previous mechanical or electrical experience is not ordinarily qualified to become other than a detail inspector. The best inspectors are usually selected by picking adept men from the working force of the factory.

Opportunity for Disabled Men

This vocation should afford possibilities for disabled soldiers who have had previous electrical or mechanical experience, or who have a liking for this work, but whose disablements unfit them for following their old occupations. Inspection requires little physical effort. Some lifting may be necessary to place the members to be tested and inspected in the proper positions on the bench or floor, but this is performed usually by laborers who have the assistance of cranes.

Wages, Hours, and Conditions of Employment

A man who has not had previous inspection experience may expect to earn from $16 to $20 per week; an experienced inspector from $20 to $27; and a foreman from $27 to $40. The work is all indoors. Sometimes it is piecework under a premium system.

The trade is not unionized. The day is usually nine hours, but may be eight.

PLAN No. 1078. TESTING

Nearly all electrical equipment is tested before it leaves the factory. That is to say, it is subjected to electrical and mechanical conditions similar to those under which it must operate in practice, so that its performance under such conditions may be predetermined. This is necessary to insure that the product which leaves the factory will not develop faults after it is in service. Where machines or devices are of large capacity, each is tested individually. Where the output comprises a large number of small, identical machines, as for example, automobile starting motors, or circuit-breakers, only one or a few out of each order which passes through the shop are subjected to test.

PLAN No. 1079. AS GENERAL APPRENTICESHIP TRAINING

Electrical testing is interesting work and affords a splendid opportunity for a man to acquire experience which will be valuable to him in almost any line of electrical work which he may subsequently elect to follow. Formerly, the larger electrical manufacturing companies would accept only university graduates in their testing departments. The testing work was usually offered in the form of an apprenticeship course, and as a stepping-stone to other more responsible positions. But of recent years, some of the companies have accepted in their testing departments men with only a high-school training or

its equivalent. It has been found that this plan is satisfactory, both from the standpoint of the company and of the men themselves.

PLAN No. 1080. TESTING MOTORS

In testing a motor the machine is loaded by making it drive, usually through a belt, an electric generator. The energy which this generator develops is forced into the same circuit as that from which the driving motor takes its power. Hence, the net energy required to conduct the test is greatly minimized, being in fact equivalent only to the losses of energy in the generator and motor during the test. By increasing the load on the generator the load on the motor is increased correspondingly, until it is carrying its full-load horsepower output. Meanwhile, from properly connected voltmeters and ammeters, readings of the voltage impressed on the motor, and the current taken by it at different loads are observed. Simultaneously the temperature of different parts of the motor are taken by means of thermometers, which are bound to the machine with tapes or held with gobs of putty. The speed of the machine at different loads is noted. From the readings thus taken, the efficiency of the motor at different loads may be computed and its other characteristics determined. If the efficiency and other performance characteristics of the machine meet the specification, and its temperature does not become greater than the limit specified by the engineering department, the machine is painted and either shipped to the customer or put into stock to await a sale. If it does not “come up” to its specifications, the difficulty must be corrected.

PLAN No. 1081. TESTING GENERATORS AND OTHER DEVICES

The methods used for testing generators are somewhat similar to those used for the motors. Other devices, such as transformers, potential regulators, circuit breakers, switches, controllers, and one thousand and one others, involve test methods of their own.

In every test the object sought is the same, namely, to subject the device, before it leaves the shop, to practical working conditions. The testing department records readings from instruments during tests and "works these readings up" into the final test data. This working up involves considerable calculation. Hence, in all testing departments there are computers who spend practically all of their time figuring results. They use slide rules for many of the operations.

Special Training Courses

As is the case in some other lines of work, companies may maintain training courses in which test-department candidates are given instruction in the essentials of the work which they are to take up. Such courses afford a splendid opportunity for men who have had only a high-school training. They are for the most part operated on the company's time, but they may be supplemented by night courses, to which the man must devote his own time several nights a week. Many of the most successful and best known electrical engineers and electrical factory men in the United States started their practical careers in the testing departments of electrical manufacturing companies. It appears to be a relatively easy matter for a man who has had a thorough test-course training to obtain a new position with advanced

responsibilities and salary. The new work may be construction or erection with some organization other than the concern with which he obtained his testing experience. Usually the testing work is so arranged that each tester spends only a few months on each class of test, so that after completing the course he is reasonably familiar with many different kinds of equipment.

Qualifications

In this work, although a man with little theoretical knowledge may be of value, no man can learn too much for his own advancement. Ability to study and read and thereby keep in touch with advances in the art is a material asset. The work is relatively light, but some lifting and pulling may be required. The loss of a leg or an arm or an eye is not necessarily a detriment. Good hearing is essential, because a man must often depend upon sound to ascertain whether or not the apparatus on test under his charge is operating properly. This branch affords splendid possibilities for high-school trained men to become conversant with electrical equipment.

Wages, Hours, and Conditions of Employment

If a man has had some previous electrical experience so much the better. The starting salary will probably be around $16 or $18 per week. A tester of some experience will probably receive from $20 to $27 per week and an experienced foreman from $35 to $47. The work is nearly always indoors, although some tests must be made outside. The trade is not generally unionized. The day is eight or nine hours.

PLAN No. 1082. COMMERCIAL OCCUPATIONS

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Introductory

Commercial occupations include certain occupations which have to do with the administrative, executive, clerical, accounting, stenographic and selling side of business. Definite courses of training for these employments have been worked out and are being offered in many high-grade schools. It must not be assumed that by a commercial course is meant merely training for bookkeeping and shorthand work. On the contrary, the range of commercial occupations open to men is very broad, as is indicated by the following partial list of such occupations:

I. Common commercial employments.
- Bookkeeping.
- General clerical work.
- Stenography.
- Retail selling.
- Telegraphy and wireless operating.

II. Professional commercial service.
- Accounting.

Salesmanship.
Advertising.
Foreign trade service.
Secretarial work.
Life insurance salesmanship.
Office management.
Banking.
Commercial teaching.



Plan No. 1082. Keep thy Shop and thy

The occupations listed in group I will appeal to men who have had a fair general education and who

are willing to devote a few months to intensive courses of training. Men who take such courses may enter upon employment at a reasonably early date after beginning their study, and may subsequently, if they desire to do so, take up evening school courses to prepare themselves for some one of the employments specified in group II. This second group of employments will appeal to men who have had a good general education, some special training, and possibly some business experience. For the average man a longer period of training will be required to fit for one of these commercial professions than will be required for group I employments. However, men who have had considerable business experience may find it possible to complete their training in a comparatively short period.

Men who have had a good general education and who are willing to devote considerable time to preparation for a profession may well consider the possibilities of commercial teaching which has been included in group II. There are thousands of schools in the United States employing teachers of commercial subjects. Since such schools are in competition with business, as well as with each other, the demand for commercial teachers is more active than for almost any other class of teachers, and salaries are correspondingly higher for such teachers.

Telegraphy and wireless work referred to in group I may appeal to some men who have had railroad experience and who are not physically able to undertake the kind of work they have been doing in the past.

Modern Business Demands

The modern development of business has created

new demands for office help. It is not long since the greatest need of the average business office was for bookkeepers and stenographers. While such workers are still in great demand, the work of the office has been divided and subdivided to such an extent that new types of workers are required for many clerical positions.

Promotion

The up-to-date business man regards every office assistant as a possible future executive. In the employment of such help he is constantly on the alert to discover aptitude for executive work, so that he ultimately may have at hand promotion material from which to recruit for the high positions in his business. While it is still desirable to train men for definite tasks and to place them in office positions where their services are required, this is not the chief end of business education. Men will not only be fitted for immediate usefulness, but they will be prepared for rapid promotion to the higher places in business organization. In other words, business education has an immediate market value and gives to its possessor a chance to win his way to the more desirable positions at the top of the business ladder.

Business and Vocational Readjustment

Commercial enterprises, except those connected with the prosecution of the war, have been at a standstill for the past two years. Now that restrictions naturally resulting from the war and those that were imposed by law, have been removed, the period of readjustment will begin. Whatever may be the immediate situation as regards the supply of labor and the demand for it during this comparatively short readjustment period, it is certain

that the demand for trained men will develop with the restoration of normal conditions. Men who are forward looking will realize that vocational training secured during this transition period will pay big dividends in later years, and will guarantee an economic status above that of the man who hurries back into the first opening he finds, and begins work regardless of his diminished competitive ability. This business readjustment period should be also the vocational readjustment period for all men who have suffered physical injuries in the service of their country.

Educational Requirements

In considering what vocation to prepare for, men should keep in mind their future needs. They should not be content with a training that will merely fit them for permanent employment in the common office routine positions. On the contrary, they should aspire to a training that will enable them to grow into the higher executive positions in connection with large business or to launch out for themselves in a business enterprise.

There has never been a time when education has counted for more than it does now. Therefore, educational qualifications and requirements should be seriously considered in connection with the selection of a vocation. This does not mean that only those who have had the advantages of high school or college training should be encouraged to prepare for business, but it does mean that those who lack this educational background should be willing to devote a longer time to training than may be required of those who have been more fortunate in the matter of educational advantages.

Previous Experience

It is highly desirable that every man cash in on his previous experience as far as possible. For example, a man who has been identified with the telephone business and who, by reason of a disability caused by war service, finds it impossible to continue in his former occupation, may be trained for a different position in the telephone business where his disability will not be a handicap. The general knowledge of the business, gained through years of contact with it, will be helpful in his new work. Then, too, his old employer will be likely to find a place for him in his organization where he can render excellent service, though it be of a sort entirely different from that which he was rendering prior to the war.

Business training prepares for positions in every kind of business organization. Whether the man's previous experience was in the telephone, railroad, manufacturing, retail, wholesale, or mining business, it matters little, since training for an office position will open the way for him to gain a footing in any kind of business, and will put him in the way of promotion providing, of course, he shows that he is entitled to it.

Realize Your Ambition

In the selection of a vocation a man's personal preference is quite as important as his previous experience. Many men have found their work uncongenial and have desired to make a change, but the opportunity to do so never seemed to come their way. Such men may have hoped for training that would fit them for another type of work. This vocational education offer that is made by the Government may be just the chance for which they

have been waiting. It is to help men plan wisely for the future that this monograph is written. All men may face the future with full confidence that the right kind of training will insure for them an economic status equal to or better than that from which they enlisted for their country's service.

Employment Possibilities

Since business training fits for occupations common to all lines of business, it is not likely that there will ever be too many men available for high grade office positions. The danger is that men will be satisfied with inadequate preparation for growth beyond the routine or clerical types of positions, and will thus continue in competition with younger workers in this field. It is only by taking full and complete training not only for immediate employment but as well for future promotion, that men can hope to avoid this competition.

Preference as to Locality

No locality is without need for men with business training, hence men so trained may hope to market their services wherever their preference may dictate. Certain types of commercial education have of course a better market value in one section of the country than in another, and men should have this in mind if they are willing to work only in some one particular section. In the main, however, business opportunity is universal.

Men and Women Who Have Made Good in Spite of Handicaps

At the end of this monograph is a tabulation showing the case histories of 133 handicapped, or

rather disabled, men and women who have made good in business. These individuals were trained by the same schools that are being used by the Federal Board for Vocational Education in its commercial re-educational work for disabled soldiers and sailors, and they represent only a fraction of the hundreds of victims of industry who have been retrained for success in life, regardless of seemingly unsurmountable obstacles. All disabled men should study this tabulation carefully and emulate the plucky people whose cases are reported therein.

PLAN No. 1083. PART 1.—COMMON COMMERCIAL EMPLOYMENTS—BOOKKEEPING

Among the oldest and most universal of office positions is that of bookkeeper. For men who require work that does not call for physical activity this vocation offers excellent opportunities of earning immediate incomes while at the same time paving the way for advancement.

Requirements

Men who elect this calling should be able to write a good business hand, be accurate and rapid in handling the usual arithmetical computations, be neat and painstaking in their work, understand the fundamental language of business, be familiar with the common business forms, and possess a thorough understanding of the universally employed double-entry system of bookkeeping.

Length of Course

The time required for completion of a course of study that will insure the possession of the above qualifications will depend upon the man's previous

education and experience, but should generally be kept within a period of six months. Many will make adequate preparation in much less time.

Where Training May Be Given

Excellent courses are to be had in a large number of approved private business schools, and men may be trained in their home environment or in large commercial centers where employment is to be sought, as they may elect.

Why Take Training?

While many so-called bookkeeping positions are open to men without training, it is highly desirable that a comprehensive knowledge of bookkeeping be secured, as it is only by this means that promotion can be expected. The posting clerk, or entry clerk, will always remain an unskilled laborer in competition with untrained boys and girls unless he is fortified by such a knowledge of the science of accounts as will enable him to become the head bookkeeper, the cost accountant, or the auditor. Such a man may, by additional training in evening school, qualify for the profession of accountancy and establish an independent business of his own.

Salary

Men who know accounts and possess the other desirable business qualifications can be placed in positions with a salary range of from $10 to $30 a week.

Permanency of Employment

The all-round bookkeeper in any establishment is indispensable to the business, and is rarely released

when business depression calls for retrenchment in the pay roll.

Disabilities

The possession of mental faculties and one hand, with fairly good general health are all that are absolutely essential to success in this occupation from the physical standpoint. Men with two artificial hands have succeeded in this work, but the absence of both hands is such a handicap that one so afflicted should rarely undertake work that requires so much writing. It should be emphasized, however, that no difficulty is experienced in learning to write well with the remaining hand, where one has been lost, regardless of previous habits in writing.

A simple device for enabling a man to do with a stump what he would ordinarily do with his left hand is available to all who care to use it. It enables one to hold a ruler or blotter; to steady a book or sheet in place while writing is being done; and to perform all the usual functions of the left hand. When the right hand is gone the left is trained to do what the right has done before, and the right arm stump becomes the supporting or auxiliary arm.

Evening School or Part-time Instruction

Those who must get to earning at the earliest possible moment may be placed at the completion of the fundamental part of the course, continuing their study in evening school or in other types of extension classes where such are available. Or it may be possible in some localities to secure for such men half-day employment which will leave half of the day free for school work.

PLAN No. 1084. GENERAL CLERICAL WORK

Expert filing and indexing positions offer an opportunity for those whose handicap is of such a character that it is desirable for them to secure employment that will not require contact with the public.

Qualifications and Training

The qualifications for this kind of work are accuracy, carefulness, and system in doing things. Training in the various indexing and filing systems in use is essential. Text material has been prepared by the manufacturers of filing cabinets, and courses of study, including practice, are offered by many schools in different parts of the country.

Promotion

Such positions rarely lead to promotion such as will appeal to the ambitious man whose handicap is of such a character as to warrant the selection of different and more promising occupation from the viewpoint of salary or independence.

Length of Course

Short intensive courses of from six to ten weeks will enable a man to qualify for this kind of office work.

Calculating Machine Operating

For a long time adding and listing machines have been in use in banks and large business offices. More recently calculating machines which are capable of performing mathematical work beyond the plain addition of the ordinary adding and listing type machine have been placed in business offices. The volume of figure work of this kind is particularly

heavy in billing, cost, and pay roll departments in many lines of manufacture. Even small manufacturers regularly employ help for the figure work exclusively. Owing to the greater accuracy and speed made possible by the use of the calculating machine, such work is no longer handled by paper and pencil methods.

Opportunities and Salaries

Opportunities for young men in this line of work exist in great number in all large cities, and there are many chances for positions of this kind even in the smaller manufacturing towns. The salaries for such positions range from $16 to $25 per week according to the degree of responsibility involved. There is an opportunity for advancement for young men of fair educational qualifications who possess a determination to learn the work which is just ahead and many young men aspire to positions as head of billing, pay roll, or cost departments, where the responsibility is considerable and the salary proportionate. Many such positions exist where a salary of $35 to $40 per week can be earned. Many large concerns have a practice of promoting men who show special aptitude for mathematical work in connection with the calculating machines to departments other than those mentioned.

Qualifications

The necessary qualifications are simple for the clerk who is to handle figure work with a calculating machine. He should have a fair mental equipment with at least a common school education. A high school or business school course will be an advantage. He should also possess a natural liking for arithmetic. The full use of one hand, preferably the

right, is essential to success in operating such a machine.

Training Required and Length of Course

To operate any key-driven type of machine speedily and accurately one must devote considerable time to intelligent practice. The process is not unlike that of learning to operate the typewriter. In the operation of this type of machine both hands will be required for the manipulation of the 81 keys. An intensive course of from 10 to 12 weeks is required to develop the necessary manual skill and master the special rules for performing the various mathematical calculations.

On the crank-operated calculating machine, all work is direct, i. e., all operations are handled exactly as they are handled with paper and pencil so far as rules are concerned. Anyone who can handle a pencil can readily operate this type of calculating machine. Speed and accuracy on this type of machine are largely independent of manual skill on the part of the operator. One who possesses a good common school education and some aptitude for arithmetic will need only two or three weeks of practice in order to handle successfully all figure work in the average office. Such machines have an unlimited range in practical work, handling such work as estimating, engineering problems, and statistics.

Other Office Machines

Much important printing and duplicating are done on privately-owned machines, and skillful operators are always in demand for this work. Such an occupation may appeal to the man whose handicap makes him shrink from continual contact with the

public, and who has his hands and fairly good general health.

Salaries are not large, usually from $10 to $15 a week and there is no natural line of promotion leading to more responsible positions. However, skill in this work, combined with a little capital, may enable a man to establish an independent business of his own by purchasing the necessary machines and advertising to do work for the general public.

Short unit courses of from 6 to 10 weeks will suffice to acquire the requisite manipulative skill for this work.

Where there are no schools giving instruction for this occupation arrangements can be made for securing training as an apprentice in the factory of the manufacturers, or in the offices of firms equipped to do this work for themselves, the training being under the direction of the Federal Board for Vocational Education.

Employment opportunities will be found only in the larger cities. However, an independent business may be established even in comparatively small towns.

The above statements regarding duplicating machine work apply to the operation of the addressograph and similar office devices, such as the Hollerith machine card puncher, the photostat, and the tabulating machine.

PLAN No. 1085. STENOGRAPHY

No less important than bookkeeping is stenography with its exceptional record for serving as a medium through which men may advance to high grade executive positions. Stenographic work requires somewhat more physical activity than does bookkeeping, but a skillful male stenographer,

though somewhat physically disabled may count on employment owing to a constant demand that has never been fully met. In no other occupation is one thrown into such constant and close contact with the business executive to whose advantage it is to promote an employee who has shown capacity for more important and profitable work. As a stepping stone to big things a stenographic position has no rival in the list of business occupations.

Many prominent men might be named who owe their success to some extent to their ability to write shorthand. The list includes men high in official positions, and prominent railroad executives who have reached their high positions, through stenographic work. Their success gives conclusive evidence of the importance of this kind of training. In other lines, also as for example, in iron and steel, insurance, powder, electricity, and in fact right down the line of big business in America bright young men have, because they were shorthand writers, had the chance to go to school to the best teachers of the business in the world, i. e., the executive heads of their respective concerns. And instead of having to pay handsomely for their instruction, they received good salaries while they were learning and preparing to step up higher.

Qualifications and Training Required

Taking character for granted, the necessary qualifications for amanuensis and secretarial work are:

Good general health, eyesight, and hearing. Ambition, enthusiasm, self-reliance, and determination. A mind of at least average activity and alertness, improved by a thorough high school education or its equivalent.

Training in English to the extent of becoming proficient in spelling and punctuation, and acquiring a good working vocabulary.

Ability to speak and write with a fair degree of fluency.

A knowledge of the more common business papers, forms, and customs.

Accuracy and reasonable facility in the use of figures; familiarity with the simpler methods of bookkeeping; and ability to write a presentable hand.

For the broader field of professional shorthand reporting, the requirements are more exacting.

The time required to master shorthand for amanuensis or secretarial work is from seven to twelve months; for professional reporting, from one to two years, during a considerable part of which time the learner is usually able to earn a comfortable salary while pursuing his course in advance shorthand.

Where Training May Be Secured

A number of good private business schools, located so as to be convenient for those taking courses, are prepared to give any training required under arrangements made by the Federal Board for Vocational Education.

Salary Possibilities

The salaries paid to amanuenses and private secretaries range from $1,200 to $5,000 a year. Shorthand reporters, in law courts and elsewhere, earn from $2,000 to $10,000 a year.

Handicaps

The possession of both hands is essential to success

in this work. Artificial appliances can scarcely take the place of the fingers in such rapid writing with both pen and machine. Good eyesight and hearing also are absolutely essential to success in this calling.

PLAN No. 1086. RETAIL SELLING

Large department stores and the chain stores offer opportunities for profitable employment at better salaries than were commonly paid a few years ago in the retail trade, and training for real salesmanship in this field is now available.

Men whose disabilities indicate as suitable for them physically more or less inactive types of employment, and who are not so injured as to make intimate contact with the public undesirable, may find in expert salesmanship opportunities worthy of their serious consideration. Positions as department heads or buyers are open to men who meet with conspicuous success as salesmen.

Why Training Is Necessary

The man behind the counter is no longer looked upon as clerk whose sole duty it is to hand out that which is asked for. He is classed as a salesman who has it within his power to build up the business of his department by winning and holding good customers. Knowledge of the well-defined principles of salesmanship and of his wares is quite as important to the "inside," or store salesman, as it is to the man "on the road." It is only by the right kind of training that such knowledge can be acquired. For the disabled soldier to learn "by experience" would require too much time.

Where Training Can Be Secured

Training for this occupation can be obtained through part-time extension day or evening courses in many cities. Then, too, many large stores maintain educational departments where training on an apprenticeship basis can be arranged for by the Federal Board for Vocational Education. Men preparing for this work have the advantage of being able to earn wages while they are taking training.

Promotion and Salaries

Success in this vocation will surely mean promotion. The usual promotion stream for men who have received good training runs from stock keeper, through junior salesman, salesman, assistant buyer, to buyer. Salaries range from $12 a week for beginners up to several thousand a year for department heads. It is also possible for men who have the necessary capital to look forward to establishment of a retail business of their own, if they prefer to be independent of an employer. Training for success in developing a retail business should be even broader and more thorough than that required for salesmanship in a store operated by others.

Length of Course

A short intensive course of three or four months will serve to place a man on an earning basis in some good modern retail establishment, and a further period of six or eight months' part-time extension study will be needed to place him on a sound footing as a salesman.

Handicaps

A salesman should not be so wounded as to be

repugnant to sensitive customers. Any disfigurement which will attract the customer's attention will increase the salesman's difficulty in making a sale. The loss of a leg will not interfere with success in this work, nor will the loss of one hand if an artificial hand is used. Cheerfulness, courtesy, neatness, and tact are among the usual qualities that are required in any occupation which brings a man into close contact with the public.

PLAN No. 1087. TELEGRAPHY AND WIRELESS OPERATING

While it is true that railroads to some extent are telephoning their orders instead of telegraphing them, there is still a real demand for men who are not only trained in telegraphy, but who have some knowledge of railroad accounting and general railroad practice. Such men can hope to secure good paying positions in railroad office work. There is always a demand for telegraphers to fill commercial positions and it is quite likely that this field of work may grow in the future. It should be added also that the development of wireless service, and the enlargement of our merchant marine will open up a new field for men who are skilled wireless operators and whose knowledge of the practical art of sending and receiving messages is supplemented by a good understanding of the fundamental principles of electricity.

Training Necessary

The necessary course of training for this vocation will include theory and practice in sending and receiving telegrams and wireless messages; a complete training in spelling and business English, business writing, and business arithmetic—unless it

is apparent that the man needs no further training in these fundamentals; railroad freight office business practice, including a thorough study of bills of lading, freight classification, rating, etc.; instruction in railroad practice with reference to freight charges, storage, and demurrage, and rejected and unclaimed freight; fundamental bookkeeping, especially in connection with the keeping of cash records, and the handling of collections and remittances; and the making of monthly reports and balance sheets. Practical work will be provided at first in connection with the school course and later in offices on a part-time basis.

Length of Course

While much depends upon the individual, it is safe to assume that a period of from 9 to 12 months will be required to master telegraphy and the necessary business training that must accompany it to insure the highest degree of success. For wireless operators more advanced instruction in electricity will be required and a correspondingly longer time will be needed. Those who wish to do so may, however, complete the telegraphy portion of the course, accept a position, and continue their study of wireless in extension classes. Men who have had railroad experience, or some business training, or good courses in physics including electricity, will be able to shorten somewhat the time required for completion of the entire course.

Handicaps

No man should undertake to prepare for this vocation who has not the use of both hands, good hearing, and at least a fair degree of general good health. The other qualifications required are much

the same as those required for any type of office work.

Pen Art

Men who have special aptitude for penmanship and lettering will find a wide field for the practice of this commercial art. Sign lettering, filling in insurance policies, diplomas, and other important documents, engrossing resolutions, teaching the subject, and supervising others in this department of business education are among some of the occupational opportunities open to men who excel in this line.

Training can be obtained in special schools, and positions for those who are qualified will not be hard to find.

PART II.—PROFESSIONAL COMMERCIAL SERVICE

The occupations described in Part I are the more elementary commercial employments for which excellent training is provided by both public and private commercial schools. This training lays a foundation for the more advanced business education which will be discussed in Part II. It is hoped that men who possess the necessary general education and physical health, supplemented by elementary business education or business experience, will consider these more advanced courses as they lead on surely to successful business careers.

Men who need the foundation courses should take them, and if necessary secure positions suited to their abilities at once. Such men should, however, immediately plan for an extensive course in one of the higher forms of commercial education.

Promotion may result from successful office work without supplementary training, but it will surely follow the completion of such advanced business courses as are outlined herein. None should be satisfied until the last educational resource that will help in his progress upward is exhausted.

PLAN No. 1088. ACCOUNTING

Accountancy has been raised to a professional basis during the past few years. Business has grown to enormous proportions and expert accountants are required as heads of the bookkeeping departments of big business. Then, too, public accountants are necessary for the public audit work required by law, the periodical inspection of books by a disinterested expert, the organization and reorganization of inadequate bookkeeping systems, and the preparation of financial reports desired for special purposes.

Who Should Be Interested

Men who have a good educational background, a sound knowledge of double entry bookkeeping, some aptitude for organization work, proven mathematical ability, and preferably some office or other business experience should have no difficulty in rising to a high place in the profession of accountancy, assuming of course the possession of other well-defined qualifications for success.

Promotion and Opportunity

A man trained in accountancy will find many avenues of promotion open to him. He may become head accountant for a large concern; auditor for several branch organizations; or cost accountant in

the production end of big business. He may establish a managerial connection with some large business organization, or become a consulting accountant with a business of his own. As a matter of fact, practically no executive position is beyond the reach of a trained accountant. Many such men develop into efficiency engineers, and devote their time to systematizing and reorganization work.

Salaries

It is useless to state salary limits in terms of dollars and cents for such a profession as accountancy. The limits are wholly dependent on individual initiative and ability. The salary is commensurate with the importance of the work and no man can ask more.

Employment Opportunity

As yet there is no crowding in this profession, and men will find opportunities for establishing themselves in this field in any industrial community.

Necessary Training

A thorough study of the fundamentals of bookkeeping and business practice must precede the study of accounting. Theory of accounting, accounting practice, auditing, accounting systems, cost accounting, practical economics, business law, corporation finance, business organization and management, all enter into the training required for proficiency in the accounting field.

Experience Required and Where to Get It

The training briefly outlined in the preceding paragraph must go hand in hand with experience in practical work. It is highly desirable that men who

elect this course take it in one of the large industrial centers where part-time employment can be secured in a large business office at first and later with a firm of recognized practicing accountants. In many such centers courses are offered by the local colleges with this need definitely in mind. Classes usually meet between 5 and 10 p. m. daily, thus leaving the business day for practical work. Those who aspire to the certified public accountant degree given in most States, can thus gain the required experience while preparing in college for the stiff examinations set by the State examining board.

Length of Course

Two or three years must be devoted to study and practice before a man can lay any claim to recognition in this field, and the full four-year period is none too long for those who would achieve the highest places in this profession. It must be remembered, however, that during this entire time good incomes may be earned—often better than a man has been able to earn before in ordinary office work. Unit courses of varying lengths are also available to those who merely want special training for special work such as auditing, or cost accounting. The length of time for these courses will depend upon previous general education, special training, and experience, but should rarely require more than from eight to ten months.

PLAN No. 1089. SALESMANSHIP

With the inevitable expansion in business immediately following the close of the great war there will be an unusual demand for salesmen. Already requests are being received for salesmanship training in connection with the Federal Board for

Vocational Education's program of re-education for disabled soldiers. The trained salesman will find a ready market for his services.

Who Should Be Interested

Men who have had a good general education, and who have a liking for the sales end of business should consider this calling seriously. Those who object to being away from home much of the time will not find salesmanship agreeable, as the great majority of selling positions require much traveling.

Training Necessary

The successful salesman must be able to talk fluently and convincingly. He must possess a good knowledge of English and a good working vocabulary; an understanding of human nature; a thorough knowledge of his wares; a familiarity with business customs; and appreciation of the value of business ethics; a fund of information regarding general business conditions; and many other qualifications that, like those mentioned above, can be acquired through courses of training. A familiarity with the principles of accounting and other business subjects also will prove helpful to a man who wishes to make the best possible preparation for the business of selling goods.

The formal instruction in salesmanship will not proceed very far before provision for contact with actual selling is made. Fundamentals can be covered in short intensive courses to be followed by more advance instruction on a part-time basis while the man is learning the practical side of his work in an actual sales department. When the foundations have been laid and the man has indicated the line of business he prefers to be associated with, the Federal

Board for Vocational Education will through its placement department, secure for him a position where the practical side of the art of selling goods can be acquired.

Salaries

The income possibilities of salesmanship are excellent, but incapable of definite statement, since so much depends on the salesman. In no other branch of business does a man have greater opportunity to demonstrate his worth. The salesman is the one employee who is quite sure to be paid all he can earn. His sales readily indicate his value to the firm.

Opportunities Widely Scattered

In this profession men may choose their own location to a large extent. Salesmen are in demand throughout the whole country and men who have climatic preferences will be able to indulge them without jeopardizing their future.

Promotion

Promotion to sales manager is within the range of possibilities for live men who make a conspicuous success of their work. The man who is ambitious will have ample scope for growth in this field.

Handicaps

Men who take up this profession should possess good general health, the ability to get about with a fair degree of facility, good hearing, and unimpeded speech. Personality counts for much in salesmanship, and since personal appearance is one factor in personality it should be suggested that facial

wounds, which are soon forgotten by friends, often distract attention on first acquaintance and put a man at a disadvantage before his customer. The loss of a leg or an arm will not prove a barrier to this occupation so long as a man's general activity is not interfered with seriously.

PLAN No. 1090. ADVERTISING

The passing from war to peace conditions will increase the demand for all kinds of advertising. Business has largely marked time during the war because of lack of goods to sell and lack of men and facilities.

Now, factories that have been on war work will have to keep their plants busy, win back trade lost through inability to supply old customers, and create new fields for their enlarged producing capacity. Retailers will have to keep pace with the new demands of readjusted commerce. All this means more advertising, and more men to plan and execute it.

Advertising to-day is as much a part of every business as clerking, bookkeeping, or stenography, for no manufacturer or merchant can do business without some form or many forms of it.

What Advertising Is

Consider the sign over the door, the labels on packages, the leaflet, circular, or catalogue describing goods, directions for using, sign cards, window posters, mailing cards, and the like; then, the business letter answering inquiries, or soliciting orders, the follow-up system that turns the inquiry into an order, the trade-aid work of many kinds that helps the manufacturer make good distributors of his dealers-and you have a bird's-eye view of some forms

of advertising work that are almost universally used, yet scarcely thought of as "advertising." Add to these the demand for sales-producing "copy" for newspaper, magazine, and trade-paper advertising; the planning and preparation of illustrations and typesetting necessary to put the advertising into effect; and the vast quantity of such "copy" that appears daily, weekly, and monthly in various advertising mediums—and it is at once apparent that an army of workers is needed to carry on this work.

Permanency of Employment

The permanence of such work is attested by the fact that there has been an increasing use of all forms of advertising, keeping steady pace with America's business growth. Even without taking into consideration outdoor advertising—billboards, bulletins and painted signs, electrical advertising display, street-car advertising, propaganda campaigns, civic and organization advertising, each of which offers fields of great extent—the employment of trained advertising men is as yet only in its infancy.

PLAN No. 1091. OPPORTUNITIES IN THIS PROFESSION

The personnel of advertising staffs includes men officially designated as follows:

Advertising director: The man who plans and directs.

Space buyer: The man who knows advertising media and the value of space, and the one who places advertising contracts.

Copy writer: The man who produces copy for advertisements, catalogues, printed matter, letters, follow-up work, etc.

Layout man: The man who assists the copy writer by preparing typographical and art layouts.

Proofreader: The man who reads proof on advertisements and printed matter.

Copy helper: The man who has charge of engravings, drawings, and printed stock, and who supervises the making, shipping, return, and safe-keeping of the same.

Buyer of printing: The man who knows papers, printing processes, their relative values, and also their sources. He also places the printing orders.

Art work buyer: The one who knows advertising art work; where to get it and its value; and who also places orders for illustrations and engravings.

Commercial artist: The man who produces sketches and finished drawings in pen and brush work, in tone and color, and who retouches photographs.

Photographer: The man with special training in posing, lighting, and photographing industrial subjects to secure pictures illustrating features of the product, texture, and construction, who works often with living models.

Correspondent: The man who produces orders from inquiries received through advertising, or who solicits orders through the mails.

Advertising promoter: The man who sells the advertising done by a house to its distributors, and who teaches them how to take advantage of the demand created, and how to use the trade-aid matter furnished by the house to its dealers.

Advertising investigator: The man employed to discover the needs, buying habits, buying power, consumption of competing lines, price limits, etc., of groups of consumers, dealers, or jobbers by actual contact with the individual.

Advertising solicitors: Men employed by publishers

to solicit advertising for their publications; by manufacturers of calendars, advertising novelties, etc., to sell their products; and by advertising agencies to sell their service to the advertiser. Every newspaper, magazine, and trade paper must have one or more, perhaps many, solicitors, as must also the advertising agency and the maker of advertising novelties, the bill poster, the bulletin painter, the car-sign proprietor.

While this general list is in no way complete, it serves to show the vast field open to men in advertising and may serve as a guide in selecting the line of work to be undertaken.

Kind of Men Needed and Qualifications Required

Any wide-awake, intelligent, ambitious, optimistic man can become a useful advertising man in some one of its many branches. Physical disabilities will prove no handicap, providing general health has not been too seriously impaired. A knowledge of practical salesmanship helps, for all advertising is only a form of selling. Men of exceptional education and executive ability find a field as managers and production men. Good merchandise salesmen make good advertising solicitors. Commercial artists can be made into advertising artists. Commercial photographers and amateurs develop into photographers of advertising subjects. Most of the other positions can be filled without much previous training by men of ordinary general ability. The humblest advertising position can be made a stepping-stone to something higher.

The kind of men that make good soldiers are needed in this profession—sturdy, honest, determined, versatile men of good common sense,

adaptability, and capacity for work. Such men will soon acquire the knowledge of detail necessary for advertising work.

Financial Rewards

No more inviting field of labor awaits the returned soldier than that of advertising, and there are few occupations in which the pecuniary rewards for high-grade service are more attractive. A man's natural ability and training for this work are the only measure of his earning capacity.

Length of Course

Men who elect this vocation will be given a short intensive course of from four to six months in a day school, and will then be placed with a good advertising firm for practical experience. They will, at the same time, be enrolled in unit extension courses for further training on a part-time basis. The time required for this advanced part-time training will vary according to the ambition of the man himself, the higher he wishes to rise in the profession, the longer will be the period of training, but correspondingly higher will be the reward. Then, too, he will be earning as he learns, and qualifying for a promotion at the same time.

PLAN No. 1092. FOREIGN TRADE

For many years past there has been an active demand for men who would be willing to represent American business in the foreign field, and this demand has never been fully met. Just now at the close of the great war there will be an expansion in the foreign trade of the United States, and trained men for this field will be needed as never before.

Men who have seen overseas duty may be interested in preparing for overseas commercial service. The living and working conditions are pleasant in almost every commercial center of the world. Of course, hardships are encountered in certain backward countries and in some tropical commercial centers, but in the main a position as representative of an American house in a foreign commercial center is an enviable one. In those foreign commercial centers which have come to be of importance, the American or European colony is a community in itself and frequently one whose social life is delightful. Social position and prestige are so important for commercial representatives in almost all foreign countries, that the term “Ambassador of commerce” has been applied to those who qualify and successfully represent American business houses in overseas commerce.

The possession of a merchant marine adequate to the needs of the time will lend a great impetus to our business activities in foreign countries. More men will also be needed for the large number of tasks connected with the handling of our shipping. The head offices of the shipping lines are at home, and these offices have branches throughout the world. Many employees are needed for the various duties in these offices. Positions in the shore end of shipping include important document work, and other work of a more routine character; salesmen who can sell transportation to foreign trade concerns; ship brokers who devote their time to the chartering of ships; insurance brokers who handle the insurance end of foreign shipping; wharve superintendents and master stevedores; warehouse managers; traffic managers, and port and harbor experts.

Training Required

Plans for giving training to men who desire positions in connection with the shore end of ocean transportation with foreign trade houses are well under way, and adequate vocational training of this type is now available for the first time in this country.

No longer is it necessary for men interested in foreign-trade service to contemplate a four-year collegiate course of study before they can form connections with firms sending their wares to foreign markets. The Federal Board for Vocational Education in co-operation with the United States Shipping Board and in the United States Bureau of Foreign and Domestic Commerce is actively promoting throughout the United States courses in foreign trade and shipping. These courses are being offered in evening, part-time, full-time, university extension, and correspondence schools, and are open to graduate engineers, lawyers, graduates of collegiate commercial courses, men who have had general college training, men of technical or business training in any branch of commerce and industry, graduates of secondary schools and, in fact, to all intelligent men with a background of business experience combined with a serious interest in international commerce or shipping activities.

PLAN No. 1093. EMPLOYMENT OPPORTUNITIES

Recent conferences with the Export Managers' Club show that all enterprising export managers are in need of trained men, or men capable of taking such training as will be necessary to the successful carrying of their important work.

There are two general divisions in foreign trade occupations. The first includes active service in the

foreign field, and the second service in the home country. In the foreign field clerks, assistants, salesmen, and managers are required. Some concerns send traveling salesmen into foreign countries to cover the field and report back to the home office, while others send men abroad with instructions to take up their residence there and establish an office for the permanent conduct of their employer's business. The establishment of such branch offices calls for the employment of the usual types of office help. Banks and other financial agencies also are created in foreign countries for the benefit of American exporters and importers.

Who Should Be Interested

Men of the American expeditionary forces who have seen something of the world, and who have gained an interest in and a taste for things outside of the United States, will find in foreign trade service great opportunities. This is particularly true of those who have learned a foreign language, and who are so situated with reference to family ties that they can easily take up an occupation in a foreign country.

The list of positions that will be opened in this field is so extensive that a man may find in it an opportunity to elect just the kind of work he is best fitted to do.

Men who prefer foreign trade service in home offices will find excellent opportunities as soon as they have completed the necessary preparation for such service. Well-defined, intensive co-operative courses of study have been worked out and are being offered in the large foreign trade centers for men who desire to enter this service. Home office positions include those requiring clerical work in connection with the preparation of commercial

documents, positions that have to do with financial affairs and foreign exchange, adjustment work, foreign correspondence, foreign advertising, transportation, credits, and collections. Superintendents for packing and loading departments also are required. Men who have had experience in the Quartermaster's Department of the Army during the war, and who have learned something about scientific handling of merchandise, will find in the foreign trade field opportunities to cash in on their special experiences.

What Training Is Necessary

A thorough study of the general technique of the home office in connection with foreign trade and shipping is considered a necessary foundation in any scheme of foreign trade education. A part-time plan, in accordance with which men may pursue their studies while securing practical experience with foreign trade houses has been worked out, and it is now possible for men to get training under a co-operative basis scheme of instruction and work. Courses offered will be given intensively for short periods and on a unit basis. They will vary in length from 15 to 30 weeks. The same provision is being made for the study of languages and the geography of various countries that are of interest in connection with foreign trade education. The United States Shipping Board is taking steps to establish permanent nautical training schools, as it is expected that more than 10,000 officers will be needed to man the United States merchant marine. This means that men who desire service in the actual transportation end of the business will find an opportunity to secure training and a very ready market for their service upon the completion of their courses.

Salaries

Since special training is required for most of the positions referred to in this connection salaries are proportionately high. Clerks and other office men earn from $1,600 to $2,400 a year. Those who qualify as junior clerks and senior clerks may hope to rise to assistant managers of departments and general export managers. Advancement should be rapid in view of the present shortage of men and the expected expansion of business. In large export departments there are export managers who receive from $5,000 to $10,000 a year. Even the latter amount is by no means the limit for men of unusual executive ability.

The positions referred to in connection with the actual operation of the merchant marine pay from $120 to $275 per month with subsistence. It is possible that these amounts may be somewhat reduced after the war demand for such service ceases, and yet it is certain that the financial returns for this kind of work will be above those for similar service on shore.

PLAN No. 1094. SECRETARIAL WORK

Executives in responsible positions are finding it necessary more and more to rely upon efficient secretarial help. Such an executive must generally have some assistant who is thoroughly familiar with every detail of his activities, and able to assume responsibility for innumerable details connected with the day's work. The comparatively small number of available secretarial workers and the hazy conception that has heretofore existed regarding the real distinction between a stenographer and a secretary have forced many executives to be satisfied with stenographic help in the positions where

secretarial help is essential. Just now much attention is being given to this vocation by colleges and schools, and there are many opportunities for securing the kind of training needed for secretarial service.

Nature of the Work

There is a wide gap between secretarial and stenographic duties. Skill in writing shorthand and in typewriting is now recognized as desirable for the secretary, but the possession of this skill does not insure secretarial efficiency. Since no training has been available for this vocation in the past secretarial workers have been recruited from the stenographic staff, and it is quite likely that a period of apprenticeship as a stenographer will continue to be a very desirable part of one's training for the higher duties of a secretarial position.

The trained secretary relieves the executive of all detail by keeping him informed as to important happenings in the business world that may be of particular interest; by making notes of appointments and calling attention to them at the proper time; by gathering data for the preparation of papers and speeches; by standing between him and the public, when the demands upon his time make it necessary to deny requests for interviews without in any way offending those who are refused; by attending conferences, and making notes on important points; by arranging for transportation and hotel accommodations in connection with traveling, and, in every way, by keeping the executive's time free for the more important managerial responsibilities devolving upon him.

Qualifications Required

Men who possess a good general education, sufficient maturity, tact, judgment, business sense, and knowledge of people may hope to succeed in this vocation providing they have the right kind of training and preliminary experience. Integrity, alertness, ambition to advance, initiative, courtesy, and loyalty are prime essential characteristics. Soldiers who have been attached to headquarters' division in the capacity of aides and secretarial workers will find in this field opportunities to make their war experience count for the most.

Promotion

No occupation offers larger opportunity for advancement. A secretary is in the closest possible contact with the executive who is in a position to recognize ability by promotion and to whose advantage it is that such promotion shall be granted. The secretary has an exceptional opportunity to learn all the details of the managerial side of the business, and when executive positions become vacant his superior is quite likely to regard him favorably for advancement.

Training Required

As a foundation for secretarial work, a man should possess a working knowledge of shorthand and typewriting, and if these subjects have not already been mastered, they will form the basic part of the secretarial course. In addition, instruction will be needed in business English and correspondence, fundamental principles of accounts and business practice, commercial law, business ethics, and secretarial technique. Many colleges are prepared to give instruction suited to the requirements of secretarial work.

Length of Course

For those who already have a knowledge of shorthand and typewriting, or who have had a course in bookkeeping and related subjects, or who have had valuable office experience, an intensive course of from 8 to 12 months may be sufficient to complete a secretarial course. For those who must acquire this foundation work a longer period will be needed. It should be said, however, that those who know shorthand and typewriting or bookkeeping can usually begin to earn wages in an office position while continuing their study in part-time extension classes.

Salary Possibilities

Secretarial workers may hope to earn salaries from $1,500 up. There is almost no limit except the man's ability and ambition to rise.

Opportunities

Opportunities in this field are found throughout the country. Men who are interested in social, philanthropical, religious, or political activities may find secretarial openings that will enable them to be intimately associated with the activity of their choice.

Handicaps

A secretarial worker should be able to get about with a fair degree of facility; he should have a personal appearance that is not repugnant to the public with which he is constantly in contact. He should possess physical endurance sufficient to enable him to meet the rather severe strain that secretarial work makes upon a man; and he should

possess good hearing and eyesight. An artificial limb would not be a serious handicap providing it did not interfere with getting about too seriously. It is also quite likely that one hand would suffice for the accomplishment of the ordinary tasks of such a position. The main requirement is that a man shall be keen and alert, and that he shall be able to go about his work with vigor and cheerfulness.

PLAN No. 1095. LIFE INSURANCE SALESMANSHIP

There are more than 200 life insurance companies in the United States having their head offices scattered throughout the chief cities in different parts of the country, with branch offices in each of the larger cities in each State, and resident agents located in most towns of importance. In the smaller towns the life agency is often combined with the fire and accident insurance.

Life companies are divided into the “Ordinary” and the “Industrial” companies, and, combined, employ about 125,000 field agents and about 75,000 persons of other capacities such as clerical, accounting, building and general employees, exclusive of casual employees such as doctors, lawyers, etc.

Life insurance has been made nearly mandatory by modern business practice. It has been popularized by adoption in the Army and Navy, as a scientific method of providing for personal dependents. It is in harmony with the trend of modern social, civic, industrial, and financial-betterment movements. It is progressive within itself—constantly devising new services to meet the requirements of the public and thus opening new avenues to its salesmen.

Life insurance salesmanship requires at the outset but a minimum of training, equipment, and capital,

and these are being supplied more and more commonly by sales organizations to their members who qualify for the profession.

Opportunity for Advancement

The work affords opportunities for personal advancement by extension of acquaintance and by choice of associates and customers. It is consistent with the attainment of social, civic, and business prominence and financial independence.

Opportunities for promotion to positions as agency managers, superintendents, and field supervisors are constantly presented to those whose ability and experience justify such advancement.

Whole Time not Necessary

Age, experience, and growing clientele become assets of increasing value. There is no “dead line” and a permanent clientele of expanding value can be built up from year to year.

While, of course, the agent physically able to devote full time to the work is likely to succeed best, it is nevertheless true that one physically handicapped may succeed measurably although able to work only part of time daily or weekly. Regular office hours and days are advisable but not necessary.

Educational Requirements

Candidates should have at least a grammar school education, and more advanced professional or technical training will be a valuable asset although not essential for success.

Experience

Previous experience in either life insurance or general salesmanship is not necessary, but will be of value, and those who have had to do with insurance work in the Army will find this experience helpful.

How Instruction is Given

Many organizations are equipped, and others will be, to conduct preliminary central office training courses for men intending to locate at distant points. A list will be furnished later of localities, companies, or agency organizations where definite courses of training are now being given.

The novice will be given theoretical and practical instruction. Field experience will be given under the guidance of qualified field supervisors.

Handicaps

In the following classification certain types of diseases and injuries are grouped according as they are regarded as being wholly, partially, or not in any degree disqualifying for the profession of life insurance salesmanship.

1. *Prohibitive.*—Disqualifying for successful field salesmanship.

(a) Diseases:

Advanced tuberculosis.

Loss of voice and similar bronchial affections.

Heart diseases not permitting ordinary activity.

Contagious or infectious diseases, chronic or acute.

Epilepsy.

Nervous affections preventing mental concentration or seriously affecting locomotion or speech.

Nervous affections causing involuntary grotesque muscular movement of face, hands or body.

Insanity.

Complete loss of sight or hearing.

(b) *Wounds:*

Unsightly and repelling facial or head wounds.

Loss of both arms.

Loss of both legs and one arm.

Preventing distinct or audible speech.

Any wound rendering soldier an object of extreme pity.

2. *Partially handicapping.*—Each case requiring individual judgment; many such men might be able to devote part time if not all to salesmanship.

(a) Diseases:

Mild tuberculosis of the lungs or throat.

Recurrent rheumatism of severe type.

Heart diseases interfering with usual activity.

Nervous affections causing involuntary marked movements of the face.

Serious varicose veins forbidding reasonable activities.

Indistinct hearing or sight.

(b) Wounds:

Loss of both legs but not arms.

Injury to arms or limbs compelling extremely awkward attitudes to be assumed.

Entire loss of one hand and noticeably unsightly dismemberment of the other.

Unsightly face or head wounds that can not be covered by hair, beard, or glasses.

3. *Not handicapping at all—*

(a) Diseases:

Chronic diseases not preventing ordinary activity and not easily noticed by others. This includes chest and head diseases, rheumatism, deafness in one ear, Bright's disease, shell-shock, etc.

Temporary diseases from which recovery may be slow but certain.

(b) *Wounds:*

Loss of one leg if artificial limb can be worn.

Loss of one arm or hand with or without artificial arm.

Wounds to arms or legs not requiring amputation.

Moderate disfigurements that can be covered by hair, beard, garments, or glasses of usual type.

Scars on face or hands that are not repellent.

Loss of teeth—if plate can be worn.

Hernia—if truss can be worn.

PLAN No. 1096. NUMBER OF POSITIONS OPEN

The companies selling ordinary life insurance can absorb rapidly 10,000 candidates for sales positions, reasonably evenly distributed between the two classes of partly handicapped and not handicapped. If the latter class predominates, even a larger number could be used.

These men can be assigned profitable and suitable new business locations either of their own or of the insurance companies' selection, as they prefer, or they can be used at their former place of residence no matter in what sections of the country this may be.

The industrial companies, about 25 in number, can absorb about 4,000 candidates presenting disabilities of a nature that would not preclude the physical activity required, since the nature of the business demands that the routes assigned be fully covered

each week.

Financial Returns for Life Insurance Salesman

The average earnings of all life insurance men, whether devoting all or but part of their time to it, and including the unsuccessful and the beginners but a few months in the production field, on the sales of 1917 was $1,000 per capita. The average of those giving it their entire time is nearer $2,000 per agent. An additional yearly income for a number of years is paid on first-year sales through the annual renewal commissions on such business as renews, which in 1917 yielded an additional $1,000 per agent. By reason of renewals accruing in future years, the annual income of a life insurance man maintaining a uniform production will increase steadily yearly.

While the rate of compensation is based upon the commission plan under which the income closely follows actual earnings and is in ratio to the salesman's efficiency and the intelligent effort he puts forth, the methods of compensation are varied according to individual preference. Such methods include straight commission, commission plus salary, straight salary, drawing accounts against contingent commissions and guarantees, and combinations of these methods as may be arranged.

The items of interest are that incomes are without limit as to maximum and that earnings can begin even during the period of preparation and study. The commission plan is thus not a difficulty, since the candidate will be assisted by his Government allowance until he is prepared to undertake work under a compensation plan which guarantees pay exactly according to earnings.

To those qualifying for executive positions

correspondingly larger salaries and opportunities are open, and men having the capacity to direct the activities of others are in constant demand. For this work Army and Navy men, as a class, have had fundamental training.

Earnings op Industrial Insurance Men

Salaries varying from $10 to $25 per week are paid to the field men of industrial insurance companies, depending upon the size of the district covered. Such agents are expected to make the weekly collections assigned to them and to maintain the volume and number of such collections.

In addition to this salary, the right and opportunity is given to earn liberal commissions on new business secured, which in turn may operate to increase the compensation for collecting future premiums.

Opportunities for promotions to positions as superintendents and district managers are frequent, and the tendency is toward the retention and development of efficient employees indefinitely.

PLAN No. 1097. OFFICE MANAGEMENT

This position is one that is usually filled by promotion and one to which any man who qualifies for business by taking a complete commercial training may reasonably aspire. Men who have executive ability; knowledge of men and ability to handle them; the ability to organize the work of an office on an efficiency basis; and a good general knowledge of business are needed for office managers.

Training

Extension courses in preparation for advancement

to this grade of commercial employment are available in many places. Those who already have the necessary training for office work will be helped by definite courses of instruction to prepare for this desirable line of promotion. Others who have had neither business training nor business experience may prepare for office work first in accordance with the plan suggested earlier in this monograph, and may later qualify for office management by extension courses under the direction of the Federal Board for Vocational Education.

PLAN No. 1098. BANKING

The banking business is one in which the higher positions are usually recruited from the lower. Many younger men are employed as messengers, clerks, runners, etc., and it is comparatively easy to find promotion material already in the organization. Since these lower positions pay very small salaries and make no appeal to men, it is not likely that large numbers of men will break into the banking business through rehabilitation channels. However there are many men in our Army who have had banking experience and desire to secure training for further promotion in this business. Then, too, some of the larger financial institutions in the big cities are in the habit of taking on men for a period of training with a view to service in their foreign branches. This practice will grow as our foreign trade expands. Men who have the necessary general education and special training, supplemented by overseas service, will find in this field an opportunity that will challenge their interest.

TRAINING

Foundation work in the general business subjects such as bookkeeping, business writing, business English, correspondence, business arithmetic, and commercial law will be followed by instruction in economics, money, banking, and finance. While there are comparatively few business schools equipped to give the more advanced technical instruction required, the Federal Board for Vocational Education will aid any man who is interested in this business, not only to secure adequate training for it, but also an opportunity to enter this field under the most favorable circumstances possible.

PLAN No. 1099. COMMERCIAL TEACHING

Male teachers are in great demand for all kinds of educational work, but in no department is the need for men greater than in that which has to do with the training of young people for business. The commercial teacher must associate himself with the industrial and business activities of his community; he must mingle with business men and keep in close touch with their business methods so far as they affect commercial training. In practically every city and town in the United States having a population of 5,000 or more commercial courses are being offered in the high school. There are over 1,000 private commercial schools giving intensive training for business positions. All these schools, both public and private are in very active competition with each other for the services of capable men teachers. Not only are these schools in competition with each other for the services of men who are qualified for this kind of work, but they are also in competition with business which is constantly recognizing that

successful commercial teachers are usually well qualified for important business positions. To the men who are contemplating training for a future career this fact is of the utmost importance. The training that he takes for commercial teaching and the experience that he gains in such a position will not only lead to high-grade educational positions, but also to business openings of more than ordinary importance.

Two Departments Represented

Commercial teachers are naturally divided into two groups, those who teach shorthand typewriting, and related secretarial subjects, and those who teach bookkeeping, business arithmetic, commercial law, economics, commercial geography, and other subjects known as the business group. While it is possible to make a preparation for either of these two departments of teaching, it is more desirable for a man to qualify in both departments in order that he may be qualified for a position as department head where the supervision of teachers in both lines of work will fall upon him.

Qualifications and Training Necessary

A man who contemplates commercial teaching as a profession should possess the following qualifications: Good personal appearance, abundant energy, resourcefulness, cheerfulness, good general health, and the ability to move about easily. It is undesirable for anyone who is to be brought constantly in contact with the public to have physical disabilities that will be offensive or will seriously distract attention. In dealing with young people in educational work it is even more necessary that unsightly wounds shall not be conspicuously

apparent in those with whom such young people come in contact in their work. This does not mean that one who has lost a leg or an arm should consider himself in this class. Among the best teachers that have ever presented commercial education to boys and girls are men who find it necessary to use a crutch or a cane.

Commercial teachers should be thoroughly qualified to handle all of the commercial subjects named above. Their training should also include thorough courses in psychology, pedagogy, school management, and history of education. Such courses of training are provided in a few of the State normal schools, and in a number of the best universities. Men who contemplate this profession are urged to be satisfied with nothing less than the complete course of training in one of these institutions. This is of the utmost importance in view of the fact that for public school commercial teaching State licenses are required and the qualifications therefore, are such that graduation from an institution of high standing is the surest way to qualify for such a certificate. It should be said, however, that for private school commercial teaching there is no license requirement in most of the States. Men who have a good general education and are well qualified in the technical subjects named above, will have no difficulty in securing profitable employment in such schools. Training for such positions can be secured in much less time than is required for the full course referred to above.

Length of Course

An intensive course of one year, assuming a good foundation with which to begin, should prepare a man for a position as commercial teacher in a private

business school. The same will suffice for training a man to accept a position as commercial teacher in a high school providing he has completed a normal school or college course. For those who have only a high-school education, two years in a State normal school, or from two to four years in the commercial department of a college, will be required to complete the full training for commercial teaching.

SALARIES

The salary range for men commercial teachers may be stated as from $1,200 to $8,000, depending upon experience, general and special education, and personal qualifications.

PLAN No. 1100. PLANS AND SUCCESSES OF DISABLED MEN AND WOMEN

Chart summarizing data relating to 133 cases of disabled persons who have taken commercial courses—Tabulation of replies to questionnaires sent out to schools.[34]

[34] All salaries are on a pre-war basis.

School, case number, and disability.	Cause of disability.	Previous education.	Course ta
PIERCE BUSINESS SCHOOL, PHILADELPHIA, PA.			

1. Deaf and dumb.	Natural.	Mount Airy.	Business administ
2. Loss of left arm.	Accident while employed.	Eighth grade.	Specia. in banking, arithmet penmans English.
3. Infantile paralysis.	Disease.	Private tuition.	Business administ
4. Paralysis.	Paralyzed.	Common school.	do.
5. War wounds.	7 wounds, gas and shell shock.	Grammar school.	do.

STONE BUSINESS COLLEGE, NEW HAVEN, CONN.

6. Loss of leg.	Accident (factory worker).	Grammar school.	Banking ar business
7. Short leg.	No report.	do.	Shorthand typewrit
8. Paralysis.	Born with disability (no occupation).	do.	Business ar stenogra
BOWLING GREEN BUSINESS UNIVERSITY, BOWLING GREEN, KY.			
9. Paralysis of legs.	Illness in infancy (no occupation).	Grammar school.	Telegraphy railroad accounti
10. Paralysis of legs.	No report.	do.	Shorthand typewrit
11. Loss of leg.	Accident (student).	Graded school.	Banking, typewrit stenogra penman
12. Deformed legs and feet.	Deformed from birth.	Eighth grade.	Banking, stenogra typewrit

13. Loss of arm.	Unknown (farmer boy).	High school.	Banking ar penmans
PIERCE SCHOOL, PHILADELPHIA, PA.			
14. Hand and arm crippled.	Accident.	Grammar school.	Shorthand typewrit
15. Loss of leg.	Railroad accident.	do.	Business administ stenogra typewrit
16. Three fingers right hand.	Accident.	do.	Business administ

17. Left side paralysis.	From birth.	Parochial school, about 8th grade.	do.
18. Dislocated hip.	Accident.	No report.	do.
NORTHWESTERN BUSINESS COLLEGE, CHICAGO, ILL.			
19. Loss of both feet.	Accident.	Grammar school.	Combined business stenogra
20. Amputation of left hand.	do.	do.	Business c

21. Deaf.	Illness.	Eighth grade.	Typewritin
22. Partial paralysis.	Illness (farmer).	3 years high school.	Business.
23. Little use of lower limbs.	Infantile paralysis.	Some high school.	6 months business
RIDER-MOORE AND STEWART SCHOOL, TRENTON, N. J.			
24. Hand maimed.	While playing ball.	Grammar school.	Commercia
25. Both legs maimed.	Unknown.	do.	Shorthand.
26. Loss of leg.	do.	Partial high school.	Shorthand typewrit
27. Loss of hand.	Thrashing machine.	Grammar school.	Commercia
28. Loss of hand and part of arm.	Unknown.	do.	do.
DUFF'S COLLEGE, PITTSBURGH, PA.			
29. Right leg off near hip.	Railroad accident (clerk).	Grammar school.	Banking, stenogra and typewrit

30. Right arm off at shoulder.	Accident, millwork (millworker).	do.	Banking ar stenogra
31. Loss of left hand at wrist.	Street-car accident (pupil).	Eighth grade.	Bookkeepi
32. Right hand stiff, fingers straight.	Gunshot wound.	High school.	Bookkeepi
THE CEDAR RAPIDS BUSINESS COLLEGE, CEDAR RAPIDS, IOWA.			
33. No use of lower limbs.	Unknown.	Grammar school.	Commerci stenogra
34. Both legs off.	Unknown (farmer).	No report.	Unknown.
35. One leg off.	Mowing machine (farmer).	Only fair.	Banking ar stenogra
36. Both legs off below knees.	No report.	No report.	Business ar stenogra
BURDETT COLLEGE, BOSTON, MASS.			

37. Hip trouble.	Childhood disease.	Average.	Business a bookkee
38. Short limb, paralyzed hip.	Unknown.	About 1 year in high school.	Banking, stenogra and typewrit
39. One hand off.	Unknown.	Some high school training.	Business a bookkee
40. Twisted neck.	Injured in childhood.	High school graduate.	Secretarial
41. Loss of left arm.	Mill machinery accident.	Average.	Business a bookkee
42. Two fingers missing.	No report.	No report.	Shorthand.

43. Hand burned.	Accident.	do.	Stenograph and typewrit
44. Hip trouble.	Childhood illness.	do.	Business c and bookkee
45. Right arm off.	Machine accident.	do.	Business c
46. Lame.	No report.	do.	No report.
47. Very lame.	do.	do.	do.
48. Very deaf.	do.	do.	Business administ
49. Short leg.	Unknown.	do.	No report.
50. Lame.	do.	do.	do.

UTICA SCHOOL OF COMMERCE, UTICA, N. Y.			
51. Loss of left hand.	Accident (was a mill hand in cotton mill before accident).	Eighth grade.	Bookkeepi
WATERBURY BUSINESS COLLEGE, WATERBURY, CONN.			
52. Loss of right leg.	Railroad injury.	Grammar school.	Banking ar stenogra
53. Right arm off (student).	No report.	2 years' high school.	Bookkeepi
54. Deaf and dumb.	Unknown (student).	Equivalent to grammar school.	do.
FERRIS INSTITUTE, BIG RAPIDS, MICH.			
55. Leg off.	Accident (was a farmer prior to accident).	High school.	Banking.
MEEKER'S BUSINESS INSTITUTE, ELMIRA, N. Y.			
56. Left arm off.	Mine accident (was a mule driver in coal mine).	Eighth grade.	Banking ar stenogra

57. Hunchback.	Fall.	High school.	Banking, stenogra and typewrit
58. “Club feet”.	From birth.	High school graduate.	Shorthand typewrit
59. Left arm off; legs paralyzed.	From birth and accident.	1 year high school.	Banking, stenogra and typewrit
60. Left hand off.	Unknown.	High school.	Bookkeepi
SPENCERIAN COMMERCIAL SCHOOL, LOUISVILLE, KY.			
61. Leg off.	Accident (was newsboy).	Eighth grade.	Business a shorthar
62. Right arm.	“Do not remember;” was a railroad man.	Country school.	Bookkeepi
63. Right arm.	Machine accident (factory girl prior to accident).	Eighth grade.	Business a shorthar

MORSE BUSINESS COLLEGE, HARTFORD, CONN.			
64. Leg off.	Accident.	Grammar school.	Shorthand typewrit
65. Left arm off.	Accident (was a tool maker prior to accident).	do.	Bookkeepi
66. Deformed.	Accident.	do.	Shorthand.
67. Deaf.	Illness (was engraver and newsdealer prior to illness).	do.	Bookkeepi
68. Helpless from waist down.	Illness (was farmer prior to illness).	do.	Banking ar typewrit
WORCESTER BUSINESS INSTITUTE, WORCESTER, MASS.			

69. Right arm off.	Caught in machine (student).	High school.	Shorthand bookkee
70. Loss of one leg.	Accident (worker in a grocery store).	Ninth grade.	Bookkeepi
GOLDEY COLLEGE, WILMINGTON, DEL.			
71. Right arm amputated.	Gunshot wound.	High school.	Shorthand typewrit
THE DRAUGHON BUSINESS COLLEGE, KNOXVILLE, TENN.			
72. Index finger off left hand.	Accident (worked in bottling works).	College.	Banking, shorthar typewrit
73. Right arm off.	Blood poisoning (school boy).	High school.	Banking ar stenogra
74. Left arm off.	Accident (farm hand).	Common school.	Bookkeepi

75. Left arm off.	Gun accident (farm hand).	do.	do.
76. Middle finger, right hand off.	Shotgun accident (farmhand).	High school. 2 years in college.	Banking, shorthar typewrit
BANK'S BUSINESS COLLEGE, PHILADELPHIA, PA.			
77. Loss of right hand.	Caught in circular saw (mechanic).	Grammar school.	Commercia
78. Loss of right arm below elbow.	Born without arm.	3 years high school, 3 summers normal school.	Combined.

79. Loss of left arm.	Caught in machinery (mechanic).	Grammar school.	Commerci
80. Withered arm (left).	Birth (student).	do.	do.
81. Loss of both legs.	Railroad accident (railroader).	do.	Shorthand, typewrit English a spelling.
GREGG SCHOOL, CHICAGO, ILL.			
82. Right hand off.	Accident (student).	High school.	Shorthand typewrit
83. Sprained wrist.	Fall on ice (student).	do.	do.
GEM CITY BUSINESS COLLEGE, QUINCY, ILL.			
84. Third and fourth fingers off right hand.	Accident.	High school.	Shorthand typewrit

85. Left arm off.	Circular saw.	Common school.	Business c
86. Left arm off.	Unknown.	High school graduate.	Business a penman
87. Badly crippled in hips.	do.	Eighth grade.	Business.
88. Right arm off.	Thrashing machine.	Eighth grade, country school.	Business a penman
89. Paralyzed from waist down.	Unknown.	Unknown.	Business a shorthan
GRIFFIN'S SPRINGFIELD BUSINESS SCHOOL, SPRINGFIELD, MASS.			
90. One-armed.	No report.	High school.	Business.
91. One-armed.	Probably in a mill.	Grammar school (?).	Banking a stenogra
PALMER METHOD SCHOOL OF PENMANSHIP, NEW YORK CITY.			
92. Crippled.	No report.	No report.	Banking a stenogra
BRYANT & STRATTON COMMERCIAL SCHOOL, PROVIDENCE, R. I.			

93. Loss of both legs.	Accident in childhood (farmer).	1 or 2 years High school.	Business.
94. Blind.	From birth.	Graduate Perkins Institute for Blind.	Typewritin stenogra
95. Both legs off.	Unknown.	High school.	Shorthand.
96. Withered arm and hand.	From birth.	2 years in convent.	Bookkeepi
97. Deaf and dumb.	Illness.	Equivalent to High school.	Bookkeepi
98. Fingers off on right hand.	Injury.	Educated in Ireland.	Commerci

99.	St. Vitus dance.	Nervous trouble.	Graduate Mount Holyoke, 1906.	Shorthand.
100.	Totally deaf.	No report.	Private tutor and school to learn lip reading.	Bookkeepi
101.	Artificial leg.	No report.	High school.	Commercia
102.	Withered arm.	do.	do.	Stenograph
103.	Hunchback.	do.	No report.	Commercia
104.	Stutters.	do.	do.	Secretarial
105.	Spells of queerness.	do.	do.	Special.
106.	Legs affected.	Spinal meningitis.	do.	Teachers.
107.	Weak mentally, bad eyes.	No report.	do.	Special.
108.	Wrists badly deformed.	Result of vaccination.	do.	Commercia
109.	Wooden leg.	No report.	do.	Secretarial

110. Artificial foot, very lame.	do.	do.	Commercia
111. One short leg.	do.	do.	do.
112. Badly burned face.	do.	do.	Secretarial
113. Lame, diseased knee.	do.	do.	do.
114. Speech.	do.	do.	Commercia
115. Paralysis.	Infantile paralysis.	do.	Teachers.
116. One short leg.	No report.	do.	Commercia
117. Short leg.	Hip disease.	do.	Secretarial
118. Hunchback.	No report.	do.	Commercia
119. Short leg.	do.	do.	Bookkeepi
120. Left handed.	do.	do.	do.
121. Bad hip, used crutch.	do.	do.	Commercia
122. Spinal trouble.	do.	do.	Bookkeepi
123. Hunchback, badly deformed.	do.	do.	Commercia
124. Paralysis.	Infantile paralysis.	do.	do.
125. Paralysis.	do.	do.	do.

PIERCE SCHOOL, PHILADELPHIA, PA.

126. Right hand off.	Circular cutter on milling machine.	Eighth grade.	Special penmans English, arithmet

ROCHESTER BUSINESS INSTITUTE, ROCHESTER, N. Y.

127. Paralysis.	Spinal meningitis and infantile paralysis.	High school graduate.	Shorthand typewrit
128. Paralysis of right leg and arm.	Injury in football game.	$3^1/_2$ years in Rochester School.	Regular commer

129. Anchylosis of hip joints.	Rheumatism.	High school graduate.	Commercia stenogra
130. Paralysis, withered arm, impeded speech.	Cerebral spinalmeningitis.	Was graduated from Grammar school.	Commercia
THE MARTIN SHORTHAND SCHOOL.			
131. Both hands amputated 4 to 6 inches below elbow.	Was pushed into a bonfire when a child of 7 years.	Seventh grade.	Stenograph
132. Both limbs amputated.	Run over by street car.	Eighth grade and 2 years at East Liberty Academy.	do.
133. Right leg amputated.	Crushed by mine car (helper in coal mine).	Eighth grade.	Bookkeepi then stenogra

PLAN No. 1101. TEACHING AS A VOCATION

ACKNOWLEDGMENT

The Federal Board for Vocational Education is indebted to Teachers' College, Columbia University, for contributing material that served as a basis for this monograph, which has been prepared by Dr. H. L. Smith, Superintendent for Co-operation for the Federal Board, under direction of Charles H. Winslow, Chief of the Division of Research. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

WHAT KINDS OF POSITIONS ARE OPEN TO MEN IN THE EDUCATIONAL FIELD?

The following types of positions are open to men in education:

(1) Teaching positions.
(2) Supervisory and executive positions on the strictly educational side.
(3) Executive positions on the strictly business side.
(4) Miscellaneous positions, such as those held by attendance and probation officers.

Teaching positions open to men may be classified as follows:

1. Positions in the eight grammar school grades—

(*a*) As teachers of the regular grade subjects (elementary school subjects) in rural schools.
(*b*) As teachers of the regular grade subjects (elementary school subjects) in fifth, sixth, and especially seventh and eighth

grades in the city schools.

(*c*) As teachers of special subjects in the grades, such as music, mechanical drawing, manual training, agriculture, commercial subjects, physical training and playground work, including coaching in athletics.

2. Positions in high schools, as teachers of practically all high-school subjects, but especially in the sciences, such as geology, physics, zoology, botany, and chemistry; and in agriculture, commercial subjects, debating, history, mathematics, foreign languages, English, drafting, shop work of various kinds, and printing.

3. Positions in all-day, part-time, or evening vocational schools as teachers of vocational subjects.

4. Positions in normal schools, colleges, and universities.

The greater part of the teaching in the elementary schools is in the hands of women, and much of it should continue in their hands since they are better suited than men to teach the lower grades. But children, especially in the upper grades, should come in contact not only with women, but with some men as well. More teaching in these grades, therefore, will doubtless in the future be put into the hands of men.

In the rural schools, except where schools have been consolidated, a teacher usually teaches all subjects in all eight grades, or in a number of these grades. In city schools in the regular grade subjects, each teacher generally handles one group of children, all of whom are in the same grade. In the upper grades of the elementary schools in cities, particularly in grades 7 and 8, each teacher generally

teaches one subject, and teaches that subject to different groups of children in different grades. Under these conditions the teacher has opportunity to specialize along the line of his choice. One may specialize in the regular old line school subjects, such as history, reading, arithmetic, writing, and geography, or in the newer subjects, such as music, art, and agriculture. Art teaching offers an attractive field. So do agriculture, woodwork, foundry, forging, sheet-metal work, concrete construction, simple electrical construction and wiring, printing, shoe repairing, and mechanical drawing. Except in the largest cities, the teachers of industrial art subjects are usually called upon to teach two or three such subjects. One's preparation for the teaching of these industrial art subjects should include first, a knowledge of the shop side of these lines of work; second, some knowledge of the everyday problems of industrial production, distribution, and consumption; and third, some knowledge of the method of teaching.

PLAN No. 1102. MEN TEACHERS NEEDED

Men who have strong sympathies with children, who have seen life outside of their own town, State, or country, who, like our soldiers returning from the front, have faced death with as much bravery as they have faced life, such men know what it means to overcome difficulties, and the experience and ideals of such men are needed for the proper education of our youth. The influence of such characters should be felt before the close of the elementary school, which is the most important part of any educational system, the foundation on which higher education is based, and which, therefore, offers a field not

unworthy the finest type of soldier.

There is a growing demand for men teachers in the best high schools and normal schools, and this demand is likely to increase as the result of the war, which has shown more clearly the need of the influence of men in our secondary schools and which has drawn many women into industrial occupations that were formerly closed to them.

This demand for men teachers is especially noticeable in the special subjects in high schools, and it is growing even in the regular subjects. Even in English, which has been taught pretty largely in the past by women, there is a growing feeling that more men should be employed. Heretofore, men fitted by nature and training for teaching English in the high schools have generally gone into journalism or magazine writing.

In the teaching of mathematics in high schools, applications rather than pure theory are being more and more emphasized. Here men generally have a wider range of information and experience than women, so that the teaching of mathematics in high schools should offer increasing opportunities to returned service men.

The method of teaching history, too, is gradually changing, so that it is more attractive to men than formerly. Particularly attractive should it be to returned soldiers and sailors, who have had such an important part in making history during recent months.

The teaching of modern languages is tending to open up somewhat to men. There will be a growing demand for teachers of French and Spanish, and this demand can not readily be filled satisfactorily for some time to come. It should open up good opportunities, therefore, to returned soldiers and

sailors. French has been neglected in American secondary schools, particularly in the central and far West. Spanish, until a very few years ago, was almost unknown in high-school courses. Recently it has been introduced rapidly. It is not certain, of course, yet that it will continue to develop under normal conditions, but it is certain that South American trade will grow faster after the war, and this fact should encourage the spread of the study of Spanish.

In the past we have made the mistake of leaving the teaching of foreign languages too much to teachers native to the countries whose language they teach. In the future we shall be careful not to make the mistake that we made in the teaching of German. We shall put the teaching of foreign languages more largely into the hands of American-born teachers. We can scarcely do better than to intrust such work to the care of returned soldiers and sailors who equip themselves for this task.

There has long been a great demand for well-prepared men teachers in sciences in the high schools. The chances for men in these subjects in the future are likely to be better than they have been in the past. Many men with scientific training will return from the war with disabilities unfitting them for their former occupation, and to such the field of science teaching may seem very promising. Opportunities will be especially good for men who have been trained in scientific or technical colleges, which include in their curricula the sciences usually taught in high schools.

For more advanced high-school work in industrial arts in the large high schools, men are needed who can teach one of the branches of industry intensively, giving their whole time to such subjects as wood-working, metal working, printing, or mechanical

drawing. A man who is a journeyman workman in any industry already has most of the training necessary for this line of teaching. Men teachers are needed also to teach some of the regular school subjects from the industrial point of view. For instance, there is occasionally need for men to teach shop mathematics or the sciences concerned in the industry, but they should be familiar with shop work and shop problems in order to make their work fit into the needs of the shop courses.

There are opportunities also in the field of teaching vocations. Positions are rapidly opening up in public all-day, part-time, and evening vocational schools; also in apprentice schools conducted by business establishments.

Opportunities for teaching positions in this work range from permanent employment on the staff of a school or college to temporary employment in conducting evening courses for a number of weeks. Many institutions of all grades conduct full-time day courses, and also conduct special, part-time or evening courses, at certain times in the year. Thus opportunities are open either for full-time or part-time employment. In industrial cities where evening industrial and commercial courses are conducted there is often an opportunity for a man to secure a position as instructor. He can do this instructing and retain his day employment.

Usually there is more demand for agricultural training in the agricultural and thinly settled States, and for trade and industrial training in the cities of the industrial States, though both forms of training are carried on to some degree in practically all the States. In any part of the country a prospective trade instructor is more likely to find opportunity in the larger cities.

Promotion

Teaching positions in colleges and universities pay more money, of course, than those in high schools. It is equally true that instructors in high schools are paid more money than those in elementary schools. This difference in salary is largely because of the greater amount of training required for the better paying positions.

In general, high-school teachers, for example, must have pursued an educational course at least four years in advance of the grade of the subject which they teach in the high school. This means graduation from a college, or what is commonly called the A. B. degree. The standards in most colleges have been raised so much the last few years that one must have at least two years of education in the college subject which he expects to teach, beyond the four years' work of the college. This means at least the master's degree and, in many institutions, the doctor's degree.

Any young man ambitious to become a college instructor should recognize that his chances of success in the work are very poor unless he is able in some way to secure the proper preparation. In many cases this is done by graduating from a normal school to teach in elementary schools. Later, by saving his money, the teacher is able to complete an A. B. degree, which makes him eligible for desirable teaching positions in high schools.

A third step for the ambitious man is that the second return to a college or university for the purpose of securing specialized training which entitles him to the master's or doctor's degree. He is then eligible for desirable college and university positions.

Any man interested in education as a profession should, therefore, take stock of his native ability, his

interest in the profession, his present educational qualifications, the grade of position to which he aspires, and the amount of sacrifice he is willing to make to meet its requirements.

After a few years' experience in actual teaching one may qualify for a supervisory position or an administrative position. There are many positions of this character. There are positions as supervisor of art, music, drawing, physical training, manual training, agriculture, etc., in the grades and in the high schools. There are supervisors also of certain grades, like supervisors in the primary grades, the intermediate grades and the upper grades. Men can very well do this supervisory work in the intermediate and especially in the upper grades. Sometimes one supervises the teaching of all subjects in a group of buildings. On the administrative side there are opportunities as principals of buildings. Sometimes the work of the principal is wholly that of administration. Sometimes it combines with the administrative work, the work of supervising actual teaching. From principalships and supervising positions one may pass on to the position of superintendent.

A young man of ability and ambition with the proper training can reasonably hope to become principal of a large building, or superintendent of a fairly good sized school system, if he is willing to pay the price of hard work for 12 to 15 years.

Administrative positions on the strictly business side of schools, such as superintendent of buildings, or of supplies, are open to men of course, who have not had teaching experience at all. Generally, however, these positions are filled by men who know something of the teaching problem itself. More and more there is a tendency to bring the business

administration and education administration nearer together.

In the future, therefore, promotions even in the business field of school work will doubtless take place more and more through the avenue of the educational field. In both of these fields, the business and the educational administration of school work, there is a distinct future for fine vigorous men, who have the power of arranging their thoughts and facts in an orderly way when they are taking up matters for discussion with their associates.

The soldier who enters the field of education has a far wider horizon, and therefore a better opportunity for promotion, than one equally well equipped in other respects who has not borne arms.

Essentials of the Ideal Teacher

It is difficult to judge in advance one's fitness for teaching. Probably the biggest single element determining success is love for children or for youth. If a man can play with them with pleasure, he has a pretty strong evidence of an understanding of child nature that will be helpful to him in teaching.

Prof. George Herbert Palmer, in his monograph "The Ideal Teacher," says that there are four essentials of the successful ideal teacher. These may be briefly indicated as follows:

1. So long as a teacher is content to keep in his possession information or facts he is not a teacher at all. He must transfer these facts to minds of others in order to be a teacher. It goes without saying that the teacher must have knowledge, a wide range of information about various things, before this knowledge can be passed on to someone else. The teacher's duty is that of taking a thought out of his own mind and putting that thought into the minds of

others. It goes without saying, therefore, that he must have possession of the thought in the first place himself.

2. The teacher must have a passion to lead others to learn. This eagerness must be accompanied by imagination which leads the teacher to put himself in the place of the pupil. This means that the teacher has to take facts and wrestle with them until they are lodged safely and permanently in the minds of the pupils. The teacher must see the things that confuse the pupils and after seeing these difficulties must clear them away. There is always the temptation for the teacher to blame failure on the dullness of pupils rather than to ask whether the teaching has been adjusted to the conditions of the pupil's mind.

3. In addition to the intellectual wealth and the sympathetic imagination above mentioned, the ideal teacher must make the pupils like to learn. Too often school work is offensive and results in arousing a rebellious spirit on the part of pupils.

4. The ideal teacher must be willing to be forgotten—to have his kind acts overlooked—to be generous, even in the absence of praise. If praise and recognition are essential to him the prospective teacher may as well give up the profession.

Test Questions for Self-examination

The discharged soldier can decide to some extent what his teaching chances are by asking himself questions like the following: Have I attended evening school or taken instruction work, or gone to lectures, or enrolled in correspondence schools, or done anything previous to entering the Army which would lead anyone to suppose that I was ambitious to advance in my vocation? When in the Army, did I obtain recognition for capacity for leadership and for

teaching others? Have I in the past looked upon teaching as a desirable profession where one could render service at a fair compensation? Have I "Stick-to-it-iveness" to attend a teachers' training school and adapt myself to classroom work with books, catalogues, reports, and lectures on the theory and practice of education?

One looking forward to a position in vocational education should ask himself such questions as the following: Have I actual technical knowledge of some trade or am I only capable of practicing a few operations connected with the trade? Have I ever been interested in social and economic life that lies behind the vocational life? Did I ever join any organization connected with an occupation or pursuit which promotes the economic and educational welfare of its members?

Each prospective teacher should ask, Have I a strong personality? Nothing awakens within a child sleeping moral qualities so well as contact with a strong attractive personality. The problem of the school is to find the teacher inspired with patriotism, filled with zeal, and favored with intellectual interests.

Teaching not Easy Work

The question of health, also, is an important one for the person who is looking forward to teaching. Many people feel that school hours are short, and that, therefore, a great amount of physical endurance is not needed in the work of teaching. Because of the particular strain of the teacher's work it is a mistake to think of the workday at all in terms of hours. It has been said that one hour of teaching is equivalent as far as fatigue is concerned to two hours of ordinary study done in quiet without the necessity of

speaking. The four or five hour teaching day, therefore, becomes the equivalent of an eight or ten hour day, and on top of that must be added two hours a day for correcting papers, preparing lesson plans, etc.

It is said that teaching is hard on the eyes and the nerves and the lungs, so that people suffering seriously from either eye, nerve, or lung trouble should hesitate to go into teaching as a life work, unless there are prospects of early recovery. It is further stated that a higher percentage of deaths occurs from tuberculosis among teachers than among persons in other occupations, although the mortality from this disease is higher for female teachers than for male teachers. Teachers, especially beginning teachers, frequently suffer from nervous strain. Almost 50 per cent of the nervous cases are said to appear during the first 5 years of teaching, while during the first 15 years of teaching 87 per cent of such cases occur. Nevertheless it is to be noted that insurance companies class teachers among their good risks.

Training Required

Men who have gotten no farther than the eighth grade in their general education might be fitted to teach some vocational subjects. Teachers of elementary subjects, either in the ungraded rural schools or in the graded city schools, should have the equivalent of a high-school education, and teachers in high schools should have the equivalent of a college education with emphasis placed upon the subject taught. Teachers in normal schools should have a year or two of work beyond the college course, and teachers in colleges and universities are generally expected to have from one to four years of

post-graduate work.

In addition to this general training in subject matter one should have professional training dealing with the methods of teaching and supervising. The demand for men with this special training in the teaching profession is growing. The minimum general education required for a principalship of a school is graduation from a good high school. In addition to this there should be at least two years of study, which is largely professional, such as one would get in a normal school or in the department of education in a college or university. Even further study than that, of course, is desirable, and the best positions generally go to men who have spent several years in study beyond college graduation. Recent studies show that men who have received even a small amount of professional training advance more rapidly than those who have depended alone on their native ability and general education.

For the positions that are largely administrative and supervisory men who have already had experience in the field of teaching may secure the necessary technical preparation by taking a year's training in any of the numerous colleges of education or normal schools which prepare for these fields. Present-day courses in theory and practice, leading directly to positions named above, offer unexcelled professional training in these fields.

Various States of the Union have different laws governing the certification of teachers. Some of the States require a definite amount of education of a general nature, plus education of a professional nature, plus an examination. Other States depend more upon the examination. The present tendency is to raise the requirement for a general education, to add to the requirement for a professional training,

and to lay less stress upon the examination. Anyone who is thinking of entering the teaching profession, however, should before doing so look up very carefully the laws in force in the State in which he plans to teach.

Applicants for teaching positions in educational institutions of any grade must generally show the authorities in control that they possess whatever qualifications may be considered necessary, including education, training, experience, and personality.

In general, the higher the grade of the institution, the higher the requirements. Colleges, technical schools, and universities all practically require for the lowest teaching positions on their regular staff at least a degree equal to that granted by the institution. Schools of secondary grade do not, as a rule, set the standard as high, while schools of intermediate grade set up intermediate qualifications.

The requirements for teachers in schools of secondary grade vary widely. If under private control, no definite statement can be made, since each school sets up its own standards. Good privately controlled schools, however, tend to set up about the same requirements as schools of corresponding type that are under public control.

In the great majority of States teachers in schools under public control must be certified before they can be employed. This certificate is usually granted after some form of examination has been successfully passed and is commonly given by the State educational authorities. Usually certificates are granted only to persons having certain educational and other qualifications. The requirements, examinations, subjects, etc., are usually given in

bulletins issued free by the departments of education of the different States. Some large cities have certifying systems of their own.

In most States teachers of agriculture must be graduates of a four-year course in an agricultural college or institution of similar grade, and in addition, must have had a practical farming experience.

In trade and commercial schools and departments the general tendency is to secure for practical or shop instructors men who actually know the occupations that they are to teach. In industrial day schools and in evening courses in these schools, there is generally required proof of a certain length of journeyman experience in the trade to be taught following an apprentice experience or its equivalent, and proof also of an elementary school education or its equivalent.

Teachers of technical or related subjects (shop mechanics, drawing, etc.), are usually required to have had several years of technical training and to have had some contact with industry.

SALARIES

Financial returns from teaching are not large. But teaching usually pays at least a comfortable living from the very first. Many people enter the profession for this reason. It is said that the money returns from teaching are, on the average, less than in law, medicine, or business. Salaries of high-school teachers, however, are said to be on the average somewhat higher than those of ministers, doctors, and lawyers. In all lines of teaching the salary range is rather large. The number of years that it takes to reach the maximum salary varies greatly in the different States. In Indiana it is said that the

maximum for men, excluding principals, is reached on the average in 6 years, whereas in Massachusetts the maximum salary for men, excluding principals, is not usually reached under 15 years. In Massachusetts the maximum salary received by teachers is about twice as great as the minimum salary.

The beginning wage for men teachers in rural schools ranges from $60 to $90 per month. The beginning wage of men teachers in the graded schools in cities is considerably more. The minimum salaries of all teachers, men and women included, in 85 of the largest cities in the United States, ranges from $405 to $1,080, whereas the maximum for such teachers in the same cities ranges from $630 to $1,820.

Teachers in industrial arts receive from $1,000 to $2,500 a year, while supervisors of such subjects receive from $1,600 to $3,000 a year.

Salaries paid State and local directors for administering vocational instruction range from $2,500 to $5,000.

Principals and superintendents of schools generally receive salaries ranging from $1,000 to $4,000, and in some of the larger cities salaries for superintendents have recently been materially increased. During the past three or four years some superintendents of our largest cities have been getting from $10,000 to $12,000.

Rewards Other Than Financial

While the salary for teaching is not as great as one would probably receive in commercial lines, nevertheless there are other rewards that tend to make teaching attractive. In the first place, there is apt to be more permanency in a teaching position than in a commercial position. Teachers are not

easily dismissed without cause. Hours are shorter, thus giving regular opportunity for exercise in the open air. In most States neither dissatisfaction of pupil nor parents is cause for dismissal of the teachers. In many States, too, if the schools are ordered closed, the salaries of teachers must go on in full. The rather long vacations in teaching give opportunity for travel or study or work, as one may elect.

Social insurance is rapidly being provided for teachers. Pension systems for city school teachers started in Chicago in 1893. At the present time there are 21 State pension systems, while 4 other States have laws permitting local organizations to set up pension plans. In addition to the State systems there are 64 city and county systems in operation. Some of these systems are not satisfactorily worked out, but within the last few years a great deal of careful study has been given to this work. The movement for social insurance is recent but wide-spread and still growing. A total of 34 States are at present represented in this movement in either State systems or local systems within the State. Retirement in these systems is most frequently on the basis of 30-year service. In about six-sevenths of the systems the teachers contribute to the funds, most frequently 1 to 2 per cent of their salaries.

In schools reporting pension systems for teachers the average salary is $730 a year, while the average pension is $500 a year.

Finally, teaching is its own reward. For the person who likes children, who appreciates the social advantages of the profession, who wishes to make his life count greatly in the lives of other people, and who has an ambition to do something for the national service in a vital way, the profession of

teaching should be attractive.

How Many Years Will It Take to Establish One's Self in The Teaching Profession?

For men teachers the rate of advancement in salary varies greatly with different communities and with different personalities. The number of years of teaching necessary before the maximum salary is reached ranges from 6 to 15 years or more. Men continue to be advanced, however, by being promoted to principalships after their chances for further advancement as teachers are reduced to a minimum.

How Great Is The Need for Men Teachers?

At one time education in the United States was largely in the hands of men. At the present time it is largely in the hands of women. A tendency is growing to bring more men into the teaching profession. The demand for teachers is generally and greatly increased of late. The growth of high schools during the past generation has been very rapid. Twenty years ago there were 200,000 pupils enrolled in 2,500 high schools of our country, thus representing one in every 210 of the population. To-day there are approximately a million and a half pupils in approximately 15,000 high schools, representing one in every 66 of the population. In some localities one person in every 25 is enrolled in a secondary school of some sort. This expansion of the secondary schools of the United States has not yet ceased. There has been marked increase also in attendance at normal schools and colleges, but this increase, while great, has not been as rapid as the increase in high-school attendance. The very recent development of vocational training is adding to the

demand for men in the teaching profession. It would seem, therefore, that the teaching profession would offer an attractive field for many of our returning soldiers, sailors, and marines.

Undoubtedly, the disabled soldier, sailor, or marine returning from this great war has a number of very great assets which he could market to advantage in educational work. Not the least among these is the advantage which he will enjoy over the civilian because of the natural admiration of young people for the soldier, sailor, or marine. With this as a start, other things being equal, his chances of success and of advancement as a teacher are very good.

The attitude of the community toward him will be one of respect and admiration. From this he can reap rich rewards in influence and friendships.

Every man who has gone to war must have thought more deeply than ever before about his country and its many problems. He comes home, perhaps, with many changed points of view. Naturally he desires to play a part in refashioning the spirit or the customs or practices, and even the institutions of this country. There is no more effective place in which to do this than in the schoolroom through the continuous everyday influence which the teacher brings to bear upon the lives of young people.

PLAN No. 1103. FARM MANAGEMENT AS A VOCATION

ACKNOWLEDGMENT

This monograph was prepared by Dr. Walter J.

Quick, Special Agent for the Federal Board for Vocational Education, under the direction of Charles H. Winslow, Chief of the Division of Research. Acknowledgment is due E. H. Thomson, Acting Chief, and Dr. E. V. Wilcox, agriculturist of the Office of Farm Management, United States Department of Agriculture, for suggestions and data, also to Dr. John Cummings, of the Research Division, for editorial assistance.

If you have been asking yourself the question, "Can I now with my disability undertake to manage a farm on business principles and expect to make a financial success of it?" you will be interested to learn that farm management is one of the most important training courses offered you by the Federal Board for Vocational Education.

Upon good business management depends success in farming, that most important industry in the United States—the industry which many of you boys returning from the war will wish to enter, the one which needs you perhaps more than any other, and in which you may expect to earn ample rewards through scientific methods.

Farm management has been defined as "the science of organization and management of farm enterprise for the purpose of securing the greatest continuous profit." It is the business end of farming. It deals with farm organization, methods, accounts, and credits, and is, therefore, of interest to all classes of farmers, including owners, managers, and tenants.

Business Methods Pay

In agricultural affairs as they have been carried on, the lack of business methods has been amazing. Absolute mismanagement has frequently been the principal cause of discouragement, failure, and

abandonment of farms. This influence has prevented many from taking up farming, but one who has a genuine love for the farm and who has or can get some practical experience on the farm may take a course of intensive study in farming and farm management under the direction of the Federal Board for Vocational Education, and then develop into a successful farm manager. The candidate must not forget, however, that farm management is a profession, and that a person without experience should not expect to become a successful farm manager in a few weeks by taking a short course at some agricultural school. What is worth getting requires time and effort in this as well as in other things.

Many who have felt full confidence in farming, and have invested their money in it and applied business principles to it, have proved that the same measure of success will attend farming under business management as attends other industries when properly managed. Tens of thousands of farmers in the United States have demonstrated this by earning substantial profits.

Diversity of Farm Business

Whatever has been true in the past, the manager of a farm to-day must be a business man capable of negotiating complicated transactions, buying and selling, and attending to the diverse details of organization and management.

You should consider well your adaptability for the diversifications of general farm life; your inclination to acquire an intimate knowledge of the principal affairs and at least a comprehensive acquaintance with everything related to farming. As a manager you must keep accurate accounts; you must know

live stock as well as crops; you must be a mechanic, and ready to lend a hand with your laborers if your condition permits; in a word, you must be broad minded and tactfully co-operate with your men. You must have a practical knowledge of crops, of their seeding and harvesting, of the principles of plant breeding, propagation, and adaptation to soils. You must understand animal husbandry, breeding, growing, and feeding the animals produced to a market finish or for milk production.

Dovetailing Activities

By careful study the many activities on the farm can be so dovetailed together as to produce a maximum of crops and live stock economically. Systematic organization must be extended to every department of the farm. Labor must be efficient and well employed; teams and machinery, sufficient and in good condition; and marketing timely, it being borne in mind that quality and condition are quite as important as is quantity of product.

Mismanagement Worse Than Bad Weather

Variations in profits from farms are more largely due to mismanagement than to unfavorable seasons or fluctuating prices. Farming has become decidedly a business proposition. The abnormal demand now being made upon the United States for food and other agricultural products to be consumed at home and in European countries makes the extensive application of scientific farming imperative.

Many farms, unprofitable because of mismanagement, could by reorganization be systematized and developed into profitable, lucrative undertakings. Accompanying this reorganization, the application of business principles and practical

management to scientific methods is of paramount importance.

With this better farming there must be associated reliable accounting, demonstrating a business warranting banking credit. It is often claimed that farmers can not keep books, when as a matter of fact, while they do not do bookkeeping in the generally accepted term, nine out of ten, from notes jotted down, have as accurate knowledge of the financial side of their enterprise as the majority of business men. This has been repeatedly proven by the hundreds of farm surveys, representing many States, by the Office of Farm Management of the Department of Agriculture, through which it was found possible on almost every farm to obtain an accurate financial statement from the memoranda kept by the farm owners, their managers or tenants, and to ascertain the profits.

Thorough organization with method and accounting simplifies management, curtails expenses, makes possible larger returns with less outlay, and establishes credit, which will not longer be denied the farmer when he adopts business methods and can show the bank his statement of annual business conditions.

Funds for Development Available

Farms have been likened to huge sponges from their ability to absorb money and labor, but the capable manager can make investment of money and labor in farming profitable. Uncle Sam, it may be noted, has arranged for the advance of money through the Federal Loan service, and local banks stand ready now as never before to accommodate the farmer temporarily with the necessary funds for development operations. Many farms, like some

manufacturing plants, are being run to only half capacity or less by a "one-horse tenant," caretaker, or discouraged farmer. They are awaiting men and money, ready to absorb both, and if they are reorganized and managed on a business basis they will become highly profitable.

The Need for Managers

Only 60,000 farms out of 6,361,000 employed managers and superintendents according to the 1910 census. But it is practically certain that more than one farm in a hundred would have been operated by managers had there been a larger number of effectively trained men available to men owning, or in position to own, farms large enough to justify the employment of a manager. With the number of improved farms increased to probably 7,000,000 by this date, the demand is greater for this class of trained men. The department of Agriculture and the State agricultural colleges report inability to fill numerous calls for farm managers and superintendents, and the advertisements in the agricultural and live-stock papers for them indicate that the demand continues. The small percentage of profits from the inefficient management of idle and incompetent tenants makes tens of thousands of farm owners not living on their places very desirous of securing active farm managers, capable of introducing scientific methods.

We believe, in fact, we know, that there are in the country numerous "old time" farm owners who are barely making a living, while their farms are constantly depreciating in value. Unquestionably such owners would receive better returns by employing farm managers. The combination of a number of farms with co-operative handling, under a

competent farm manager, on the community principle, would reduce expenses for machinery, teams, and power, and make possible more economic employment of labor. The existence of such conditions offers an excellent field of activity to the man who is trained well enough to see and to use these opportunities. Knowing the possibilities such a man might be able to so thoroughly convince the owners of a number of inefficiently operated farms of the advantage of having them worked as a unit and thereby get them to adopt his plans. The country is full of landed estates of sufficient area to justify the owners in employing specially trained men. Syndicates and individuals have been for years buying groups of neglected farms and orchards in the southern States. These are almost invariably being handled by scientifically trained farm managers. The properties have improved under modern methods of culture and have in most cases shown profits within two or three years, notwithstanding the necessary outlay to bring the run-down property into productive condition. Similar conditions obtain in New York and other northern and western States.

Responsibility of The Manager

Managers are responsible for success in farming. Upon their experience and ability depends the securing of the "greatest continuous profit," and, in fact, the securing, in many cases, of any profit at all. They direct, plan, and systemize the regular farm duties.

The manager must arrange an advantageous distribution of farm labor, keep in intimate touch with all the farm work, know how to do it and be able to judge when it is well done, know what reasonably to expect of his men, know how to direct

labor so as to meet adequately each season's demand and so as to provide employment at all times.

The manager must study the efficiency of different classes of workers. Too often farm profits are thought to depend upon small wages rather than upon experience and ability. The good manager will not make this mistake. The old belief that anyone can farm has been abandoned. Almost anyone can learn to farm, but the losses by the inexperience of an apprentice must be carefully avoided. Many a prospect of a full crop of corn as evidenced by the regularity of "stand in the row" has been reduced to a three-fourths return by an inexperienced plowboy plowing the young plants out or leaving them covered. An experienced plowman with an improved cultivator would have made a profit possible where the inexperienced hand caused a loss. The better worker is worthy his hire and better wages. The demand is growing in farming as in other industries for trained workers. The yields that the farm manager is able to secure are dependent so largely on his knowledge of labor and ability to direct it, that particular study should be given the labor problem of the farm by anyone preparing to assume the responsibilities of farm management.

Farm work is not accomplished by separate groups of workers so much as by the same group of workers being employed in the appropriate undertakings at different seasons, as the manager directs.

The competition for satisfactory farm labor has become so keen that far-sighted managers pay special attention to the conditions under which their laborers, as well as their skilled hands, live. A little money judiciously expended in providing buildings that are livable and homelike, a little liberality in the matter of time, a chance to garden, to keep a cow or

a few hens, or to do some of the many other things that serve to keep satisfactory labor, may return a profit far out of proportion to the expense represented. In other words, the farm manager must profit by the experience of the manufacturer and avoid excessive "labor turn over."

Small Farming as a Preparation for Farm Management

Large farms and estates employ crews of men and utilize expensive equipment. They especially require the services of well-trained and reliable farm managers, capable of selecting practical foremen and laborers, and of keeping well in hand the details of all farm processes necessary to economical management. But good management is essential also on small farms, operated by owners or tenants, as well as on large estates. The owner, and generally the tenant as well, are their own managers, and managing a small farm well is one way of learning the profession of the farm manager. The small farmer as well as the large must consider well the location, climate, soil, lay of land, water supply, and other features of his farm, so as to determine the most suitable type of farming under existing conditions. He, as well as the large farmer, must keep accounts, organize the farming operations in proper sequence, determine upon cropping, direct the preparation of soil, fertilizing, seeding, cultivating, harvesting, and all the minor details of live stock, breeding, raising, and feeding, do the buying as well as the marketing of crops, live stock, and live-stock products.

Area of Employment

The geographical area of farm operations, and consequently of the demand for farm managers, is

co-extensive with the United States.

Implements and Machinery

The farm manager must have an intimate knowledge of tools and machinery and an inclination to employ only the best and most modern implements, even if special financing for a year or so must be undertaken in order to farm most profitably. Tractors, modern machinery, and labor-saving implements should be studied, wisely selected, and purchased, even if it is found necessary to buy on terms.

Why Take Training

You can hardly have had sufficient agricultural experience, if you have not had college or vocational training in some agricultural institution, to justify you in not taking advantage of the opportunity for a vocational course in farm management, if you look forward to a career in this profession.

If you have had only limited practical experience you may become a farm foreman, in which as wide an experience is not required, thus securing for you an opportunity for development and promotion to the higher place of manager. The training that will develop a good farm manager is equally valuable for promotion to the position of county agricultural agent. This work is increasing, attractive, and remunerative. Men with sufficient training, experience, and ability to “mix” with the farmers can do a valuable work. All training and experience with money saved for an initial payment are stepping stones to farm ownership. Notwithstanding disabilities, which are seldom disqualifying and rarely prohibitive, you with farm experience occupy an ideal position for training in farm management

and its accompanying opportunity for advancement.

Opportunity for promotion is exceptional in farm management and will naturally be accorded you—in fact, you will be given preference—if your efficiency is evident. Men with ideas, who think and do things, are in demand on the farm. Having taken the vocational training in farm management, having skipped no links in the chain of development, and having acquired by reading and observation all the information pertaining to it, promotion will be but natural and rapid in the occupation which you have made a specialty, and upon which you have made yourself a reliable authority. Think it over seriously. Upon training depends your future, your occupation, and your success in life. You may succeed without training, but you are more likely to succeed if you have been retrained and readjusted to the new conditions which will confront you in earning a livelihood.

After training you should not expect to begin at the top unless you have had practical experience and are in a position to become an owner or a tenant at once.

Salaries

The positions of farm manager, superintendent, or foreman are considered from the salary rather than the wage standpoint and are usually of annual engagement for the calendar year, as practically all farm operations have ended with the close of the year, making it a most suitable time for the changing of men, if found advisable. The salary paid is proportionate to experience and efficiency and commensurate with that of other callings. As in other occupations, it may be small at the start, but will increase with efficiency. Commonly farm managers

and superintendents are receiving annually from $1,000 to $3,000, and on large estates often $4,000 or $5,000, with many perquisites, such as dwelling, garden and truck land, fuel, and the privilege of keeping a cow, pigs, and poultry. Farm foremen are paid from $500 to $1,200 with perquisites. Sometimes the beginning salary is a little less than the minimum, but often carries a contingent bonus when the year ends with satisfactory results. The general level of pay is likely to advance under the unusual conditions which now obtain in agriculture.

Your salary in the country may be less than in the city, but your living expenses are greatly decreased by the perquisites mentioned, and in not having presented to members of the family the temptations of the city to spend money unnecessarily. Then, too, the healthful conditions of the country prevent much sickness and consequent loss of time and there are therefore fewer doctor's bills. Therefore the saving from the annual income as farm manager is equal to, and in a majority of cases, exceeds the returns from a city position, besides placing you in line for independent ownership.

As in other positions, that of manager and the amount of salary commanded varies with the magnitude of the farm and the capacity of the manager to develop himself and the opportunities entrusted to him. A farm boy, after two years in an Agricultural College, took a foreman's position starting at $600 a year and perquisites, the second year he received $900, then became manager at $1,800, and now receives $3,000. In five years he has quadrupled the income.

Overcoming Your Disability

Your disability has an excellent opportunity of

being overcome in farming. Handicaps that would interfere in other training courses are corrected in many of the farm processes by the therapeutic exercises so interesting and variable. The opportunities are so great that the handicapped may develop his own vocation on the farm. Devices to beat your handicap and make it possible for you to do the things you did not imagine you could perform have been invented and manufactured in almost every country for the benefit of the disabled in war, which Uncle Sam has now available for your use.

When you are advised that your handicap permits you to return to the farm, the sooner the practice of your training is begun the greater will be the therapeutic value. This is your reconstruction, your individual man-struggle for restoration in correcting the disability which you acquired in the great world-struggle.

As a farm manager, landowner, tenant, supervisor, superintendent, or foreman, the experienced man capable of using a trained brain in directing others can succeed in spite of almost any disability. If the occupation places you in position to devote your time principally to the management of your farm, or the one you have in charge, you can assign to others such work as you may be incapable of performing yourself.

Education

Your knowledge of the common school branches, especially English, mathematics, and current literature will greatly assist you in studying the elementary principles of chemistry; in comprehending the analyses of soil and water, the protein and carbohydrate contents of the feeds, milk, and plants, quite necessary in the selection of feeds

for the proper balancing of rations; in the understanding of plant breeding, growth, and propagation; in studying entomology and obtaining a practical knowledge of insects, pests, diseases, and the bacteria of milk, water, etc., and in acquiring some knowledge of physics and its application to the soil, drainage, buildings, machinery, heating, lighting —all vastly important to the farm manager.

Technical training is valuable in adapting many farm processes to increase the profit on certain crops and makes special projects worthy of careful consideration by the disabled, seeking side-line opportunities on the farm for alternating employment when regular operations can not be pursued.

The knowledge to be gained in the vocational training course will depend upon your previous education, experience, and application. All the time necessary will be allotted to the course. It is, however, advisable not to overtax your strength, but acquire efficiency gradually. You will be advised by the training instructors as to your ability to undertake new features and widen the scope of instruction.

Getting back home to work again should be, and doubtless is, your greatest ambition, hence the importance of reaching your decision at the earliest possible moment and applying for the training which Uncle Sam has in readiness for you. Seek an early opportunity for advisement while in the hospital. You will find the attitude of your old friends, your own family, and your former employers all that you could possibly expect, in their desire to assist you in getting “over the top” in agriculture. The disposition of your fellow workmen will be to give you every encouragement and to lend a helping hand whenever

and as long as you need it. They will take a justifiable pride in you and your determination to be a man among your former fellowmen in civil life and to train for a self-supporting and honorable occupation—one that will enable you to remain true to agriculture and to your country in its efforts to produce for the world the food which is now so greatly in demand; to prevent hunger and starvation, and to quell food riots in the war-afflicted countries.

The new year 1919 is upon us and spring is rapidly approaching, reminding us of farming activities and that activities in farming should have our prompt attention this year of all others, that starvation may cease with a bountiful harvest.

To you is offered free this exceptional opportunity to readjust yourself back into civil life in American agriculture by selecting farm management as your vocational training course.

It is all up to you.

Give it consideration *now*.

Agricultural literature is available in all libraries and consists of treatises and textbooks suitable for reading with the idea of the definite study for perfecting knowledge to be applied in pursuing any or many lines of agriculture. Many books have been written in the story plan and are most attractive and inspiring. Others are the best translations from other languages; even "Farm Management of the Romans" can now be secured in nearly all libraries of countries prominent in agriculture.

Libraries now make it a point to keep the leading current agricultural periodicals on file for the reader.

The Department of Agriculture bulletins, agricultural reports, farmers' bulletins, and special works on agriculture are always available to everyone desiring them; likewise similar literature

issued by State agricultural colleges and experiment stations, applicable directly to local State conditions, are especially helpful and will be supplied regularly as printed, to all addresses supplied.

We append a list of bulletins germane to the subject of this monograph and which will be found interesting and beneficial.

Agricultural Bulletins

The Use of a Diary for Farm Accounts. Farmers' Bulletin No. 782.

Farm Practices that Increase Crop Yields in Kentucky and Tennessee. Farmers' Bulletin No. 981.

Farm Practices that Increase Crop Yields in the Gulf Coast Region. Farmers' Bulletin No. 986.

Labor Requirements of Dairy Farms as Influenced by Milking Machines. Department of Agriculture Bulletin No. 423.

The Normal Day's Work of Farm Implements, Workmen, and Crews. Department of Agriculture Bulletin No. 412.

A System of Farm Cost Accounting. Farmers' Bulletin No. 572.

A Method of Analyzing the Farm Business. Farmers' Bulletin No. 661.

Systems of Farming in Central New Jersey. Farmers' Bulletin No. 472.

Farm Management Practice of Chester County, Pa. Department of Agriculture Bulletin No. 341.

Seasonal Distribution of Farm Labor in Chester County, Pa. Department of Agriculture Bulletin No. 528.

Labor Costs and Seasonal Distribution of Labor. Utah Agricultural College Experiment Bulletin No. 165.

A Normal Day's Work for Various Farm

Operations. Farmers' Bulletin No. 3.

An example of Successful Farm Management in Southern New York. Bulletin of the United States Department of Agriculture No. 32.

Value to Farm Families of Food, Fuel, and Use of House. Farmers' Bulletin No. 410.

Lease Contracts Used in Renting Farms on Shares. Bulletin of the Department of Agriculture No. 650.

Replanning a Farm for Profit. Farmers' Bulletin No. 370.

Waste Land and Wasted Land on Farms. Farmers' Bulletin No. 745.

A Simple Way to Increase Crop Yields. Farmers' Bulletin No. 924.

Clearing Land. Farmers' Bulletin No. 974.

Better Use of Man Labor on the Farm. Farmers' Bulletin No. 989.

Saving Farm Labor by Harvesting Crops with Live Stock. Farmers' Bulletin No. 1008.

A System of Tenant Farming and Results. Farmers' Bulletin No. 437.

PLAN No. 1104. OCCUPATIONS IN THE AUTOMOBILE MANUFACTURING INDUSTRY

Acknowledgment

This monograph was prepared by M. R. Bass, special agent of the Federal Board for Vocational education. Acknowledgment is due to Dr. John Cummings of the research division for editorial assistance.

The purpose of this monograph is to give a brief description of some of the work done in the manufacture of automobiles. No attempt has been

made, however, to go into the machine shop side of the industry, a field in which lie possibilities for placing thousands of reeducated men in good positions. The monograph is limited to automobile assembly work.

Manufacturing automobiles and automobile accessories is one of the foremost industries of the United States. One manufacturer alone is known to have turned out more than 3,500 complete automobiles in one day, and to have turned out in one year some 350,000 cars. Many concerns produce from 50,000 to 125,000 cars annually. The 1914 census of the industry gives the value of the automobile products as $632,831,474, and wonderful changes in the last four years have greatly increased the value of the products of this industry, which was practically unknown 20 years ago.

A recent study developed the fact that there are some 85 occupations in the automobile manufacturing industry, which in its various branches offers excellent opportunities to mechanics, apprentices, and men who wish to take up a new trade. A man with even very limited qualifications can surely fit in somewhere.

The industry is still growing rapidly and branching out into what may be called an automotive industry, embracing the manufacture of motor trucks, tractors, and airplanes, as well as of automobiles. A mechanic in one branch of the industry may shift easily to other branches.

Certain factories have discontinued general manufacturing, and have specialized in the manufacture of automobile units or parts, such as engines, transmissions, frames, and axles, and the manufacturer who used to build practically all of his automobile has been persuaded to buy certain units

from these specialty manufacturers. Small manufacturers have thus been enabled to build a part of a car and to buy the rest from unit manufacturers, and many small factories have been started in this way.

Work in the various automobile factories varies from purely unskilled to highly skilled labor. The unskilled employments include those of machine operators, assemblers, subassemblers, tool room keepers, janitors, watchmen, and checkers, while the skilled employments include those of special machine men, tool makers, die sinkers, heat-treatment experts, dynamometer testers, ignition experts, inspectors and general mechanical experts.

Good wages are paid, common laborers in some plants receiving from $3 to $5 per day. Well-trained, skilled mechanics, of course, earn much higher rates.

Standardization of automobile parts is gradually bringing about standardization of the automobile as a whole, which greatly simplifies the work of the mechanic who builds and repairs automobiles.

Trucks are being more extensively used by wholesale and retail merchants. Overland freight is being carried by truck trains, between small towns, and even long-distance hauling is meeting with success. This increased motor-truck service is increasing the demand for mechanics in the factories, and also for truck drivers.

Automobile factories are usually located in large cities, where raw material and supplies are at hand. Shipping and labor conditions also are carefully considered. A very large percentage of the automobile output is manufactured in the States of Michigan, Ohio, New York, and Indiana. The State of Michigan alone produced 80 per cent or four-fifths of the pleasure vehicles manufactured in 1914.

Organization of an Automobile Plant

Large plants are made up of a number of departments. The office is the chief executive department. Here the plant is checked up, all correspondence taken care of, and all financial, educational, and business matters attended to. Closely connected with the office usually are the drafting rooms, where new models, changes in models, and experimental changes are made, since all such changes are first made on drawings. The engineering and experimental departments may also be located in the office building. In the experimental department all changes are worked out, and research work is carried on. If such changes prove to be a betterment they are made on the blue prints, and are then made in the factory throughout. Since even a minor change may cost the factory thousands of dollars, all changes must be carefully considered.

Other departments include those organized for engine, frame, axle, and chassis assembly, the paint department, and other departments according to size of factory and product manufactured, whether a complete automobile or an automobile unit.

The staff of men who handle a department usually includes a general superintendent, assistant superintendent, department foreman, section foreman, timekeeper, inspectors, and checkers.

The superintendent in many cases is a man who has come up through the ranks, and superintendents of this kind are usually the most efficient. Assistant superintendents, foremen, and others also are usually men picked from the ranks. Men with common-school educations are holding responsible positions in many factories and are drawing large salaries.

In each factory will be found an efficiency man or production manager, whose duties are to put into

operation new methods, machines, and devices to increase production.

There will be found also an educational and welfare department in each factory, which looks after the welfare of workers, settles disputes between workmen and foremen, and in individual cases shifts workers from one shop operation to another. As a rule, the hospital or first-aid division is located in this department, which may undertake also the organization of training classes in such subjects as will increase efficiency, and may arrange for entertainments and the organization of clubs.

Progressive Assembly Method of Manufacturing

Progressive assembly means assembly of parts by stages, or step by step. In this work a man does one operation only, although he may be frequently changed from job to job, according to his ability as workman or mechanic.

Special equipment is required for this method. The work starts with the frame as a skeleton, which is placed either on a conveyer, that is moved very slowly, or on a special framework equipped with casters that it may be moved freely from place to place.

Where the conveyer is used, the conveyer is from 100 to 200 feet long, and moves at the rate of about two feet per minute, although the rate varies from factory to factory. By the time the frame or skeleton reaches the end of the conveyor the automobile is practically complete. The various units have been attached as the frame moves slowly down the floor. In some factories the automobile is so completely assembled that the engine is started and, after a short road test, the car is driven to the shipping platform.

This means that in some factories an automobile is completely assembled in less than an hour. As the automobiles are placed close together on the conveyer a finished machine is turned out every minute or so.

Let us now proceed through the progressive assembly by units.

PLAN No. 1105. PLACING THE FRAME

The frame with its necessary brackets and springs having been assembled in a subassembly department, is placed upon the conveyer. Where the frame is heavy, an air or hydraulic hoist is used. This operation is usually done by two men, who must be able to move about freely but are not compelled to climb or to move rapidly. A man capable of hooking a chain to the frame and who is able to move a short distance can easily qualify.

PLAN No. 1106. FRONT AND REAR AXLES

The frame having been placed upon the conveyer, the spring and front and rear axles are then attached. The rear axles are usually mounted by two men with the aid of a hoist. These axles like the frame have been assembled in a subassembly department of the factory.

The men who attach the axles to the frames need not be expert mechanics but must know how to handle wrenches and hand tools. They must be able to move about freely and be able to start the nuts or bolts and tighten them. Special tools are used where possible to save time. Time is a big factor in this department. If the mechanic does not complete his operation in a given number of feet on the conveyer,

he will interfere with the next operation. The conveyer is moving all the time and he must complete his operation within his allotted space.

PLAN No. 1107. MOUNTING THE TRANSMISSION

Following the assembly of the axles to the frame, the transmission gear set is mounted and bolted into place. In many cases the transmission is attached to the engine (unit power plant), in which case this operation is completed when the engine is put into place. The men doing this operation need not be skilled mechanics, but must be able to use hand tools and move about freely. A man with an artificial leg could do this work easily. Again a man with one good hand and part of other could do this work.

PLAN No. 1108. PLACING THE ENGINE

The engine is the next unit attached to the frame. In placing the engine a hoist is used and no heavy lifting is required. The engine is lowered into place and securely bolted. The propeller shaft also is attached and necessary connections are made. Usually the engine has had the carburetor, ignition system, and starting and lighting equipment attached to it in the engine department. For this operation men do not need to be mechanics. A workman must be able to handle hand tools such as wrenches, screw drivers, and hammers, should have strength enough to help place the engine, and should be able to move about freely. This work is all done standing and moving about. All work of this nature is passed upon by an inspector.

PLAN No. 1109. MOUNTING THE RADIATOR

The next operation is mounting and bolting the radiator into place, and connecting the water hoses to the engine. This operation is one that requires sufficient strength to lift the radiator into place, and is usually taken care of by one man. He also must be able to handle hand tools.

PLAN No. 1110. SECURING THE STEERING GEAR

The steering gear is next secured to the frame, an operation which is usually taken care of by one man with possibly some little assistance by a helper. The operation requires a man who can lift the gear and put it into place. It is rather an awkward piece to handle and the employee should be physically able to handle it.

PLAN No. 1111. WHEELS AND BEARINGS

The next operation is mounting front wheels and bearings. This requires a little more skill and care than some of the other operations that have been mentioned. The mechanic must clean and lubricate the wheel bearings and mount and adjust the wheels, which must be neither too loose nor too tight. He must also secure his adjustment by means of the locking devices furnished. If he is a careless mechanic he may leave something undone, thereby endangering the lives of users of the car after it leaves the factory.

The man who looks after this operation must be capable of lifting the wheels into place and adjusting them. The operation calls for a man with a normal body, although minor defects would not prevent him from doing the work efficiently.

The rear wheels require practically the same attention that the front wheels do. However, this operation may vary with the particular type of rear-axle construction.

PLAN No. 1112. DASH AND INSTRUMENT BOARD

The next operation is lowering into place and securely bolting the dash and instrument board. This is commonly taken care of by two men, whose requirements are the same as for axle, transmission, and engine assembly. The operation is unnecessary where the dash is not a separate unit.

PLAN No. 1113. STARTING THE ENGINE

The dash on some cars has the fuel tank attached to it. In such cases the chassis is now practically completed. We will say it has now reached the end of the conveyer. Here gas and water are put in the containers and the engine is ready to start. This operation is sometimes accomplished by placing the rear wheels of the car between two revolving drums, which will cause the rear wheels to revolve.

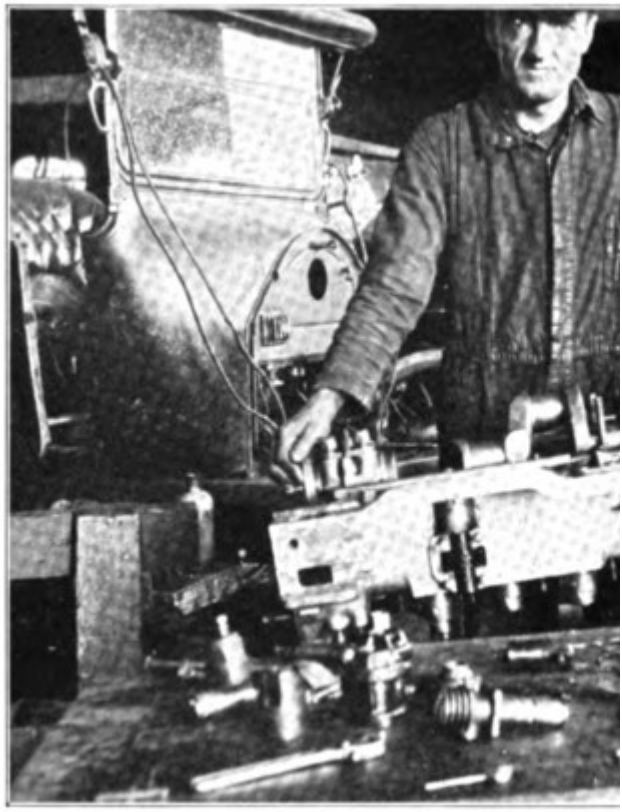
The gear-shift lever is placed in some selected gear position and the clutch engaged; this in turn revolves the engine, and if the ignition is switched on, the engine will start. This operation saves considerable energy in cranking, or saves the electric current in the starting battery. After the engine is started, the chassis may be driven away on its own power, an operation which requires a man who can efficiently handle an automobile.

PLAN No. 1114. INSPECTION

The chassis is now driven to the road-test department, where it is inspected for grease in the gear cases and such other inspections as may be necessary. Inspectors here need not be highly trained mechanics. Men with handicaps could take care of this work very nicely.

PLAN No. 1115. ROAD TESTING

Possibly a road-test body is next attached to the chassis. This body usually contains sufficient weight (rocks, iron, or sand) to make up the equivalent of the automobile body. The chassis is then given a run over the country roads. Here the trained mechanic is necessary, able to adjust the carburetor, ignition, starting and lighting equipment, brakes, rear axle gears, and clutch. In fact almost any part of the car may need adjustment. He must be able to locate trouble of all kinds. In many cases the chassis test is very limited and the tester makes out a report, the work indicated being done in a department by less skilled mechanics who have specialized in one job, such as, for example, brakes. Where this method is used, the tester must be sure of his report. A road tester need not have a perfect body, but he must have practical experience and be physically able to handle a car.



Plan No. 1114. He that Hath a Trad

There are many jobs in the testing department that a handicapped man can do, and the chances for advancement in this department are very good.

PLAN No. 1116. DYNAMOMETER TEST

After the chassis has passed the inspector of the road-test department it may be given a dynamometer test. This is accomplished by attaching an electric dynamometer to the rear wheels either by belts or

chains. The engine is then operated at various speeds and the horsepower developed noted. If it is not up to the average, a close inspection is made to determine where power is lost, whether in the engine, transmission, or rear axle. The dynamometer tester must be a man who has been trained for this particular job. He must understand his machine and be able to use simple formulas. Slight physical disabilities would not interfere with his efficiency. This is a desirable occupation and usually leads to something better.

After the final chassis test the chassis is thoroughly washed and new wheels mounted. This is a job similar to that spoken of under front and rear wheels. The chassis then goes to the paint shop for its final finish. Here the body and fenders are fitted.

PLAN No. 1117. IN THE PAINTING DEPARTMENT

There are many jobs in the painting department that are very well adapted to a handicapped man. He can become a rubber (one who rubs the surface of a body to make it smooth) if he has only one hand and one good leg. He can learn to paint, or he can learn to do upholstery work. This is one of the branches of the automobile industry in which the work is easy, and being inside work it should be a desirable occupation. The pay is good in any of these branches of the work.

PLAN No. 1118. COMPLETING THE CAB

Following the body and fenders the top is put on, then the windshield and instruments.

The tires and demountable rims are then mounted. (An old set of tires are used for road-test work.) This

is another place where handicapped men may fit in, as certain handicaps would not interfere with the putting on of rims and tires.

PLAN No. 1119. FINAL INSPECTING AND TESTING

The car is now completed and is delivered to the final test department. Here we have inspectors, testers, and checkers. In this department the car is carefully inspected as to missing parts in final assembly, finish, tires, and general condition. An expert makes a final test of the car. He drives it a few miles and notes the general running of the car. He may make final adjustments on the carburetor, etc. If the car passes his inspection, it is carefully checked as to equipment and tagged. In this department the tools are put in and the car made ready for shipment or to be driven away.

The men in this department must be men who have come up through the ranks, or men who are thoroughly familiar with the construction of the particular make of automobile. The inspector is usually a man who is able to fill out reports and keep his records. The checker does similar work, while the final tester must be a mechanic whose judgment of the mechanical condition of the car is not to be questioned. Handicapped mechanics could qualify for this position providing they were able to handle the car properly. One good hand and a part of the other and possibly one leg would allow a man to do this work. Wages are good and the position is a responsible one.

PLAN No. 1120. PREPARATION FOR SHIPPING

From the final test department, the car goes to the shipping department. There a crew of men load the cars and block them for shipping. The men employed here must have good strong bodies as they have to move the cars by hand and oftentimes considerable lifting is necessary. A handicapped man could hardly qualify in this work unless his injury had been very slight. Wages for this work are higher than those of common laborers and the work is steady.

PLAN No. 1121. UNLOADING, STORING, AND DELIVERING CARS

The car is now ready for shipment and is transported to the agent of the manufacturer. Here a small crew unloads the cars and takes them to the warehouse for storage.

The men in this unloading crew are usually a little better grade of men than the loaders. Usually each one of these unloaders can drive or steer an automobile. The cars are sometimes driven away from the unloading platform under their own power, while in other cases they are towed at the end of a rope or cable. This branch of work is not very steady, and oftentimes the crews are made up of mechanics from the repair shop.

After the car has been placed in the warehouse for storage some one must check it up. This is usually done by the record clerk. The agent now puts his salesman out to sell the car and after it has been sold it is necessary for some one to deliver it to the customer. The car is brought from the warehouse to the garage or service department where it is inspected. This inspection consists of filling the fuel tank, oil reservoir, radiator, and grease cups, inflating tires, and making a road test. After delivery

the customer must be instructed as to the proper way to handle the car, and several men are employed for this service.

After History of the Car

The car is now in the hands of the customer, and after he has had some service out of it, it finally becomes necessary for him to have the car gone over and adjusted. He brings the car to the repair department for this work, which requires various specialists such as, for example, engine specialists, and specialists on ignition. In time the car is practically worn out or the owner wants a new one, and he therefore trades his old car on a new one or sells it outright.

Possibly the used-car dealer gets hold of it for resale. If so, he cleans it up, adjusts it, and possibly has it painted. Here again the services of helpers, mechanics, and salesmen are required.

Eventually the car finds its way to the junk dealer as no longer usable. This dealer tears the car to pieces and sells the brass, aluminum, iron, and steel taken from it. In many cases the car is an orphan—i. e., a car that is no longer manufactured—and the junk dealer saves such parts as may be sold to owners who have cars of the same make, but who are unable to purchase new parts. In this way many old cars are rebuilt and the life of the car extended several years. But in the end the car and its parts find their way to the scrap-iron dealer.

The scrap-iron man carefully assorts the various metals. Frames and other parts are cut to pieces with oxy-acetylene cutting torches, and the pieces are eventually sold to manufacturers, automobile companies, and other buyers. Material used in a car 10 years ago may in some cases be remolded and

used in a car of the same make. From the beginning of the first piece made to the return of the junked automobile, the services of many thousands of men, skilled and unskilled, are required at every stage in the manufacture, maintenance, and salvaging of cars.

Conditions of Employment

Working conditions as found in various factories are very good. In most factories the employee receives a great deal of attention. Practically all of the large factories have built hospitals, private schools, lunch rooms, rest rooms, club rooms, and play grounds, and have established welfare departments. The factories have been carefully surveyed and the ventilation and sanitary conditions brought to the highest point of efficiency. The average day is nine hours. Some factories work 8 and a few work 10 hours per day.

Living conditions are good in practically every locality where the automobile industry may be located. Street-car systems allow employees to live out in suburbs, where their rents are cheaper and where they may have small gardens.

There are some occupations, as stated above, which are not the most desirable for a man who has the education and ability to learn something better, but many of these occupations pay good wages, the work is steady, and the man can always find employment in them. Very few of the factories shut down during normal years, which means that a man is practically insured of steady work.

Motor Truck and Tractor Assembly

What has been said here concerning automobile assembly applies equally to motor truck and tractor assembly.

MANUFACTURE OF AUTOMOBILE UNITS

In the following paragraphs general statements will be made regarding the construction of each automobile unit, the nature of the work, the physical and mental qualifications of workers, and the desirability of the occupation involved. While the same class of work differs considerably from factory to factory, it is nevertheless true that up-to-date factories have much in common.

PLAN No. 1122. FRAMES

Automobile frames are made of pressed steel. Steel for the frame is run through a powerful press, which presses the side and cross members into proper shape. These presses are handled by men trained for this particular job. They must know when the work is right and how to adjust the machines. The dies which form the frames often break and require replacing and adjusting.

After the frame parts have been pressed into shape and sheared to length, they are passed to the assembly department. Here large punch and drill presses are used to make holes for rivets and bolts. The holes are first marked from a template or are layed out by a layout man. A template is a jig or fixture that will allow all the holes to be marked uniformly so that parts will be interchangeable and uniform. This worker or layout man must be able to read blue prints. He must also be able to move about freely.

After the frame members are marked they go to the press men where the holes are made. These men do not need to be expert mechanics. They are known as machine operators, and do nothing else but punch and drill holes in these pieces. A handicapped man

could operate many of these machines.

The parts are now passed to the assembly floor where the frame is to be assembled. Here we find men who assemble the parts from blue prints. Other men clamp or bolt the frame together. Oftentimes the frame is put in a jig to hold it until completed. Rivet men work on the frame next, or possibly the same men who assemble it will rivet it. Some frames are hot riveted while others are cold riveted. Where the frame is hot riveted, the rivets must be heated. The common practice is to heat the rivets in an oil or gas furnace. Rivets are passed to the riveter while red hot and he places them in the holes; he is usually the buck up man, i. e., the man who holds the rivet in place with a large bar while it is headed on the other side. Two men are required for riveting, which is done with an air hammer. Each rivet takes but a few seconds. In a few places riveting machines (squeezers) are used which save considerable time. The man who does this work must be able to move about freely, and should have two good hands in order to handle the tools and rivets.

The frames may next pass to a department where other parts are attached, such as step-board hangers and spring hangers. It is now ready for shipment or for the paint department, as the case may be.

The frame construction does not require a large number of expert mechanics. Oftentimes some of this work is paid for by the piece. All of the piecework is inspected; and if not up to standard, must be corrected.

Framework is considered rough work and a man should be in good health to undertake it. General working conditions are good and work is steady.

PLAN No. 1123. SPRINGS

Automobile springs are manufactured from high-grade steel. The steel must be heat treated and tempered so as to withstand thousands of vibrations which may tend to crystalize the steel and cause it to break. If the spring is tempered too hard it will break, and if it is not hard enough it will sag. Heat treatment of spring steel is a science in itself.

Red-hot steel is run through a mill which rolls it to the proper thickness and width. It is heat treated and forged to the proper shape and tempered in a bath, (oil-water, etc.), as may be best suited to that particular steel.

The compounding of the steels used in making springs requires careful attention. Here experts who have made a study of steels and alloys are employed, and the men engaged in this work must generally have had college training.

Rolling mills and forge machines are handled by men who have been trained to operate them. A handicapped man could handle some of the machines, some of which require two good hands while others require but one hand. Some can be operated by men with one leg.

Springs are assembled after being matched and formed, and are then ready for shipment. In assembling springs they must be scaled and oiled. The oil is to prevent rust while the scaling is done to remove the shell-like crust that may form in tempering. The spring bolt bushings are also installed in this department. A man having one good leg and two hands could assemble springs. Spring work as a whole requires a great number of men, some of whom must be highly trained in their special work, while others need no special training. The work is inside, wages are good, and factories run practically

the year round. Spring factories are usually located near large automobile centers. While some automobile manufacturers make their own springs, the majority purchase from spring factories.

PLAN No. 1124. FRONT AXLES AND SPINDLES

Front axles, unlike the frame, are forged instead of being pressed into shape. In the pressed steelwork the dies that shape the piece move slowly under great pressure. In the drop-forge work one die is stationary, and the other attached to a large weight operated by power is lifted several feet and released, striking the piece laid upon the stationary die a hard blow, and forging the metal into the shape. Before being placed in the drop forge machine the metal is heated in a blast furnace to the proper temperature.

Front axles are drop-forged from a solid bar of steel. They are forged into an I-beam form which gives them great strength. The end of the axle is forged into the shape of a fork or yoke.

This rough forge work is done by men who are capable of handling the weight of the axle and who can handle the machine. Care must be exercised or the dies will be ruined. Two to three men are usually necessary for each drop forge machine. They must bend the axle to proper shape while it is still hot. The axle is given a rough jig test before it goes to the heat-treatment department. After the axle is forged it goes to the heat-treatment department, where it is heated to take out any internal strain. In forging steel, the structure is disturbed and put under strain, and reheating of heat treatment relieves this strain, giving the steel greater strength.

The men who run these heat-treatment furnaces have been trained for this particular work, and they

must move about freely and be able to handle the axles.

From the heat-treatment department the axle goes to the machine shop for the machine-work.

In another section of the axle department steering spindles are drop-forged. These parts are much smaller and are made in many different shapes. In fact, very few automobiles of different makes use the same shaped steering spindles. As this work is lighter, a man with one good leg and one arm can do some of the operations. A forge or blacksmith shop is usually connected with the drop forge department. In the forge shop the steering spindle arms are bent to the proper angle so as to give perfect steering to the automobile. The men must be qualified to do simple forge and bending work, and handicapped men could fit in here very well.

In the forge and spindle departments working conditions are not of the best, as there is noise, smoke, and the smell of hot steel. The light of the fires also is hard on the eyes. Pay is good, however, and the work is steady.

Small parts of the front axle are made and furnished in the machine department. All parts are finally passed to the assembly department.

In the assembly department the front axle and spindles are assembled ready for the automobile. Here we find stands for holding the axle forging, while the spindles are being attached. This operation requires men who can put together these parts. They must be able to handle tools and do the work in a thorough manner. Considerable judgment must be exercised. The bolts and parts must be lubricated before assembling, the proper adjustments made, and all nuts and bolts securely locked in place. The inspector passes upon all this work to see that it is

properly done. A man must be able to use hand tools and move about, and should be able to use both hands freely.

In another department hubs for wheels are made. Here are the powerful presses in which the hubs are pressed out, and the punch and drill presses for making holes. Operators of these machines have duties similar to those of men in the spindle department. Hubs require some machine-shop work, which is done in the machine shop. Either ball or roller bearings must be placed in the hubs to reduce the friction.

PLAN No. 1125. BEARING MANUFACTURE

Bearing manufacture is practically an industry in itself. In this plant or department, a force of real mechanics is employed, men who are authorities on steel and the heat treatment of steel. The wheel bearings of an automobile receive many severe shocks and strains, and a poor piece of steel or a poorly heat-treated piece of steel may do considerable damage to the car. Roller and ball bearings are used in several places in an automobile. They are used in the engine, magneto, generator clutch, transmission and rear axle. Wherever it is desirable to reduce friction to save power, an antifriction bearing is used.

Research work as connected with bearing manufacture covers a large field. It includes not only work in the laboratory but as well work done in the field, wherever tractors are used. The engineers are always watching their product for any chance to improve it.

In manufacturing bearings, whether ball or roller, a high-grade pure iron is selected. This raw material

is put into furnaces and melted. Alloys are added in proper portions to make a tough, close-grained long-wearing steel, able to resist shocks. Samples of this steel are tested in the laboratory as to their hardness, grain, and tensile strength. This is work for a carefully trained metallurgist, who must have well-trained assistants. Handicapped men who are technically qualified can take up this branch of the industry.

After the steel has been compounded it goes to the drop-forge department, where the balls or rollers are rough forged. The trip hammer in this department is controlled by one foot, and the steel must be turned over several times in passing through the various dies. The rough-forged balls or rollers are next taken to the machine shop or grinding department.

In the various departments of the bearing manufacturing plants small electric cars are used to pull trailers loaded with parts to various points of the factory. The operator of these cars must be a man who has the free use of one foot for operating the brake, and he must have two hands to operate the control levers. This work is usually done standing on the truck. However, some of the operators are provided with seats.

The balls and rollers are next machined and ground to size. They are then carefully assorted as to sizes and passed to the inspection department, where men sitting at benches carefully check and test each piece, using special testing devices and machines. This department could readily use a man with one leg, but he should have the free use of two hands. A loss of one or more fingers would not be a serious handicap. As this work is all inspection work, it is done sitting. The department is usually quiet, and the work is not hard. Conditions and pay are good.

In another department the races (inside and outside) and the retainers are manufactured. The work is similar to that done in the ball or roller department, although the pieces are different. It includes forging, machining, grinding and inspecting.

The bearing parts have been made and tested, the bearing is now ready for assembling. In the assembling department men sit at their work. A man with one leg, and possibly one who had lost both feet, might find employment. Some of the work is done by machinery, while some is handwork. The pieces are placed upon benches, and the bearing is then assembled and placed in a machine that clinches the cage or retainer so as to hold in the balls or rollers. The bearing is then ready for the inspector who determines whether or not it has been properly put together, and if the balls and rollers are free in the cages.

The next step is to lubricate the bearings with an acid-proof grease to prevent rust. The bearing is then wrapped in oil paper and placed in a box ready for the storeroom or for shipment.

There are several operations in this department where a handicapped man could secure employment. The work as a whole is not hard, conditions are excellent, and the wages are good. Some of the work is noisy and is not desirable for men with certain disabilities, but on the other hand there are places where men who have only one eye, arm, or leg could find employment on equal terms with other men.

It should be noted that large bearing factories have many improved methods of manufacturing which vary considerably from that described above. Only a general statement has been attempted.

PLAN No. 1126. REAR AXLES

The building of rear axles is practically an industry in itself. There are several large companies who do nothing else but manufacture gears, and front and rear axles. In this branch of the industry we find all kinds of work going on, including forging, pressed-steel work, machining, heat treatment, and oxy-acetylene welding.

The rear-axle housing may be a casting or it may be pressed steel, or a forging. Where castings are used we have foundry work employing molders, core men, flask men, and cupola men. Most of the jobs in the foundry require men of sturdy build and good physical condition. Some foundry work, however, such as inspection, core work, and testing small castings, can be done sitting. Again there are jobs, such as trimming, grinding, and filing, that can be done by a man with one arm or one leg. The average foundry man is well paid and works short hours, but the work is dirty and not generally well suited for handicapped men.

The pressed-steel department of the rear-axle factory is equipped with special machines for pressing various parts into shape. Some of these machines could be operated by a man with one good leg or one leg and one arm.

In another department of the axle factory, brake supports are assembled. Here men stand at benches, riveting and bolting to the axle, housing the various necessary braces, and other pieces. Some of this work is heavy and some very light.

Gears for the rear axle, some eight in number, have been machined in the machine shop, heat-treated in the heat-treatment department, tested and inspected in the inspection department, and are now ready for the assembly of the differential.

In the machine shop and inspection department much of the work could be done efficiently by handicapped men who have been trained for it. Some of this work requires technical skill, some a technical education, but some of it requires just plain everyday common sense.

The differential housing (two halves) is usually a malleable casting. It is machined in the machine department and inspected in the inspection department.

All of the necessary parts for assembling the differential are brought to the differential assembly department. Here men fit gears, rivet gears to cases, and assemble the differentials. In some places this work is done by the progressive method, one man putting on one piece and another man another piece, while in other places one man assembles the whole differential. In this department, a man with one leg and two good hands could very well do the work. He must be able to use hand tools, and must know how properly to adjust the gears in the case. The operation is quickly learned and does not require a highly trained man.

After the differential is assembled, it passes to the inspector, and if it meets the necessary requirements, it is ready for the rear axle.

The rear-axle housing having been equipped with brake supports, trues rod and brake levers, is ready for the brake bands and shoes. The brakes are lined with an oil and waterproof lining, which is riveted to the bands or shoes. This operation is done in a riveting machine, each rivet being countersunk and headed. Riveting is done by one man who does nothing else but rivet brake lining to the bands or shoes. A handicapped man might do this work.

The lining having been riveted to the bands, they

are now ready for assembling on the rear-axle housing. In some factories a whole axle is assembled by two men, while in others using the progressive method, it is assembled by a number of men, each man doing one specific operation.

After the fittings have been applied to the axle housing, it is then ready for the differential assembly, which is the work of one or two men. They must know how to install the bearings properly on the differential and drive-pinion shaft, and must know how to adjust the gears. If the gears are not properly adjusted, they will be noisy and the wear upon them will be considerably increased. It takes practice to do this work efficiently. Men who assemble the rear axle and differential must be able to move about freely, and should have the free use of both hands.

After the axle has been assembled, it is inspected and passed to the testing department. In the testing department, wheels are applied and the axle mounted on a stand for testing. The axle is driven by an electric motor, brakes being applied to provide the equivalent of a load. The tester then notes the noise of the axle, and the contact surfaces of the teeth, and if final adjustments are necessary they are made in this department. The men are rear-axle experts, and understand thoroughly all the adjustments of the rear axle. They must be able to handle the axles and lifting is often times necessary.

The axle after being tested is numbered, tagged, and sent to the storeroom for shipment. In the rear-axle factory, there are many classes of workers which have not been mentioned. Some of these are draftsmen, tool-room helpers, storekeepers, clerks, checkers, timekeepers, janitors, gate keepers, machine hands, truckmen, and mechanics. Much of the work done by these men could be done by men

handicapped by loss of hand, leg, eye, or hearing. All of the work pays a good living wage, and working conditions are good.

PLAN No. 1127. UNIVERSAL JOINTS

Unit manufacturing has been specialized to such an extent that there are now factories which manufacture nothing but universal joints. These are small but very important units. In the universal joint factories we find steel presses, drop-forge machines, machine-shop equipment, and assembly departments. The work as carried on in these plants has been fairly explained in other parts of this monograph.

PLAN No. 1128. TRANSMISSIONS

Transmissions are another unit of the automobile that are sometimes made in a specialized plant. There are several well-known transmission firms who make nothing else but transmissions and gears.

The transmission case is usually made of aluminum and is cast into the proper shape. In the foundry are found the same classes of workers as in the axle factory, only the men are casting aluminum instead of steel.

The case having been cast is dumped from the sand, cleaned, trimmed, and inspected. Any small holes are welded shut, and the case is then cleaned ready for the sand blast.

In sand blasting a stream of air and sand is played against the part. The air is under high pressure and the sand fed in plays upon the aluminum at a high velocity, cleaning and smoothing it. Operators of the sand-blast machine wear masks and dust-proof suits and work in a special cabinet. It is impossible to

work without this protection.

After being inspected the transmission case is passed to the machine department, where it is machined to receive the bearings, covers, etc.

Gears, shafts, and shifting forks used in the transmission are also made in the machine shop. The gears and shafts are next heat treated and tested. They are then ground to insure accuracy and are again tested for trueness. This testing operation is done by men who sit at benches. Part of this work is done sitting, and could be done by a man with one leg. Gears are tested as to hardness and for centers. Special equipment is used for these operations, and a man does not need experience other than that learned at the work in a short time.

From the inspection department the transmission case, shafts, gears, and bearings (the bearing having been made in another department or purchased) are taken to the assembly department. Here we find men standing at benches putting together the various parts of the transmissions. Gears are riveted or keyed to shafts, bearings are fitted to cases, and shafts and parts put in the case. Shafts and bearing are then adjusted and the adjustments locked. The assembled transmission is now ready for the inspectors, who check the work. The work in the transmission assembly department is similar to that of the rear axle department. Some transmissions are heavy and some light. The employee in this department must be able to move about freely, and must be able to use such hand tools as wrenches, files, and hammers. He needs no special instruction.

The transmission is now passed to the testing department where it is tested for noisy bearings and gears. If it passes this test, the covers are put on to keep out dirt. It is then numbered and sent to the

stock department.

In a transmission factory there are many occupations that could be filled by men with slight handicaps. Much of the work can be done by men who have lost fingers, one hand, a leg, or foot, and by men who are not physically strong. The factories pay good wages, hours are reasonable, and the work is steady. Much of the work is piece-work.

PLAN No. 1129. CLUTCH

Practically all parts of the clutch are made in the machine shop. After the parts have been machined and inspected they are sent to the assembly department, where the work is similar to that described for other units. It requires a man who can use both hands and move about. Wages for this work are practically the same as are paid the assembler in the other unit factories—from 80 to 60 cents per hour—and general conditions are the same as in other factories.

PLAN No. 1130. ENGINES

There are a number of concerns which build only automobile engines, and the automobile engine factory is usually a large plant.

Usually about three classes or grades of engines are built in a factory which makes a specialty of engines. The first class or grades of engines go into the higher-priced cars, the second grade into the second-class cars, and the third grade into the cheaper cars.

The engine factory must have its foundry in which are employed such foundry experts and helpers as patternmakers, coremen, cupolamen, molders, and

machine operators. Some engine parts are aluminum, some brass, some steel, and some cast iron. There is much work in the foundry that could easily be done by handicapped men—by men, for example, who have stiff joints and who are unable to move about freely, and men who have lost one arm, a hand, or a leg.

The crank case of the engine is usually cast of aluminum. After this part has been cast it goes to a cleaning and inspecting department, where it is carefully inspected before any machine work is done upon it. After it passes inspection it is rough jigged and the machine work is started. After the milling, operations are done on the case—such as smoothing the sides, top, and bottom—and the case then goes to a layout department, where it is placed upon a large surface plate. Layout men, using surface gauges and such other tools, mark out the dimensions and spot holes for bolts, studs, etc. The crank case then goes back to the machine-shop department, where it is drilled, tapped, and machined. It is then inspected, after which the bearings are fitted. Some engines have the bearings babbitted into the case, while others have them detachable, the bearings being machined to fit the case.

After the bearings have been fitted into the case they are reamed with a bearing reamer. The lower half of the crank case, which is usually the oiled reservoir covering the timing-gear case, and other crank-case parts are finished in their respective departments. The crank case, having gone through a number of small operations, is now ready for the assembly department. There are a number of places in the crank-case department where handicapped men could find employment. Some of the operations could well be done by men who have lost a hand,

eye, or leg, or by men who have stiff joints. The work in this department is usually noisy, and possibly not well suited for men of a nervous temperament.

The crank shaft of the automobile engine is usually drop-forged. However, a few shafts are made from a solid block of steel. When the shafts are drop-forged, a number of machine operators are employed. The men operating these forge machines need not be experts in that they are trained in the factory for this particular job. Some of these machines could very easily be operated by men with one arm, or with one leg and one arm. If the crank shaft had been drop-forged, it goes to the heat treatment department for heat treating. It is then sent to the machine shop where it is rough turned, and in a number of cases is then sent back to the heat-treatment department. The shaft is then machined, rough ground and finished ground to size. It is now passed to the inspection department where the journals are inspected as to size, length, and trueness. The shaft then goes to a balancing machine where it is given a running test and carefully balanced.

The flywheel, having been machined in another department, is then fitted to the crank shaft and the shaft and flywheel are balanced together. This balancing of the shaft and flywheel has much to do with reducing the vibration of the engine when in use. After passing this test the shaft is ready to be fitted to the crank case. The fitting to the case is done by scraping—an operation which requires a man who has had previous training in this line of work to develop a very particular skill in it. A man must be very efficient to turn out the proper amount of work each day. The scraping operation does not, however, take much time with present-day

equipment. After the bearing is scraped to fit the shaft, the bearings are shimmed and tightened to the proper tension, and the shaft and case is ready for a block test. It is important that these bearings be tightened to the proper tension, since if they are too tight the bearing may burn out from the increased friction, while if they are not tight enough the engine will soon develop a knock when it is put into service.

The greater part of the work done on the crank shaft is done in the machine-shop department. Outside of this department, however, there are a number of jobs that could be done by handicapped men, among them being those of inspectors, balancing machine hand men, and bearing scrapers. Inspectors and balancers should have the free use of two hands. They are not required to move about rapidly, but should be able to move from one place to another. The bearing scrapers could be men who have lost part of one hand, one eye, or one leg. This work requires bending over so that a man who has had stomach wounds or injury to the back could not do it.

The cam shaft for the engine is drop-forged and rough turned, the work being similar to that done in the other drop-forge departments. The shaft then goes to an electroplating department where it is copper plated. It is then sent back to the machine department where the cam faces and such other places that are to be hardened are ground to a slightly oversized measurement. The shaft is then sent to the heat-treatment department where it is hardened. The process of this hardening is to pack the shaft in a large metal box together with such hardening compound as has been selected by the factory. The box containing the shafts to be hardened is then put into a heat-treatment furnace where it is

heated to a proper temperature and allowed to remain there for the proper length of time, after which the shafts are quenched in a bath to finish the heat-treating process.

The copper plating, which has been put on the shaft in a previous operation, prevents the carbon from entering the shaft during the heat-treating process. The carbon enters the shaft only where the copper plating has been removed. After heat treatment the shaft is rough tested for trueness. It is then sent to the grinding department where it is ground to the final dimensions. The shaft then goes to the inspection department, where it is carefully inspected before being sent to the stock assembly division. Such other parts, as timing gears and shafts, are machined and inspected in other parts of the factory.

The valve tappets of the average automobile engine are of the mushroom or button-head type. This type of tappet is either drop-forged or made of pressed steel. The work requires about the same class of workmen as have been mentioned in drop-forge and die work under frames and axles. After the tappets have been formed into shape they are then rough turned, after which they are heat treated, machined, and inspected. They are then assembled ready for the engine. The assembly and inspection departments are about the only places where handicapped men could be used to an advantage, with exception of the machine-shop work.

The assembly and inspection work of the valve tappets can be done sitting down, and can be handled very well by men who have lost one or even both legs. They should, however, have the free use of one hand, and of at least part of the other, so as to enable them to use special testing tools and

equipment.

Connecting rods for engines are drop-forged and machined in their respective departments. They are then inspected before the bearings are fitted to them. This inspection work could be very well done by a man with two hands and one leg, or by a man who is capable of lifting light weights and who can move about with ease. The bearings of the average automobile engine are detachable, and are made in a special department and sent to the connecting-rod assembly department for installing in the connecting rod. Here the bearings are fitted to the connecting rod in both upper and lower halves, after which the bearing is reamed. The bearing is then scraped to a shaft until it has the proper bearing surface. The rod is then jigged in a fixture so that it will be in proper alignment when it is installed in the engine. The connecting rods are then carefully weighed so that all rods or pairs of rods are of equal weight. They are then tagged or marked and sent to the crank shaft department, where they are fitted to the crank shaft upon which they are to be used. The connecting rod department could furnish employment for a number of disabled men. Some of this work is done sitting down and some is done standing at a bench. The bearing work done on the connecting rods could be done by men who have one good leg and one good arm, and the free use of the stub of the other arm, or a device could be used to take the place of the other hand. No special educational requirements are indicated for this work and no special instructions are necessary.

Cylinders for engines, having been cast in the foundry, are rough-tested, the core sand removed, and the cylinders scaled. Some of this work is done sitting down and could very well be done by men

who have received injuries to their legs. However, they should have the free use of both hands. Cylinders, after being scaled and cleaned, are sent to the machine department where they are machined and ground. This work is all machine-shop work.

After being ground, cylinders are inspected for trueness and general condition. The valves are then ground to the cylinders. This operation can be done by men who have the free use of one hand and of part of the other hand. Some of this work is done sitting down, so that a man need not have two good legs. Some of the valve grinding is often done in machines, in which case it is necessary that the operator watch a number of valves on the machine at one time. This operation would require a man who could move about freely in order to inspect the machine.

Pistons for the engine, having been machined and ground, are inspected as to sizes, dimensions, etc. This operation could well be done by a man with two good hands, but he must be able to stand at a bench and move about freely. The pistons are then fitted to the cylinders so as to get a proper fit in each cylinder. They are also carefully balanced in pairs and equal weights are selected as nearly as possible. The fitting of pistons to cylinders and the balancing of them could well be done by handicapped men. The piston pins also are fitted to the piston and to the connecting rod. This work is done standing at benches, and could be done by men who have the free use of both hands.

Piston rings which are made from castings in the machine shop, where they have been ground, are sent to the inspector who carefully inspects each ring. This work is light and is well suited to a man who could sit at a bench, but he must have the free

use of both hands. Piston rings are fitted to cylinders and pistons in another department. This operation requires a little more skill than some of the others mentioned and a man must have some mechanical ability to learn to do the work efficiently. There are, however, many minor injuries which would not prevent a man from doing this work.

The manifolds, both inlet and exhaust are cast in the foundry department. They are then machined, where necessary, after which they are inspected. This department could employ disabled men for inspection work.

There are a number of bolts and screws and special fittings which must be carefully inspected before they can go to the assembly department. Every bolt must be looked over as to its general condition before it can be used. This work alone offers employment to a large number of men in every automobile engine factory. It is very light and a man in very delicate condition could efficiently perform a number of these operations. In a number of positions one hand is all that is necessary. Men could either sit or recline on the bench and do the work. In fact, men in bed even could come up to production in this particular kind of work.

The oil pump for the engine, having been machined in the various departments is assembled by men who sit at benches. This work is very light work and can be handled to advantage by men with handicaps. They should, however, have the use of both hands.

We have now mentioned the various units which go to make up an engine and have come to the point where it is necessary to assemble these various parts.

In the up-to-date automobile factory, the engine assembly is done by the progressive system. The

conveyor system which is used in engine assembly is similar to that used in the chassis assembly, described in another section of this bulletin. The crank case is usually mounted upon this conveyor or movable stand. The crank shaft, having been assembled to the case in another department, is now ready for the connecting rods, and the rods with the pistons are attached. The cam shaft, tappets, and tappet guides are then installed, and the cylinders are mounted. The engine moves on to another section where the manifolds are attached to the cylinders. It then passes to a section where the carburetor is mounted. Next the ignition system is attached, and the starting and lighting and such other units as this particular engine may require are installed. All these operations have taken place while the engine has been moving. Special tools are used during these operations, such as air wrenches, socket wrenches, and any tool that may save a few seconds time.

The work that is done on this engine conveyor system is considered to be hard work in that each man must keep moving at top speed in order to turn out the required production in that department. The men are well paid and they must be qualified to take care of their particular section of this conveyor. There are a number of places, however, where handicapped men can be used in this work. Very few of these operations could be efficiently handled by a man who did not have the free use of both hands. He could, however, carry on some of this work, if he had received injuries to one of his legs. All of this work is inspected and a man is carefully checked as to the work he has done.

After the engine has been inspected, it is ready for a block test. The conveyor carries the engine to this

block-test department, where the engine is mounted on a special stand and is connected to an electric motor, which drives the engine at sufficient speed to lubricate it and to work in the moving parts. The block-test mechanics are men who can pick out noises and defects in the engine. They must watch the engine for hot bearings, loose bearings, and in fact this department is a sort of running-test inspection department. If the engine does not show any defects and meets normal requirements, it is given a running test under its own power. This test is oftentimes done on the same motor or electric set that it has been run in by, or in other words the electric motor becomes a generator. This test is known as the dynamometer test.

The engine running under its own power is loaded down by the resistance of the electric generator and the horsepower noted. The carburetor and ignition is adjusted to bring the engine to the normal horsepower. If the engine fails to come up to normal horsepower, it is rejected and must go back for rebuilding. After it passes the horsepower test, the oil is removed and the engine is sent to the storeroom or chassis assembly department as the case may be.

The inspection department of the engine assembly could employ a number of disabled men provided they were qualified by mechanical experience. The block test department could employ men with slight handicaps who have had previous experience in engine work. They should, however, be expert gas engine men. This is true also of men in the dynamometer-test department. In the engine-assembly department, however, some helpers and less skilled mechanics could very well find employment even though disabled.

All work in engine factories can be termed

desirable employment, since up-to-date factories are well equipped, and well heated, lighted, and ventilated. Pay is good and the factory usually runs the year around. Engine factories are usually located near large automobile centers, for the same reason that the automobile factories are located there, namely, railroad facilities, power facilities, and general living conditions.

PLAN No. 1131. CARBURETORS

Carburetors are usually made by a manufacturer who makes a specialty of making carburetors. Carburetion is one of the most interesting subjects in the automotive industry, and manufacturers in this line employ large staffs of experts and research men. They employ also engineers for the purpose of making tests of the various types of carburetors, and of the different classes of fuels.

Some carburetor factories have their own foundries where they make their own castings, which are usually of aluminum or bronze. Some of the highest types of foundry men may be found in this department, as this particular branch of work must be of very high grade. Manufacturers take pride in the appearance of their castings. In a foundry of this type there are several occupations that disabled men could do, such as pattern work, core making, molding, and even flask work.

After the castings have been poured they are ready for cleaning and scaling. Part of this work is done in the sand blast. The castings are then carefully inspected, after which they are ready for the machine-shop department. There are a number of machines used in carburetor work which do not really come under the head of machine-shop

equipment, in that they are punch presses. These presses are used for punching the float parts for the carburetor and other similar pieces. The float is usually made up of two pieces, pressed from a flat piece of stock into a cup shape. These two halves are put together and soldered to make an air-tight chamber. This construction, of course, will vary with the different makes of carburetors. Where this work is done, disabled men could handle the pieces very nicely. They could also do such soldering as is done on floats.

There are many small screws, nozzles, and similar parts made in the machine shop which require a large number of machine operators. The machines include among others automatic screw machines. After these parts have been machined, it is necessary that each part be carefully inspected before it goes to the assembly department, and this inspection work is very light work, well suited to disabled men who are unable to do heavy work. The use of one arm is about all that is necessary to perform one of these operations. There are also a number of testing operations in carburetor factories which could be handled to an advantage by handicapped men.

After the carburetor parts have been machined the carburetor is ready for final assembly. This work is usually done by men sitting at benches, who assemble the various sizes of carburetors on the various benches. The work could be done by men who have lost the use of their feet or legs, as it does not require very much moving about. After the carburetor has been assembled, it is given a preliminary test on a rack to determine whether or not the float level is too high, and whether or not the joints of the carburetor lack fuel. After the carburetor passes this test it goes to a machine department,

where it is tried out on an engine. The running test is the most skilled work done along this line, and requires men who understand the operation of gasoline engines and who are capable of attaching and detaching a carburetor quickly. It is not necessary in all cases that every carburetor be tested on an engine. Where this is not done the carburetors are inspected and passed on to the shipping department.

On the whole, there are a number of desirable places in the carburetor department which are well suited for handicapped men. The working conditions in these factories are good and the wages paid are about the same as those paid by any general assembly or manufacturing plant.

PLAN No. 1132. IGNITION

A number of factories make a specialty of building ignition apparatus for automobiles. In them we find the usual organization found in other similar factories. Some of these factories build ignition systems on a large scale, in which case the organization is elaborate.

One of the most important factors of the ignition system is the insulation. A compound has been discovered, known as “bakelite,” which has a very high resistance to electricity. This substance usually comes to the manufacturer in powdered form and the manufacturer puts it through his mixing process.

The bakelite for parts to be made is carefully weighed for each piece. It is then placed in jigs which hold contacts, segments, etc. The jigs or molds are then placed in a molding machine to which is applied considerable pressure and heat. The heat causes the bakelite to run together, forming one solid

piece of material when it is properly cured. After the standard heat has been applied to the bakelite for the proper length of time the mold is placed in another press and cold water is run around it to chill or set the bakelite. The molded part is then removed from the press and is ready for inspection.

When the part comes from the mold it is very shiny and smooth in appearance. The inspection of this part is to determine whether or not the contacts have stayed in proper position and whether or not there are any flaws in the bakelite. Bakelite parts are used in many places in the ignition system. There are a number of places in the bakelite section of the ignition factory where disabled men might well find employment.

Men with one leg could weigh out the bakelite, and a man with one leg and one arm could possibly run the presses around the bakelite for curing. This work is done in a dry department; the conditions are very good and the wages are reasonable.

In the coil department of the ignition factories we find various types of work going on. Here are machines for winding the primary and secondary coils, testing machines, etc. The ignition coil is made up of an iron core, an insulator around the iron core, a primary winding, a secondary winding, and a condenser. Some coils have vibrators attached, in which case the vibrators are mounted on the outside of the coil windings.

The core of the coil is made up of a bundle of soft iron wires. The fiber tube is commonly used as insulating material. This tube is filled with the soft iron wire. The primary winding, of which there are about two layers, is wound on the outside of the fiber tube. This operation takes but a few seconds, the tube being placed between a pair of centers on a

small motor driven machine similar to a small lathe. The wire is guided on to this tube while it is revolving. This work is done sitting, and could very well be done by men who have received injuries to their legs, or by men who have received injuries to their spine. The main requirements are that the operator shall have the free use of both hands, and be able to see properly the work that is going on.

The secondary or high-tension winding of the coil is similar to the low-tension winding. The high-tension winding, however, has many turns of very fine wire no larger than the ordinary thread used on sewing machines. This wire is insulated, and care must be exercised that the insulation is not broken. The secondary winding also is wound on a fiber tube on a machine similar to that on which the primary coil is wound. Between each layer of wire in these windings a small strip of insulation is placed. This, of course, is done at the end of each layer of wire. In carrying out this operation the operator must be very careful that the insulation is not broken; that the insulation is properly placed, and that the layers of wire are smooth and uniform.

The condenser of the ignition coil is made of two layers of tin foil and several layers of insulation, such as paraffin paper. This operation requires a person who is very careful, since if this particular part is not carefully constructed it will not function properly. The condenser is also machine wound in a number of cases, and skill comes with practice in this work.

Requirements for this job are about the same as found in the coil winding, viz., that the operator must have the free use of both hands, and be able to watch his work carefully.

After these various parts have been made in their respective departments they are ready for the

industrial tests. This is done with meters to determine the amount of resistance that each coil has. If the resistance is not the same as found in other coils, the insulation is broken or the coil is shorted, in which case the coil is rejected. The condenser test is somewhat different. Here we find that special meters are used for determining the capacity. These testing operations require a man who has been trained for this particular job. The work is usually done sitting down.

After these various parts have passed inspection they are sent to the coil assembly, where they are put together in their proper relation. Where the coil is a box coil, the windings and condenser are placed in a box and hot paraffin or an insulating compound is poured into the box. After it has cooled all the ignition parts are held securely in place. The coil is then finished and is ready for the final test. This work is all light work, and there are a number of positions in which handicapped men could be employed.

In another part of the ignition factory, we find the breaker mechanism and other ignition apparatus being manufactured. This mechanism requires considerable machine work, which is done on special machines in the machine-shop department. After these parts have been machined and inspected they come through the assembly department, where the ignition apparatus is assembled. Here we find the workers at benches assembling the very fine delicate parts of the apparatus. The small springs, platinum points, screws, etc., must be placed in their proper places and with proper tension. After the ignition apparatus has been properly assembled it is inspected, and then goes to the testing department, where apparatus is tested as to its efficiency, etc.

In another department, wires are cut and made into proper lengths for certain ignition jobs. Here the terminals are soldered to the ends of the wires. Sometimes these operations are done on a conveyer system. This work is done sitting, and is well adapted to disabled men.

In the ignition, assembly, inspection, and testing departments, there are a number of operations that could be done by men with one arm and no legs, one leg and two arms, one eye, one arm and one leg, by men who have lost their hearing, and even by men who have been blinded. The work as found in the ignition department is light, working conditions are good, and the pay is average.

Where the ignition manufacturer manufactures magnetos, we find a little different class of work going on. Armatures are wound with primary and secondary windings, and this is done on a somewhat specialized machine. Insulation, also, is somewhat specialized, and assembly work differs somewhat from other assembly work. Magnetos must be made, charged, and tested. Condensers are of a special design. As a whole, however, the work in the magneto department requires about the same class of workmen as are found in the ignition department.

PLAN No. 1133. STARTING AND LIGHTING EQUIPMENT

The electrical equipment of the automobile has reached a point of development which has brought about a large demand for this particular kind of apparatus. A number of factories make a specialty of this kind of equipment.

The starting and lighting equipment of the automobile, being made up of a number of pieces of

material, requires considerable machine work, which will not be described here. The armature, which is made up of a shaft, laminated core, and a commutator, is all built in a sub-assembly department, after which the armature passes to the winding department, where special machines are operated. The operators of these machines do not need to be experts, but they do become very efficient at this kind of work after a short time. The wire is wound on the armature in the proper slots and the ends come out to the proper length. The sleeves are then put over the ends of the wires for insulation and the wires trimmed to exact length, after which the wire ends are soldered to the proper commutator bars.

The generator also has field coils or windings. These windings are wound on jigs for this work and are later placed in the fieldpieces of the generator. Each coil is tested before it is assembled to the field, and each armature is tested before it is assembled. After the pieces have been made in the various departments the generator is sent to the assembly department. Here the assembler is furnished with the generator castings, coils, pole pieces, bearings, armature, plates, brushes, and such other fittings as may be necessary. He proceeds to assemble the complete generator, after which the generator passes to the inspection department where it is inspected and tested as to its output.

The starting and lighting factory offers a number of splendid opportunities for the placement of disabled men. Handicapped men could very efficiently wind armatures. It has been said that a blind man could wind an armature after some practice. Men without legs could do the soldering of these armatures; men without legs could wind and

test field windings and could assemble generators; men with one arm could test and wind field windings and do several other operations.

The starter motor as used in the automobile is a piece of equipment similar to that of a generator, about the only difference being that the starter motor is a little heavier machine, and the armature is wound with heavier wire. It is made for the purpose of cranking the automobile engine, and must withstand considerable abuse. Disabled men could make the tests on generators and starter motors with very little difficulty.

The output of a generator must be controlled to a limited degree. This is done by what is known as voltage regulation. There must be some kind of a relay to disconnect the storage battery and generator when the engine is not running. This is done by what is known as the circuit breaker. The voltage regulator and circuit breaker of the automobile starting and lighting system is made up of coils, springs, and breaker mechanism, depending upon the type of regulator and circuit breaker used. This work is all light work, usually handwork, and could be done by disabled men to a large extent. The assembling of this work requires the free use of both hands and a man must be able to see the work that is being done.

As a whole, work in ignition, starting and lighting departments is very desirable work. The working conditions are considered very good, the hours reasonable, and the pay about the same as in other manufacturing concerns.

PLAN No. 1134. RADIATORS

The demand for efficient radiators for the up-to-

date automobile has almost created a separate industry in itself. Cooling systems for automobile engines have developed to such a point that a large force of experts are employed in the work of improving such systems. There are a number of factories which employ hundreds of employees in the manufacture of radiators for the automotive industry. These factories use a large amount of steel, tin, copper, and brass. They have developed special machines for the purpose of making peculiarly shaped cores in an endeavor to increase the radiating surface without increasing the cost. Large punch machines are used in making these shapes, and these machines have been so perfected that practically all the operator has to do is to feed through the machine one continuous roll of metal and take away the shaped cores. The cores are sent to the assembly department where they are then placed in proper formation. They are then dipped in a molten bath of solder which closes the ends of the tubes or solders them together, and then go to the final assembly department where each core is incased in the proper shaped casing and the radiator pipe and hose connections are soldered on. The radiator is then ready for testing, which is done in a tank where compressed air is forced into the radiator. If there are any leaks, they will show by bubbles arising from them.

The work as done in these factories requires some experts and some novices. Some of it can be done by men who have been handicapped, and there is considerable demand for men capable of handling this particular branch of the work. Working conditions as found in the radiator factories are good and hours are reasonable.

PLAN No. 1135. STEERING GEARS

The steering gear is one of the most important units of the automobile. A number of factories have been organized for the sole purpose of manufacturing a particular type of steering gear. In these factories we find ordinary drop-forging machines, machine-shop equipment, woodworking, and assembly work.

This work requires men who are able to move about freely and who have the free use of both hands. Some of the work is piecework (at least in some factories), and men must be able to come up to at least a reasonable production in order to qualify. The conditions as found in other manufacturing plants are found also in the steering-gear factories.

PLAN No. 1136. WHEELS

In the wheel factories, we find a number of special machines such as spoke machines, felloes machines, and trimming machines. These are practically automatic, the material being fed through them and the finished product coming out. After the parts have been made in their respective departments, they are ready for assembly. This requires a certain amount of handwork. The wheels must be assembled so that they will not loosen when they have been put into use. After they have been assembled, it is often necessary that a band be mounted on them. After a wheel has been assembled, it is put into a machine which trues and trims it, and it is then ready for the automobile manufacturer.

As the woodwork in the wheel factory is covered in the bulletin on woodworking, no further comments are made here.

PLAN No. 1137. BODIES

With the increased production of automobiles, large manufacturers have seen fit to purchase their bodies from body manufacturers. This has encouraged the body manufacturers to increase their production which has brought increased activities in this particular branch of the work.

In the body factories are employed woodworkers, sheet-metal workers, sand blasters, painters, upholsterers, and top builders.

In the woodworking department the work is similar to that of cabinet making, only the men are building skeleton instead of closed-type work. After the frame or skeleton of the body has been built, the metal or covering is fitted and secured to the framework. The body is then sent to be sand-blasted to make it smooth and also to assist in making the paint cling to a shiny surface. It then goes to the painting department where it is given a priming coat, several filler coats, color coat rubbing, varnishing, and a final finishing coat.

The woodworking department requires men who are able to handle tools and who are able to move about freely. The sheet-metal department requires men who are capable of using screw drivers and who are able to drive nails. The sand-blast department requires men with a normal body who can wear a dustproof suit, and who can handle the sand-blast equipment. The paint department requires men who are capable of moving about freely and who have the free use of one hand.

In the upholstering department are found machines for sewing, and racks upon which the upholstering is built before being put into the body. A number of these operations are done sitting, so that a man without legs could very efficiently do this

work.

The upholstering is first made upon racks or frames, and is then cut out and tacked to the body. In this way the work is much easier done than by building it upon the body itself. The machine operators should have the use of one foot. However, with special equipment, the loss of both legs could be overcome in some of the work. The work in the upholstery department is very desirable in that it is dry and quiet, and employment is steady. Pay is good, and hours are about the same as in any other factories.

PLAN No. 1138. ACCESSORIES

The word "accessories" means extras or special pieces of equipment which are applied to the automobile. Under this heading are included wind shields, speedometers, clocks, indicators, horns, mirrors, spark plugs, and various other pieces of equipment. As this work inquires a great variety of machines, such as punches and presses, and a varied machine-shop equipment, no attempt will be made here to go into details. What has been said in preceding sections has covered the work carried on in these factories. For example, the work done in speedometer factories is somewhat similar to the work done in starting and lighting factories; and the work done in horn factories is somewhat similar to that done in ignition factories. Suffice it to say, that there are hundreds of occupations in the accessory departments and factories alone which offer employment to men who have met with accidents which prevent them from having the free use of every member of the body. There are a number of occupations which lend themselves particularly to

men who are not able to do heavy work, as for instance, in the assembly of speedometers, clocks, and horns.

Conditions in these accessory factories are first class, wages are good, and hours are about the same as in the average manufacturing plant.

Classification of Occupations With Reference to Disabilities

In passing through an up-to-date automobile factory, there are thousands of operations being carried out at one time. The foregoing account does not cover hundreds of minor operations, skilled and unskilled, which could be efficiently done by disabled men. Many of these operations are entirely suitable for individuals who have been slightly disabled.

The following tabulation classifies the principal occupations which have been mentioned, with reference to certain type disabilities. It will be understood that neither the list of disabilities nor the several lists of occupations specified under these disabilities are complete.

Possible Occupations for Men with Certain Disabilities

Total blindness. Folding cartons, counting parts, armature winding, bolts and nuts, inspector of packing of parts in cartons, inspecting and testing.

Loss of one eye. Almost any occupation that the man is otherwise qualified to work at.

Deafness, total or partial. Drafting clerk or checker, frame assembly, spring assembly, axle assembly, bearing assembly, transmission assembly, clutch assembly, engine assembly, bearing work, cam-shaft inspection, con-rod assembly, cylinder assembly, ring inspection, oil-pump assembly, carburetor assembly, coil winding, condenser assembly, coil assembly, coil testing, armature winding,

generator assembly, magneto assembly, magneto test, general wiring, radiator assembly, wheel building, body building, upholstering, painting, many kinds of inspection work.

Stiff neck. Punch press and machine work, and occupations listed under deafness.

Injured spine. Drafting, inspection work, light assembly work, checking, timekeeping, messenger, gatekeeper, small electric machine operator, traveling-crane operator, heat treatment checker, employment department clerk.

Loss of one arm. Drafting, inspection, checker, foreman, timekeeper, gatekeeper, messenger, electrical machine operator, traveling-crane operator, heat treatment checker, light assembly work, armature winding, electrical testing, drop forge operator, punch press operator, machine shop work, employment department clerk.

Loss of both arms. Checking, gatekeeper, and other work in proportion as man becomes skillful in the manipulation of artificial appliances.

Loss of part of finger an one hand. Practically any work for which man is otherwise qualified, providing he has learned to use remaining fingers.

Stiff arm or shoulder, or partial loss of use of arm. Drafting, checking, inspecting, foreman, timekeeper, gatekeeper, information department, employment department, machine operator, lighter assembly work, magneto work, coil work, generator work, soldering, chipping and trimming, foundry (light work).

Loss of both legs. Upholstering, drafting, checking, inspecting, gatekeeper, timekeeper, clerk, information, employment department, machine operator, small assembly work, testing of electrical equipment, soldering, pyrometer checker in heat treatment department.

Loss of one leg. Drafting, checker, inspector, foreman, timekeeper, gatekeeper, employment department, practically any assembly work, painting, upholstering, salvage department, body work, soldering, foundry work, machine operator, tester, dynamometer tester. Loss of a leg should not be a serious handicap.

Shell shock and nervousness. Drafting, checker, inspector,

timekeeper, gatekeeper, lighter assembly work, painting, upholstering, body work, soldering, coil work, generator assembly, magneto assembly, cut-out assembly, electrical testing.

Heart trouble and epilepsy. Drafting, checker, inspector, light assembly work, painting, upholstering, coil work, generator assembly, cut-out assembly, electrical testing.

Tuberculosis. Loading crew checker (outside), inspector, car clerk, yard stock keeper, special salvage department as found in some factories especially set aside for tubercular people, outside trucking.

Rheumatism. Drafting, checker, inspector, painting, upholstering, body mechanic, wheel assembly, general assembly work, salvage department, machine operator, ignition expert, soldering, coil work, magneto assembly, generator assembly, cut-out assembly, testing of electrical equipment, laboratory work.

Other disabilities, such as body wounds, etc., leaving patient in delicate condition. Drafting, checker, inspector, foreman, clerk, employment department, information department, gatekeeper, electrical machine operator, light assembly work, machine operator, upholstery, soldering, light inspection work, magneto assembly, generator assembly, stationary motor assembly, Bakelite machine operator; many other operations which require very little strength and skill.

PLAN No. 1139. OXY-ACETYLENE WELDING

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What the Welder Does

He handles a torch, or blowpipe, at the tip of which a flame is produced by the burning of a mixture of two gases—acetylene and oxygen. A high degree of heat is produced by this flame, which can be concentrated at any point by proper handling of the torch.

The welder's activities may be divided into two operations—welding and cutting.

Welding

In welding, metals, like or unlike, are joined together by melting them until they fuse, "adding material" being used where it is required. The welder also builds up worn parts or adds metal where it is lacking. Common metals which can be treated by this process include the following: Cast iron, steel, malleable iron, aluminum, copper, brass, bronze, lead, and nickel. Precious metals also can be welded. Each metal has its peculiar characteristics and mode of treatment, and the welder who would turn out a good job must master the special technique for handling each metal.

Welding forms the larger part of the welder's activities. It is much more difficult than cutting, and also has a wider field of application.

Cutting

Cutting can be learned in a few hours. It is restricted in its scope, as it can be used only on steel and wrought iron. The cutting torch is similar to the welding torch with the difference that it is equipped with a special outlet for oxygen under pressure. The operator turns on his usual welding flame until the object is heated to a cherry red, and then presses a device which turns on the oxygen, causing the metal

to burn away rapidly. The torch is then advanced slowly along the line of the cut to be made. By practice comes the knack of steadiness and of moving the torch at just the right speed to cut clear through the metal—not too fast for complete penetration, nor too slow, causing loss of oxygen.

Work in the Open and in the Shop

Where the job can not be brought into the shop, welding and cutting are done out of doors, and may be carried on under all conditions of weather. Very commonly the process is used in cutting scrap, wreckage, and piling, and in welding piping and mains.

Inside work varies from shop to shop according as the shop is part of a manufacturing plant or of a foundry, or is purely a job welding shop.

Some account of the common uses of the processes in different industries is given in the section below on “Industrial Applications.” In steam and electric railway shops and yards, in shipbuilding, in the manufacture and repair of automobiles, in installing pipes and mains, in sheet-metal and metal plate work, in the manufacture of furniture, containers and other metal products, and in foundry work, welding and cutting is being extensively used to-day, and each day the welder’s field of operations is still further extended.

What Localities Need Welders?

The answer is: All localities where industrial plants are located, or where street railways are operated, or where farm machinery and implements are made or repaired, or where automobiles are used or built. Such localities will probably include your own home town or some town not far away from home.

The Welder's Tools and Equipment

The numerous makes of torches on the market are of two general types—the medium, or positive, pressure torch; and the low pressure, or injector torch. Practically all the oxygen used comes in compressed form in cylinders. Acetylene is more commonly generated on the premises, owing to the cheapness of this method. It is piped into the buildings and is always readily accessible. Generators, like torches, are of various makes, but they vary in type to correspond to the two kinds of torches, *i. e.*, pressure generators, and low-pressure generators. Generators are automatic in their action, being controlled by the flow of gas. Where the gas is not generated in the establishment, and especially in outdoor work, dissolved acetylene is used. This comes in cylinders which are filled with porous material and contain acetone, a liquid, in which the gas is dissolved under pressure.

Welding equipment varies according to circumstances. In general a welding unit includes welding and cutting torches; hose and connections; oxygen and acetylene regulators and gauges; a supply of various tips; filler rods; goggles; friction lighters; gloves; asbestos sheets; fluxes; hand tools, such as pliers, files, hammers and cold chisels; welding table; preheating arrangement; fire brick; carbon blocks; and V-blocks. It may include also, hand shear, anvil, hand forge, bench and pipe vises, emery grinders, drill press, hack saw, jigs, lathe, hoist, and work bench.

Practically all of the necessary equipment is furnished to the welder, sometimes with exception of goggles, gloves, and overalls or leather apron, which the welder may have to obtain for himself.

Why Take Training?

The aim of re-education is to turn out a good welder who has not only the manipulative skill, but who in addition is well-grounded in the necessary theoretical knowledge. It can not be too strongly pointed out, in the view of the highly unsatisfactory method of turning out welders obtaining in the past, that the course can not be too thorough. The need is for good welders, not for half-trained men. Really good welders in this country are not many, and there is in this field a splendid opportunity for the well-equipped man, but for him only. An employer will always be looking for a better man if he has a half-trained man on the job.

Overcoming Your Disability

The question is not primarily one of the handicap, but rather of the man behind the handicap. It is not the exception, but rather the rule, that a partially handicapped person, endowed with ingenuity will, even though at a disadvantage, beat the sound man who does not possess any ingenuity. This is borne out by numerous instances of foreign experience in re-education.

This applies, of course, especially to the less serious disabilities and not at all to those which are manifestly debarring. In the case of a welder, the latter would include blindness or defective vision, paralysis, shell shock and nervous disorders, loss of both arms or hands, tuberculosis, ankylosis of the upper members, spinal trouble, stiff neck, and dizziness.

Ankylosis of the knee or wrist might be overcome to some extent. Amputation of one leg will simply limit the field of activities. Where both legs are gone it would still be possible to enter some specialized

field where work at the bench is all that is required. In such cases, however, it might be advisable to take up soldering or electric resistance welding. Loss of limbs would be an embarrassing handicap for most jobs, and prohibitive for outside work which necessitates climbing, crawling, stooping, or getting into abnormal positions. Men who have trouble in getting about should not enter this field. Only physically sound men should undertake work in confined spaces, in a boiler for example. One partially amputated arm would probably not be deterrent. Indoor work is manifestly unsuited to men with weak lungs, as the air in the shop is generally more or less heated and vitiated. Outdoor work might be pursued with benefit. Men with weak backs would generally be at a disadvantage. Kidney or intestinal trouble might or might not be deterrent, depending on the gravity of the trouble and the degree to which physical stamina and general health are affected. Rupture would not be a handicap except where heavy work is to be done, and in that class of work there is usually a helper around. Impairment of efficiency due to loss of one eye, which may make difficult the acquirement of precision in distancing the flame from the material to be welded, may nevertheless generally be overcome.

The welder must have one good arm and hand with which to hold and manipulate the torch, and enough of a stump left in the other arm to be capable of using the filler rod and of puddling. Amputation, ankylosis, or paralysis of a finger or two are not prohibitive, so long as the proper grip and manipulation of the torch can be preserved.

Devices for Overcoming Handicaps

Special “automatic pincers” are being used by

French autogenous welders, to take the place of a missing hand, for those who have lost only part of the forearm. Drawings of this appliance are here given. The upper drawing shows the opening of the pincers through extension of the forearm, and the lower two drawings represent modification of the upper pincers for the use of welders.

Those who are incapable of using their hand through any cause are equipped with a special tool holder which is attached to the forearm.

Where the handicap consists of the loss of an arm, cutting may be taken up to advantage. There is restricted field of employment for disabled men in the operation of automatic welding or cutting machines.

Safety and Hygiene

As in other occupations, there are in welding, certain safety measures to be taken to avoid accidents. These are clearly defined and are made an integral part of the welder's training until observance becomes automatic.

This applies, of course, to the man who is physically sound as well as to the disabled. In the case of the handicapped, the matter becomes one of ascertaining if the disability interferes with the carrying out of these safety measures; and if so, if the difficulty can be overcome. If not, some other occupation must be selected. In the welder's case, however, these precautions are mostly "don'ts," and do not present serious difficulties to be overcome.

Acetylene is not poisonous and the impurities in the gas which are poisonous are not present in sufficient quantity in the American carbide to be dangerous. The characteristic odor of the gas is a protection against fire, explosion, and suffocation.

One cubic foot thoroughly mixed with 10,000 cubic feet of air can be detected.

How Previous Experience Helps

In selecting any vocation, a man's former occupation must be carefully taken into account, and particularly is this true in the case of welding. Previous experience, training, and education are such important factors in the student's success or failure that particular attention should be paid to them. Experience as a blacksmith, machinist, boilermaker, patternmaker, sheet-metal worker, molder, electrician, and in kindred occupations will be in every case of great value.

All experience in handling metals, as well as all mechanical experience is a valuable asset. For a man who has had such experience, it will be comparatively easy to become a good all-round welder. It goes without saying that no disabled man should take up the course unless he feels an interest in the work or in some special branch of it. It is this interest coupled with ingenuity which will make it possible for the welder to handle new problems successfully and to devise better and more efficient ways of doing things.

In the case of a former welder who is capable of taking up his former vocation, a short course of training will suffice. A former welder whose handicap prevents him from taking up his old trade may, with the proper training and necessary qualifications, become an excellent teacher, a welding foreman, or a superintendent.

Are Welders Going to be Needed?

The process is of comparatively recent application, dating back to about the year 1904. Its growth has

been extremely rapid, especially of later years, as regards development of technique, extension of its applications, and perfection of apparatus. Regardless of this progress, however, it is no exaggeration to state that the process is as yet in its initial stages, and that in the near future its field of utility will be greatly extended. As contrasted with the growth of oxy-acetylene welding, the supply of good welders has lagged far behind the demand. Unlike European countries, this country has only lately come to realize the importance of well-grounded, thorough, practical training for prospective welders. In view of these two factors—the remarkable expansion of the process and the shortage of welders—prospects look bright for the future.

Qualifying as a Teacher of the Welding Process

In any occupation where the demand for labor is increasing rapidly, there is bound to be a demand for men to teach the processes and practice of the occupation. If you master the trade you yourself may qualify as a teacher.

Getting to Work after Training

In contemplating placement after training the following factors are to be taken into account:

Your choice of a field.
Your special fitness.
The industrial demand.

It is the disabled man's privilege to decide what he will specialize in and he will be allowed the freedom of choosing which branch of welding he will take up, such choice being of course subject to the guidance of the vocational adviser.

Most welders will exhibit a tendency toward some

special branch or type of welding, even while they are learning the art. The instructor will keep in constant touch with the pupil during the course to determine if there is such a trend in him, and if so to encourage it. Some take to one metal in preference to others; some to one operation in preference to others; some may give evidence of ability as all-round welders.

The demand for welders is so varied that knowing the demands in general it will in most cases be possible to satisfy preferences and special aptitudes. This will be the aim always.

If as a trained welder you desire to get started on your own hook, several questions will arise in your mind?

Where shall I be located?

What are the demands of the locality in which I shall live?

What is my fitness for the work?

How about the necessary equipment?

The locality should be such as to give you ample opportunity to make good. It might be hard for you to go against much competition at the start. Likewise, to act as a pioneer of the industry in some locality which knows nothing about the work, might not be desirable.

In placing retrained welders, local demands will be carefully considered to the end that no man shall be placed where he may have work coming in which he is not capable of handling efficiently.

What if You Do not Take Training?

You will not be a real welder; probably you will not get a chance to try your hand at manipulating the torch at all. If you do get a chance you may get hurt or hurt others trying to weld without training

for the trade. Train for it, and then go to it, and if you fail come back for more training or for training in some other trade.

Industrial Applications

Some idea of the wide range of application of the oxy-acetylene processes may be gained from a brief survey of their uses in several industrial fields.

PLAN No. 1140. STEAM RAILWAYS

Oxy-acetylene welding is used in the shops of practically every railroad in the country as a means of reducing cost of repair and of reclaiming worn parts. Each craft usually does the welding of metals that originates in its department: Blacksmiths handle wrought iron and steel; boilermakers, boiler plates and flues; machinists, cast iron; coppersmiths, brass pipe work.

The process is generally used in the reclamation of broken engine frames, damaged cylinders, broken spokes in driver wheels, cracked valve chamber bushings, broken steam and exhaust pipes and air pump heads; in mending cracks, cutting out and welding patches on side sheets of fire boxes, flue sheets and door collars; in welding front end doors when damaged, engine truck frames and cradles, frame braces and brackets, tender bolsters, guides, and pedestals. The process is used to some extent also in building up worn diamond crossings and frogs. Both cutting and welding are used in the upkeep and repair of steel cars.

At the scrap yard the welder cuts up old boilers and other scrap for salvaging.

PLAN No. 1141. ELECTRIC RAILWAYS

Applications of the process by electric railways are similar to those by steam railways. There are, however, more opportunities for doing welding at the table. Of such a nature are restoring of armature bearing housings and frame heads, worn axle seats for motors and axle caps, journal boxes, pinion seats and keyways, brush holders, trolley bases, and third-rail shoe castings. Heavy broken parts such as truck frames, drawheads, brake hangers and body bolsters are repaired. To some extent the process is used also in bonding rails and in welding steel trolleys. Most of the work is handled in the shop, where, however, electric welding is coming into more general use, owing to the availability and economy of electric power.

PLAN No. 1142. SHIPBUILDING

Extensive use is made of the process in cutting all kinds and shapes of steel plate. Hydrogen is very generally used, instead of acetylene, and welding machines have been introduced. Welding proper is more generally applied in reclamation work, damaged or broken parts of the ship and of its machinery and propellers being often welded by this process.

Electric arc welding is fast coming to the front in this field, except for cutting where the gas process can not be replaced.

PLAN No. 1143. AUTOMOBILE INDUSTRY

Oxy-acetylene welding of automobile parts is not in general very difficult, but as in all other welding mastery of fundamentals is here also essential to

success. The work is varied in character, including cast iron, aluminum, steel, and wrought iron welding.

The process is extensively used in the repair of automobiles, and to a lesser degree in their manufacture. Both the industry itself and the repair work provide excellent fields for the prospective welder.

Repair work is done generally in either a job welding shop, where a number of welders are employed and where all kinds of welding is carried on, or else in a garage or automobile repair shop where a welder is employed to do the necessary work. In small communities the welding shop is usually run by one man who owns it and who does all the welding. In the large welding shops acetylene is generated; in other cases dissolved acetylene is used. A welder who is expert in the welding of aluminum is particularly valuable in this work.

In manufacture, the work is done in the shop. It is often simple and well suited to workers who must elect a sedentary employment. The process is broadening its scope in this field.

Closely related to the automobile is the motorcycle. A number of its parts, such as handlebars, special jigs and muffler heads, are welded in manufacture. In repair work the scope is somewhat similar to that of automobile repairing.

PLAN No. 1144. PIPE AND MAIN WORK

In the welding of pipes and mains, the process is finding increased application and this field presents good prospects of expansion in the future. Extensive work in this country as well as in Europe, where it is more largely used, has demonstrated that welding is

not only the most economical method but as well the most efficient in that leaky joints are eliminated. Welding does away with threaded joints, and thus makes possible the use of much lighter pipe, since there is no need for making allowance in thickness for threading. Moreover, joint couplings are dispensed with. The expense saved in maintenance alone is tremendous, as the joint is water-tight and there is therefore little likelihood of trouble arising from leaks. In making connections, Y's, T's, crosses and drips are made on the spot, being cut out of odd lengths of pipe and fitted together. This effects an economy in that these odd pieces are saved.

The process has its greatest application in the welding of gas, steam, air, oil, water and ammonia pipes and mains, and the work is chiefly outside work, although it is used to some extent on interior pipe connections. Special fittings or connections may be welded in the shop. Outdoors welding is generally performed on sections of pipe while above the ground, the whole section being finally lowered into the ditch. The welding of these several sections to each other has to be done in the ditch or trench, a pit being generally dug in order to give the welder sufficient room for carrying on the work. Obviously this work requires suppleness in the worker.

Where there is a large amount of welding, the apparatus most commonly used is a portable generator, with which is mounted a set of oxygen tanks. In other cases a small two-wheeled truck carrying one oxygen and one dissolved acetylene cylinder may suffice.

In this kind of work, the welder is generally assisted by one or two helpers who do the heavy work, placing, holding, and turning the pipes while the welder keeps on welding. Some overhead

welding is done which forces the welder to assume a strained position.

PLAN No. 1145. SHEET METAL

Welding sheet metal is an important application of the process, which is superseding to a large extent riveting and soldering. Very careful work may be required but in the main the work is not particularly difficult, and it can be easily mastered if the training given is thorough. Electric resistance welding, however, is superseding oxy-acetylene in many manufacturing operations.

PLAN No. 1146. METALLIC FURNITURE

Extensive use of oxy-acetylene welding is made in the manufacture of metallic furniture and in kindred trades. Welding is an efficient and economical way of joining various parts together, as well as of making the parts themselves. The work may be more or less routine and much of it is done at the bench. This is a comparatively easy type of welding, in which a man can become proficient in a short time. It would be eminently suited to the welder who has trouble in going about or who is easily fatigued, and who would be better off in some sedentary work. The process is largely used in the manufacture of steel desks, chairs, filing cabinets, office safes, stepladders, and surgical, hospital and dental furniture.

PLAN No. 1147. CONTAINERS

Welding is fast superseding old methods in the manufacture of containers of various kinds out of sheet metal. In this class is included the manufacture

of steel barrels, range boilers, kitchen utensils, light air tanks, and storage tanks. This kind of work needs a well-trained man on the job. Except in the case of larger objects, the work can be done at the welding table, and it is not of a straining nature.

PLAN No. 1148. METAL PLATE

Metal plate welding is quite similar in its scope to sheet metal work. It is largely used in the manufacture of ammonia and air receivers, vacuum driers, steam driers, and vats. The process is not used in boiler work to any extent, as the consequences of a faulty weld might be extremely serious.

PLAN No. 1149. FOUNDRIES

In steel foundries the process is extensively used in cutting away risers, gates, and heads from castings. As compared with the old method of cutting with a saw, the gas process is much quicker and much more economical. This sort of cutting work is simple and does not require great dexterity. The welder should be capable of bending over or assuming more or less cramping positions, as he has to work on the castings in positions in which they have been left on the floor. Welding is almost universally used in the reclamation of defective castings, and by this process castings are saved which for some slight defect would have been consigned to the scrap heap. The process finds application also in the welding of blowholes, cold shuts, porous spots, and cracks. It is used to some extent in manufacture, two parts being cast separately and joined by welding.

PLAN No. 1150. FORESTRY PURSUITS

Acknowledgment

This monograph was prepared by Capt. S. T. Dana, in the Forestry Service of the Department of Agriculture, under the direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings of the Research Division for editorial assistance.

What Forestry Is

Forestry is the business, or the art, or the science, depending on the point of view from which you look at it, of handling forests for timber production or stream-flow protection. It does not, as is often mistakenly thought, have anything to do with fruit trees, or even with street and park trees. The care of these comes under horticulture and arboriculture. Forestry is distinct from either in that it has to do primarily with entire stands of trees, or forests, rather than with individuals. Forests are really nothing more nor less than tree societies, or communities, comparable in many ways with human communities, every member of which has an influence upon and in turn is influenced by its neighbors; and it is this fact that gives to forestry its distinctive character.

Forestry should also not be confused with lumbering. Lumbering has to do merely with harvesting the trees on any given area, with cutting them, transporting them to the mill, and converting them into lumber or other products. While the chief task of the forester is to manage forest lands, he has to do with the production of trees as well as with their utilization. Forestry is concerned fully as much

with the future as with the present. Like agriculture it looks forward to keeping the land continuously productive by the growth of successive crops. Only in the case of forestry the crops instead of being wheat, or rye, or corn, are trees, which in turn can be converted into fuel, fence posts, telephone poles, railroad ties, wood pulp, lumber, and a host of other wood products. How much the forests mean to the economic development of a community through the crops which they produce and the employment which they offer is evidenced only too plainly by the desolation which has followed destructive lumbering in many a once prosperous forest region.

In addition to yielding crops which have a commercial value, forests in mountainous regions perform another important function which is none the less valuable because its benefits are difficult to measure in dollars and cents. By decreasing erosion and regulating stream-flow the mountain forests conserve water for domestic supplies, irrigation, power, and navigation, and at the same time help to lessen the damage caused by destructive floods. So far-reaching is this influence and so great is the population affected by it, that the treatment which such forests receive becomes a matter of vital interest to the general public. One of the primary concerns of forestry is to see that they are handled in such a way as to afford the maximum amount of protection, even if this involves, as it not infrequently does, the restriction or entire prevention of lumbering operations.

What Foresters Do

In order to handle to the best advantage the area under his charge there is a wide range of work which a forester may be called upon to do. He must be able

to identify different kinds of trees and must know the uses to which each can be put and the sites to which they are best adapted. He must be able to map the area and to determine the amount and value of the timber upon it. He must be able to draw up a complete plan for protecting the forest from fire and to carry out the details involved in its execution. He must know how to control the attacks of destructive insects and fungous diseases. He must be able to handle the many details connected with the collection of seed and the production of young trees in forest-tree nurseries. He must know where and how to plant these, or how to sow the seed on areas where this is preferable. He must know whether any given stand is too dense, and if so, what and how many trees should be taken out to stimulate the growth of those that are left. He must be able to determine the rate at which trees are growing and the age at which they should be cut and to make plans for harvesting them in such a way as to secure natural reproduction. And finally, he must be able to draw up a "working plan" providing in detail for the handling of the entire forest in such a way as to keep it continually productive.

All of this obviously involves a good deal of office work in the formulation of plans, the maintenance of records, and the miscellaneous administrative work connected with any business enterprise. It also involves a good deal of practical out-of-door work. The average forester must take long walks and horseback rides. He must often camp out in a tent or with no shelter whatever. He must take his part in fighting forest fires, which means the liberal and energetic use of the axe, the mattock, and the shovel. He must run compass and transit lines, and make topographic maps. He must estimate the size and

contents of standing trees by the use of calipers and height-measures, and must scale the fallen timber. He must mark, or blaze, the trees to be removed in lumbering and must see that the operations are carried out in accordance with the approved plans. He must collect tree cones, extract the seeds from these, sow them in the nursery, care for the young seedlings, and later set them out in the forest.

He must also do a hundred and one other things which are not strictly forestry but which are so closely connected with it that they must be handled by the forester along with his other work. Grazing is a good example of this, since most of the forest regions in the United States produce forage as well as trees. In order to utilize this to best advantage the forester must know how many stock the range will support and how they should be handled. In regions where mineral deposits occur he must be familiar with the mining laws and must have at least enough knowledge regarding mining to enable him to deal intelligently with prospectors and others. Since most of the forests occur in undeveloped regions he must know how to open these up by building ranger and lookout stations and by constructing such other permanent improvements as roads, bridges, trails, and telephone lines. In short, the average forester, particularly in pioneer regions, must be a veritable jack-of-all-trades.

Where Foresters Work

Forestry is primarily an out-of-door occupation. Some indoor work in the formulation of plans, writing of reports, handling of correspondence, and other office routine, is of course necessary, particularly in the case of those charged with the administration of large areas. But the average

forester must spend the bulk of his time in the open, in the forests for which he is caring. Sometimes his headquarters may be in a small town or sometimes in a more or less isolated situation in the woods themselves. In either case his daily work will ordinarily take him into the open in sunshine and in rain. Occasionally he may be absent from home for several weeks at a time carrying his bed and provisions on his back, or, if he is fortunate, on a pack animal.

So far as geographical location is concerned, opportunities for foresters have heretofore been mainly in the mountain regions of the West where the National Forests are located. As forestry comes to be practiced more and more on State Forests and on private lands, however, similar opportunities will develop in the East. There is no reason why large numbers of foresters should not eventually be employed wherever forests occur, and this means practically throughout the country except in the Great Plains and in the farming regions of the Central States and Middle West.

What Handicaps Are Serious

Generally speaking, a forester must be able-bodied and in good physical health. He must have a strong heart, sound lungs, and a constitution able to stand exposure to all kinds of wind and weather. Heart disease, tuberculosis, and other serious organic troubles are handicaps that point to the choice of another occupation.

On the other hand, there are certain disabilities, and particularly injuries of various sorts, that do not constitute any serious drawback. Injuries to the mouth, nose, ears, scalp, and other parts of the head, for example, do not disqualify unless they interfere

to a dangerous extent with one's eyesight or hearing. Some deafness is allowable provided it has not gone so far as to prevent communication or to endanger one from falling trees or other accidents. Even blindness in one eye is not a real handicap if the other eye is still sound. The loss of an arm or a leg incapacitates a man for the physical work required of most foresters, but minor injuries to these limbs, such as loss of a finger or a toe, do not disqualify one.

For certain specialized duties one can have sustained even more serious injuries and still be able to give satisfactory service. One may be badly crippled and yet be successful in research work provided he is able to move about more or less freely, has some use of his arms, and can handle a microscope. Men at fire-lookout stations need little more than good eyes and sufficient hearing to use a telephone. On the other hand, one would hardly wish to take up fire-lookout work as a permanent occupation, and unless his condition can be improved sufficiently to enable him to resume active physical work his chances for advancement are poor. Special appliances for handling tools are not necessary, as is the case with many industrial workers. The average forester must be able to turn his hand to a wide variety of activities and to use such homely implements as the axe, the hammer, the shovel, and the mattock.

The danger of further injury is no greater in forestry than in most other outdoor occupations. Accidents due to forest fires, bucking horses, falling trees, and rolling stones are always possible, but the proportion of those seriously injured in such ways as these is not large. Those employed by the National Government receive compensation in case of injury

incurred in line of duty.

What Training is Necessary

Forestry requires the services of three more or less distinct grades of workers—the professional forester, the forester ranger, and the forest guard. The professional forester handles the larger and more technical phases of forest management. He determines what the forest under his charge contains, how much it is worth, how fast it is growing, when and how it should be cut, what kinds of trees should be favored, and other questions of the same kind; and also exercises general supervision over the execution of whatever measures are decided upon. The forest ranger acts as a sort of semi-technical assistant to the professional forester. He does not need so thorough an education as the professional forester but must have sufficient technical knowledge to enable him to carry out intelligently the plans formulated by the latter. His work is to a large extent "practical" and involves the routine of fire protection and fire fighting, marking the trees to be removed in timber sales, scaling the felled logs, handling planting operations, surveying, building trails, running telephone lines, and doing other work connected with the administration of the forest. The forest guard is ordinarily a non-technical assistant who helps the forest ranger in those aspects of his work which require little or no knowledge of forestry. Forest guards are frequently appointed for short periods only to help the regular force during the busy season and particularly in the work of fire protection and fire fighting. Previous experience in the woods or in similar occupations such as lumbering and surveying constitutes a valuable, but not essential, preliminary training for foresters of all

grades.

Twenty-five years ago the professional forester was almost unknown in this country and there was not a single educational institution at which he could secure the necessary training. To-day the profession is well recognized and there are more than 20 schools offering instruction of a grade similar to that required of civil engineers, doctors, lawyers, ministers, and other professional men. As a basis for the more technical phases of his education the man who desires to become a professional forester must have had courses of collegiate grade in botany, geology, organic chemistry, mathematics through trigonometry, plane surveying, mechanical drawing, economics, and either French or German, or preferably both. With these as a foundation he is ready to go ahead with the technical subjects such as dendrology, silvics, silviculture, forest mensuration, forest valuation, forest management, and forest regulation. Obviously a comprehensive training of this sort can not be obtained with less than four years of collegiate work, at least two of which must be devoted almost entirely to professional forestry subjects. If a man has already had a college education, however, he can readily prepare himself for the profession by two years of post-graduate work. The degree of bachelor of science in forestry is usually given on the completion of a four-year professional course, and of master of science in forestry, or master of forestry, on the completion of a five-year professional course or of two years of postgraduate work following four years of regular college work.

For the forest ranger no such intensive training is necessary. With a high school education as a background, one year of rather elementary training

in such subjects as fire protection, surveying, timber estimating and scaling, nursery practice, methods of planting, range management, and report writing is sufficient to enable a man to qualify. In general, the course covers much the same ground as that taken by the professional forester, but in a much briefer and more elementary way. Those who have already had considerable practical experience along these lines can secure a sufficient foundation for their work in three or four months, although even for such men the longer course is preferable if time to take it can be found. Many of the forest schools of the country now offer courses of this sort and the opportunities for instruction are ample.

Since forest guards are engaged almost wholly on nontechnical work no particular course of training is necessary. No one with any ambition, however, would wish to remain a forest guard indefinitely when other opportunities are open to him merely by taking a free course of instruction. If one wishes to take up forestry, therefore, and is not in a position to take the professional course, he should by all means attempt to qualify as a forest ranger. Should lack of other openings then make it necessary for him to serve as a forest guard for the time being, he would be in a position to take advantage of the first opportunity for advancement.

What Opportunities Are Offered

Opportunities for employment for foresters may be classed as fairly good. The point has now been passed where the supply is totally inadequate to meet the demand, but at the same time the war has greatly depleted the ranks of foresters throughout the country, and there is no question that many new men will be needed during the process of

reconstruction and afterwards. The National Forests already offer opportunities for the employment of many men and it can not be doubted that similar opportunities will soon be offered in State forests as well as in the case of forests still in the hands of private owners. With the steady decrease in the timber supply, the Nation will soon be face to face with the necessity of practicing forestry extensively as a national safeguard and unless private owners take upon themselves the task, there is little question but that the Federal and State Governments will take matters largely into their own hands.

Altogether it is a safe prediction that any one who desires to engage in forestry and who qualifies himself for the work will be able to find employment. The entering salary for forest guards in the national service averages about $900 a year and for forest rangers about $1,100 a year. Technically trained foresters ordinarily enter at approximately the same salary as forest rangers, $1,100 or $1,200 a year, but with greater opportunities for advancement later. In State and private work approximately the same entering salaries may be expected although some private owners may be unwilling to pay quite so much to forest guards and forest rangers at the start.

What Are the Chances for Promotion?

Chances for limited promotion are reasonably good. It should be recognized frankly, however, that one can not hope to get rich in the profession and that a comfortable living is all that can ordinarily be looked forward to. In exceptional cases unusually able and well qualified men will doubtless be able to draw salaries of $4,000 or $5,000 a year. The average professional forester, however, can hardly

hope to advance much beyond $2,500 or $3,500 a year except by acquiring an interest in some lumber business or in the forest itself. For the forest ranger a salary of $1,500 or $1,600 may reasonably be looked forward to. Moreover, this salary often carries with it a ranger station which can be occupied as long as he stays in the service, and also an opportunity to produce some crops for his own use. Forest guards can hardly hope for more than $900 or $1,800 a year.

In other words, in forestry, as in all other professions, the better educated you are the better are your chances for promotion. Even at best, however, the chances for large salaries are small and those who are bent on getting rich should look elsewhere for an opportunity to do so. On the other hand, one who is satisfied to make a comfortable living, to spend a large part of his life in the open, to occupy a responsible and respected place in his home community, and to enjoy the satisfaction which comes from having an important share in a work of great public service, can not look for a more congenial or attractive occupation than forestry.

Appendix on Forestry Schools and Courses

These lists have been compiled by the Forest Service to aid in answering inquiries as to institutions at which instruction in forestry may be obtained. While every effort has been made to avoid errors, the Forest Service does not vouch for the completeness of the lists, their accuracy, or the relative merits of the courses offered. More detailed information regarding opportunities for disabled soldiers and sailors to take training courses in forestry may be obtained from representatives of the Federal Board for Vocational Education.

Schools With Courses Leading to a Degree in Forestry

University of California, College of Agriculture, Division of Forestry, Berkeley, Cal.—Two four-year courses, one in forestry and one in forest engineering, both leading to the degree of bachelor of science. Nineteen weeks of each of these courses are spent in camp, most of the time on a national forest. A five-year course combining the work of both courses leads to the degree of master of science in forestry, which is also granted on the completion of one year of graduate work in connection with either course.

Colorado State Agricultural College, Fort Collins, Colo.—Four-year course in forestry leading to the degree of bachelor of science in forestry.

Colorado College, Colorado School of Forestry, Colorado Springs, Colo.—Two-year course leading to the degree of forest engineer, open only to applicants who have completed two years of college work or an equivalent course of study. The fall and spring terms are spent at Manitou Park, the property of the school, near Woodland Park, Colo. A two-year course for graduate students leads to the degree of master of forestry.

New York State College of Agriculture at Cornell University, Department of Forestry, Ithaca, N. Y.—Five-year course in professional forestry, leading after four years to the degree of bachelor of science and after one additional year to that of master of forestry. Field work includes five weeks in camp in the Adirondacks in the summer following sophomore year, 10 weeks each in the summers following junior and senior years, and three months of practical work in the forest in the fall term of senior year.

Georgia State College of Agriculture at University of

Georgia, Georgia State Forest School, Athens, Ga.—Four-year professional course leading to the degree of bachelor of science in forestry. Considerable latitude for specialization is offered during junior and senior years. Eighteen weeks of the course are spent in field work in camp, and three months in practical work in specialization.

Georgia College of Forestry, Greensboro, Ga.—Three-year course of ten months a year leading to the degree of bachelor of science. Headquarters of the college are on a timber tract five miles from Greensboro. Trips are required to the hardwood region of northern Georgia and the long-leaf pine region of southern Georgia.

Harvard University, Department of Forestry, Bussey Institution, Jamaica Plain, Mass.—Graduate specialization and research leading to the degree of master in forestry. Special elective work is offered in dendrology, silviculture, forest management, wood technology, and (in cooperation with the Harvard Graduate School of Business Administration) a two-year course in lumbering. The technical work is carried on at the Harvard Forest, the Arnold Arboretum, and the Bussey Institution.

University of Idaho, School of Forestry, Moscow, Idaho.—Two four-year collegiate courses, one in general forestry and one with special attention to lumbering, both leading to the degree of bachelor of science in forestry.

Iowa State College of Agriculture and Mechanic Arts, Department of Forestry, Ames, Iowa.—Four-year undergraduate course leading to the degree of bachelor of science in forestry; also a five-year course leading to the degree of master of science in forestry. Both courses include three months of work in summer camp, in addition to which all candidates

for degrees must have at least three months of practical work. A five-year combined course in forestry and landscape gardening leads to the two degrees of bachelor of science in forestry and bachelor of science in horticulture.

University of Maine, Department of Forestry, Orono, Me.—Four-year undergraduate course in forestry leading to the degree of bachelor of science in forestry. Special attention is given to forest management and forest engineering applicable to the northeastern United States.

Michigan Agricultural College, Department of Forestry, East Lansing, Mich.—Four-year course in forestry leading to the degree of bachelor of science. Graduate courses leading to the degree of master of forestry are also offered. A summer term of seven weeks between the sophomore and junior years is held near Cadillac, Mich.

University of Michigan, Department of Forestry, Ann Arbor, Mich.—Four-year course leading to the degree of bachelor of science in forestry; also a five-year course leading to the degree of master of science in forestry. Graduates of other colleges of university rank require two years of graduate study.

University of Minnesota, Department of Agriculture, College of Forestry, University Farm, St. Paul, Minn.—Four-year course in forestry leading to the degree of bachelor of science and offering three lines of specialization: Technical forestry, lumbering, and wood chemistry. Two months of freshman year, from June 1 to August 1, and four months of junior year, from April 15 to August 15, are spent at Itasca State Park. One year of graduate work leads to the degree of master of science.

University of Missouri, College of Agriculture, Department of Forestry, Columbia, Mo.—Five-year

course in forestry leading to the degree of master of forestry. The degree of bachelor of science in forestry is conferred upon the completion of four years' work. Field work includes a summer course of 10 weeks on the university forest of 50,000 acres in the Ozark Uplands.

University of Montana, Forest School, Missoula, Mont.—Two four-year courses, one in forestry and one in forest engineering, leading respectively to the degrees of bachelor of science in forestry and bachelor of science in forest engineering. The course in forestry aims to prepare men for the work of forest rangers and forest supervisors, and for such work with lumber companies, timber-owning corporations, and the like, as involves the administration, protection, and utilization of forests; that in forest engineering for work as scalers, cruisers, lumbermen, logging engineers, and in general all engineering work in the forest. A graduate course in forest engineering leading to the degree of forest engineer will be offered later.

Ohio State University, Department of Forestry, Columbus, Ohio.—Four-year undergraduate course in forestry leading to the degree of bachelor of science in forestry. At least one summer of practical work in the woods is required before graduation. An optional fifth year is offered leading to the degree of master of science in forestry.

Oregon Agricultural College, School of Forestry, Corvallis, Oreg.—Two four-year courses, one in forestry and one in logging engineering, leading respectively to the degrees of bachelor of science in forestry and bachelor of science in logging engineering.

Pennsylvania State College, Department of Forestry, State College, Pa.—Four-year course in professional

forestry leading to the degree of bachelor of science. Field work includes six weeks in camp at the end of freshman year, eight weeks at the end of sophomore year, and eight weeks during senior year. Opportunity is given for special study in lumbering.

Pennsylvania Department of Forestry, State Forest Academy, Mont Alto, Pa.—Three-year course in forestry of 48 weeks a year leading to the degree of bachelor of forestry. The course is maintained for the training of foresters for the State Forest Service. Appointments are made from a competitive examination open to residents of Pennsylvania between 19 and 25 years of age. The State supplies board, tuition, and quarters, and requires bond for the successful completion of the course and three years' service on State forests.

New York State College of Forestry at Syracuse University, Syracuse, N. Y.—Four-year courses lending to the degree of bachelor of science. Five-year professional courses leading to the degrees of master of forestry and doctor of economics. Special opportunity is offered in lumbering, pulp and paper making, city forestry, forest entomology and botany, and forest pathology, and for research work at the State Forest Experiment Station.

State College of Washington, Department of Forestry, Pullman, Wash.—Four-year course leading to the degree of bachelor of science in forestry.

University of Washington, College of Forestry, Seattle, Wash.—Four and five year courses, arranged for specialization in general forestry, logging engineering, forest products, and the business of lumbering. At the end of the fourth year the student receives the degree of bachelor of science and at the end of the fifth year of master of science in forestry. Students who wish to specialize should take the five-

year course.

Yale University, School of Forestry, New Haven, Conn.—Two-year graduate course leading to the degree of master of forestry. Field work includes 10 weeks at Milford, Pike County, Pa., in the summer term of junior year; three weeks at Union, Conn., and in the Adirondack Mountains in the spring term of junior year, and 12 weeks in the South in the spring term of senior year. Advanced work in dendrology, silviculture, forest management, forest products, and lumbering is open to those who have already had a general course in forestry. Special students are accepted in limited numbers provided their scholastic attainments are such that they can take the work to advantage.

Schools With Short Courses in Forestry Other Than Ranger Courses

Alabama Polytechnic Institute, Auburn, Ala.—An elementary course in forestry covering seven weeks is given to senior students in the agricultural course. The work comprises a study of forest conditions in Alabama, care of woodlands, uses of the different southern woods, methods of preservation, etc.

Berea College, Berea, Ky.—A short course in the fundamental principles of forestry is given as part of the course in agriculture.

University of California, Berkeley, Cal.—Nonprofessional instruction in general forestry is given throughout the regular college year by means of two courses open to any student in the university.

University of Chicago, Ill.—The department of botany offers a course in forest ecology, dealing mainly with the life, activities, and death of trees; the structure and rôle of their various organs; and their relation to climate, soil, and their organic

environment. Forest succession and its causes and the great forest formations of the United States and Canada are also taken up.

Clemson Agricultural College, Clemson, S. C.—A course in general forestry is required of all students in the agricultural course during the latter part of junior year.

Connecticut Agricultural College, Storrs, Conn.—A course in wood lot forestry covering one semester is required of all students in the regular four-year courses. The course is designed to give the student a working knowledge of the best methods of handling the farm wood lot with special reference to Connecticut conditions. The field work covers the identification of the economic species, measurement of growth and yield, improvement cuttings, and reforestation. A similar but less comprehensive course covering one semester is required of all students in the two-year course in the School of Agriculture.

Cornell University, Ithaca, N. Y.—Five elementary courses are offered for agricultural and other students in the university covering the farm wood lot, elements of forestry silviculture, mensuration, management, utilization, and conservation. Two other courses, the field of forestry and wood technology, are open to both general and professional students. General courses in forestry are also given in the summer school and in the short-term winter course.

Delaware College, Newark, Del.—An elementary course covering one semester is elective for juniors and seniors in agriculture. It deals with the elements of silvics, methods of silvicultural management, natural and artificial regeneration, forest protection, forest mensuration, wood utilization, lumbering,

wood preservation, forest economics, forest finance, and a study of the characteristic lumber trees of the United States, their classification and identification.

University of Georgia, Athens, Ga.—A short course in farm forestry is required of seniors in agriculture, and an elementary course in wood lot forestry of one-year men in agriculture. A nature study during the summer, open to teachers, a vocational course in wood and its uses, and a correspondence course in farm forestry are also offered.

University of Idaho, Moscow, Idaho.—A course in general forestry is offered for students in the various departments of the university, and a short course in farm forestry for students in the College of Agriculture.

Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa.—A course in farm forestry designed to meet the needs of the Iowa farmer is required of practically all agricultural students during their first year. It includes a discussion of windbreaks, shelter belts, and wood lots with respect to their value on the farm, and also a little work on dendrology, forest planting, silviculture, preservative treatment of timbers, and the utilization of forest products.

Kansas State Agricultural College, Manhattan, Kans.—Courses in farm forestry, silviculture, and dendrology are elective for all students in agricultural and general science courses during the winter term of junior year. A course in forest nursery practice is elective for students in the School of Agriculture during the spring term of the third year, and also, without credit, for all students in college courses in agriculture and general science.

Louisiana State University, Baton Rouge, La.—A year's course in general forestry is required of juniors in the teachers' course in agriculture, and additional

courses of one year each in forestry and in the propagation and care of ornamental and shade trees are elective for seniors. Courses in forestry covering two years and a course in the propagation and care of ornamental and shade trees covering one year are elective for juniors and seniors in the College of Agriculture. The aim is not to turn out trained foresters, but to teach forestry in connection with the agricultural courses, with special reference to the management of farm wood lots.

University of Maine, Orono, Me.—A course in general forestry is open to all students, and is required of all students in the College of Agriculture.

Maryland Agricultural College, College Park, Md.—A course in farm forestry comprising 20 lectures and 60 hours of demonstration work is given to seniors in agriculture and horticulture, and to the second-year men of the two-year courses in agriculture and horticulture. The course includes wood lot management, nursery practice, planting, forest botany, and estimating timber crops.

Massachusetts Agricultural College, Amherst, Mass.—An elective major course is offered in the department of forestry during junior and senior years, which takes up such studies as dendrology, silviculture, forest mensuration, and allied subjects. During the winter several lectures are given by the State forester on "State Forest Policy." The course is intended to give the students the same kind of education regarding true forest land that they receive concerning tillable land, and also to prepare students for the graduate schools of forestry. A lecture course dealing especially with wood lot management is offered to students of the short winter and summer schools.

University of Minnesota, Northwest School and

Station, Crookston, Minn.—An elementary course in forestry is offered dealing with the planting of windbreaks and wood lots, the characteristics and adaptability of the more common trees, and the methods of propagation and conservation of planted and natural forests.

Mississippi Agricultural and Mechanical College, Agricultural College, Miss.—Courses in farm forestry and dendrology of one term each are offered for students in agriculture.

University of Missouri, Columbia, Mo.—A summer school of forestry for lumbermen, timberland owners, and rangers is given on the university forest of 50,000 acres in the Ozark Mountains, in connection with the summer course for regular forestry students.

University of Montana, Missoula, Mont.—Special courses in surveying, scaling and cruising, lumbering, forest appraisal, and logging engineering are offered in connection with the short course for rangers.

Mount Hermon School, Mount Hermon, Mass.—An elementary course in the care of lawns, shrubbery, and forests is given during one term.

University of Nebraska, Lincoln, Nebr.—A course in farm forestry covering one semester is elective for all students of the university and is designed primarily for agricultural students. It is an elementary course designed to familiarize students with the best trees that will grow in the State of Nebraska, as well as the methods of handling the farm wood lot.

New Hampshire College, Durham, N. H.—Courses in forestry are required of all four-year and two-year agricultural students, and are elective for all students of the college. Beginning with junior year, four-year students in agriculture may elect forestry as a principal subject and are then given advanced

forestry work together with other agricultural and associated subjects. Every encouragement and assistance is given a student desiring to make forestry his profession, with the understanding that he will complete his training at some school offering a complete course in forestry.

North Carolina College of Agriculture and Mechanic Arts, West Raleigh, N. C.—A course in forestry is offered as one of the senior horticultural electives.

North Dakota Agricultural College, Agricultural College, N. Dak.—An elementary course in forestry covering six weeks is offered in the third term of junior year in the four-year agricultural course.

North Dakota State School of Forestry, Bottineau, N. Dak.—Instruction similar to that in the agricultural high schools is offered with special attention to horticulture and forestry. The forestry work consists of a study of the plains and prairie regions and has to do particularly with windbreaks, shelter belts, etc. A special three-year course is also offered for the preparation of landscape gardeners, landscape engineers, and city foresters.

Oklahoma Agricultural and Mechanical College, Stillwater, Okla.—A course in elementary forestry is required of all horticulture students during the first term of junior year.

Purdue University, Lafayette, Ind.—The work in forestry consists of a line of electives within the school of science. The subjects covered are forest botany and dendrology, elements of silviculture, forest mensuration, forest management, forest protection, forest utilization, forest pathology, and technical forestry. The latter includes a study of structural timbers with demonstrations in the testing laboratories and also work in surveying and making forest maps.

Rhode Island State College, Kingston, R. I.—A course in forestry dealing with the management of New England wood lots is required in the second term, junior year, in the agricultural course.

South Dakota State College of Agriculture and Mechanic Arts, Brookings, S. Dak.—A course in forestry is required in the second semester of the sophomore year in the horticultural group and in the third-year of the three-year school of agriculture. It is elective in the second semester, junior year, in the animal husbandry and dairy husbandry groups of the four-year collegiate agricultural course.

Leland Stanford Junior University, Stanford University, Cal.—Courses are offered in the study of trees, forest pathology, and other matters basal to the study of forestry.

Syracuse University, Syracuse, N. Y.—A field course in elementary forestry, forest ecology, and botany, soils, geology, and woodcraft, open to any man over 15, is given by the New York State College of Forestry during August at Cranberry Lake in the western Adirondacks. Courses in forestry are also given for students in the university outside of the College of Forestry, and especially for those desiring to teach.

University of Tennessee, Knoxville, Tenn.—An elective course in forestry covering one term is offered in the senior year of the four-year agricultural course. The work deals chiefly with the management of farm wood lots and small holdings of hardwood timber.

Agricultural and Mechanical College of Texas, College Station, Tex.—Courses in the principles of forestry, dendrology, silviculture (with special reference to planting), and wood technology and utilization, each covering one semester and elective for juniors and

seniors in agriculture and science, offered in the college year 1916-17. No attempt will be made to equip students for the profession of forestry. From time to time, however, additional courses will be offered to meet the needs of students along farm forestry, planting, timber preservation, and other lines.

University of Vermont, Burlington, Vt.—Students in agriculture are required to take one course in forestry during their sophomore year. The aim of this course is to give all agricultural students a working knowledge of forestry, which can be applied to their own farms or in the teaching of agriculture. The more advanced courses are open to those who wish to pursue the subject further.

State College of Washington, Pullman, Wash.—A one-year practical course is offered in the elementary science department, planned to equip young men to become logging engineers.

University of Washington, Seattle, Wash.—Two courses of 12 weeks each are offered—one in lumber and its uses for men engaged in offices at the mills, lumber salesmen, engineers, contractors, and builders; the other in logging for the training of logging foremen or others engaged in work at logging camps.

Winona College of Agriculture, Winona Lake, Ind.—A course of one-half semester in the principles of forestry is offered in the two-year agricultural course. The growing of trees for fences and the preservative treatment of fence posts are taken up in a practical way, and some work is also offered on lumber and its use on the farm.

University of Wisconsin, Madison, Wis.—Nine elective courses, each running through one semester, as well as a number of special lectures in various

departments of the university, are given by members of the Forest Products Laboratory of the United States Forest Service, where opportunity for research work is also offered. The object of the work, which is open to both undergraduates and graduates, is to enable men to acquire a thorough scientific and practical training in organic chemistry and wood technology and to apply this knowledge in scientific and commercial operations and investigations in the wood-using industries and in teaching.

Wyman's School of Woods, Manising, Mich.—A 24-months' course in forestry, logging, and woodcraft is offered, on the satisfactory completion of which students are granted a certificate of efficiency in logging and engineering. A 10-weeks' out-of-door summer course is also offered to afford those students who are contemplating forestry as a profession an opportunity to become familiar with the character of the work.

Yale University, New Haven, Conn.—An elementary course of eight weeks is offered during the summer at Milford, Pike County, Pa., for those who desire a general knowledge of the subject.

TREE SURGERY

Davey Institute of Tree Surgery, Kent, Ohio.—A 20-months' course for the training of tree surgeons is offered, including instruction in botany, plant pathology, dendrology, entomology, fruit growing, spraying, and the theory and practice of tree surgery.

SCHOOLS WITH RANGER COURSES IN FORESTRY

University of California, College of Agriculture, Division of Forestry, Berkeley, Cal.—Beginning in

January, a 12 weeks' course designed especially for rangers and loggers is offered.

Georgia State College of Agriculture at University of Georgia, Georgia State Forest School, Athens, Ga.—A ranger course of eight weeks, open to men in the Government service and to lumbermen, is offered during the summer.

University of Idaho, School of Forestry, Moscow, Idaho.—A three-year ranger course, extending from November 1 to April 1 of each school year, is offered. The course is so arranged that a single year's work may also be taken.

University of Missouri, College of Agriculture, Department of Forestry, Columbia, Mo.—A course for lumbermen, timberland owners, and rangers is offered on the university forest of 50,000 acres in the Ozark Mountains, in connection with the summer course for regular forestry students.

University of Montana, Forest School, Missoula, Mont.—A three months' ranger course is offered during the winter, with opportunity for specialization and the election of advanced work. The course is designed primarily for men who have already had considerable experience in woods work.

New York State College of Forestry at Syracuse University, Syracuse, N.Y.—A one-year course of practical training is offered at the State Ranger School located on the college forest of 2,000 acres at Wanakena, in the western Adirondacks. The course is designed to fit men for such positions as guards, rangers, forest-estate managers, tree-planting experts, and nursery foremen.

Oregon Agricultural College, School of Forestry, Corvallis, Oreg.—A five months' course is offered for those desiring to prepare for the position of ranger in the United States Forest Service or for work in the

State protective associations.

State College of Washington, Department of Forestry, Pullman, Wash.—A six weeks' course is offered in the Winter School for the preparation of forest rangers.

University of Washington, College of Forestry, Seattle, Wash.—Two courses of 12 weeks each are offered, one in forestry for the training of forest rangers, guards, or woodland owners; the other in logging for the training of logging foremen or others engaged in work at logging camps.

PLAN No. 1151. AUTOMOBILE MAINTENANCE AND SERVICE

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In no other industry, perhaps has progress been so rapid and marvelous as in the manufacture and maintenance of automobiles, which to-day employs hundreds of thousands of men and women in a great variety of occupations, and represents investment of many millions of dollars.

Two great divisions of the industry may be made, one including the manufacturing plants which produce new cars, and the other, the maintenance and service shops and departments which operate and keep cars in repair and good running order. This monograph deals with occupations in "Automobile maintenance and service."

What Men Do in These Occupations

In automobile maintenance and service, specialization is rapidly creating six principal groups of workers. It is true that in small garages one man may "tinker" with all parts of an automobile, but it is, in fact, just as essential to employ, for example, a battery specialist for a machine as it is to employ an eye specialist for a person.

The six groups include: (1) Repair-shop men, who deal primarily with the mechanical treatment of the car when it has been disabled; (2) starting and lighting experts, who repair and adjust electrical equipment, including wiring, lights, motors, and generators; (3) ignition experts, who look after the testing, adjustment and maintenance of current supply, short circuits, contact breakers, vibrators, spark plugs, coils, condensers, connections, distributors, and magnetos; (4) storage-battery men in stations where batteries are charged, repaired, rebuilt, tested, and kept in good working condition; (5) tire-repair men, who take care of the splicing, patching, retreading, building up, inside repair, and vulcanizing of casings and tubes that have been disabled by punctures, blisters, blow-outs, rim cuts, and general wear; and (6) automobile and truck drivers, who are responsible for operation of cars on the road. The work of these groups embraces a greatly diversified field of employment and offers a wide range of occupational choice.



Plan No. 1150. Auto Re

Where Men in These Occupations Work

Men are employed in the maintenance and service of automobiles and trucks in every community. In every village, town, and city shops and service stations are to be found.

Private garages commonly have some equipment for making minor adjustments and small repairs, and chauffeurs are expected to keep their automobiles in good running order. Public garages, which in many cases are maintained in connection with automobile

sales agencies, often employ several general repair men, and sometimes employ starting, lighting, and ignition specialists.

The repair shops are established principally for the purpose of repairing and rebuilding all types of cars with their parts and accessories. They offer a large field of employment for repairmen and experts.

Service stations, often referred to as oil and gasoline filling stations, include shops where special types of work are done. They may be classified as battery, speedometer, ignition, starting and lighting, and tire-service stations. Many men, if they have been trained, find employment in these places.

Chauffeurs and truck drivers find employment in both private and public service—chauffeurs in driving taxicabs and private pleasure automobiles; and drivers in the operation of light and heavy delivery trucks for retail and wholesale houses, and also in hauling materials for road and building construction, farm produce, and manufactured products.

Automobile plants and garages employ men as testers in the working out of new cars, and for the purpose of locating and determining trouble when a car is not working properly.

Finally, men with a knowledge of automobiles, parts, accessories, and equipment can find employment as salesmen in garages, sales agencies, and retail and wholesale stores.

PLAN No. 1152. AUTOMOBILE REPAIR-SHOP WORK

The Occupation

Repair-shop work consists in overhauling,

adjusting, and repairing all types of motor cars and their parts. In the small garages where only a few men, often only one, are employed the mechanic must handle all kinds of work. Some large garages, as has been noted, employ specialists, and in many localities there are service and repair shops maintained especially for this work.

Oxy-acetylene welding, a trade separate and apart from repair work, which is used to a very large extent in the repairing and building up of broken castings and forgings in automobile repair shops, is taken up in another monograph.

In some shops there are enginemen, axlemen, transmission men, and other mechanical experts. All of these may be classified as mechanics. Other men found in repair shops are known as trouble-finders or inspectors, helpers, foremen, and carburetor specialists.

The mechanic should be able to do skilled work on all mechanical parts of any car. His work consists in adjustment, care, overhauling, and repairing. Adjustment and care include valve, carburetor, clutch-spring, brake, and steering-mechanism adjustment, and cleaning and lubrication of parts. Much of this work can, however, be done by the automobile driver or helper in a garage. Overhauling includes repairing, but refers generally to the tearing down of the whole machine for cleaning, inspection, adjustment, and testing, together with replacement of worn and broken parts. Work on the engine requires in many cases its removal from the chassis, and disconnection of all attached parts. Some of the jobs to be done on automobile engines are removal of carbon from pistons, refitting of pistons, regrinding valves, replacing and scraping bearings, adjustment of fans and valve rods, setting timing

gears, correcting the firing order of cylinders, repairing and replacing broken parts.

The mechanic is required to remedy clutch troubles, by adjustment or replacing of worn leather on the cone. Transmission repairs include replacement of gears, fitting keys, taking up the wear in the main bearings, or complete replacement and repair of shifting-rod connections to overcome looseness. The universal joints in driving mechanisms often require disassembling and rebushing, while the mesh of the drive pinion and bevel gear of the differential will need adjusting. Work on the differential and rear axle may involve tearing down the rear construction. Such work requires skilled mechanics, especially to determine the trouble and make the proper reassembly. The play in wheels needs careful attention and exact adjustment, although it requires no particular skill or knowledge. Trouble found in the front wheels is ordinarily due to lack of alignment, and must be remedied to relieve not only a tremendous wear on tires but to prevent uncertain and difficult steering. A sagging in the frame, often caused by a fracture, can best be repaired by welding. Brakes require attention to eliminate noises and dragging, which causes a noticeable lack of power, and worn brake linings must be replaced.

The cooling system, made up of pump, fan, radiator, and connections, will require adjustment and repair, including replacing the rubber hose, mending broken parts of the pump, putting on new fan belts, and soldering leaks in the radiator. Cleaning the radiator and taking cold-weather precautions against freezing also are necessary tasks.

An inspector or trouble finder in a repair shop or garage service department is the foreman or

mechanic, but in large shops men are employed solely for the purpose of diagnosing trouble. Such a man must be highly skilled. His work is to locate trouble and determine and report its nature and extent. Trouble is located by inspection and examination of the car standing still, by testing at the start and at various speeds, and by coasting. The trouble-finder expert makes a list of all worn and broken parts, indicates necessary repairs and adjustments, and then turns the job over to the men who are to do the work.

Usually the foreman is in charge of all repair-shop work. He should be a man of clean personal habits, should have a thorough knowledge of automatic construction, and be able to direct work and handle men with courtesy and tact, to compute jobs, estimate cost of time and materials, keep time and stock records, and route work through on repair-order forms specifying work, parts, and costs for each job. A manager or superintendent often is in charge of the business end of the work, in which case the foreman gives his time to seeing that jobs are correctly done.

Helpers are usually assigned to heavy lifting and pulling, to cleaning parts, and to general shop sweeping. They run errands, help pull down and assemble motors, transmissions, and rear axles, and do other work requiring little skill.

Tools, Machines, Equipment, and Materials Used

A variety of hand tools are used in repair work, including adjustable and fixed jaw wrenches, hammers, snips, breast and hand drills, screw drivers, hack saws, center punches, cold and cape chisels, soldering coppers, pliers, files, brushes, blow

torches, vises, and other small tools. The machine equipment includes lathes, drill presses, grinders, and forges equipped with motor power and having full sets of tools for use with each. The shop must be further provided with benches, chain hoists, motor and rear-axle stands, creepers, and special tools and devices for special work. An oxy-acetylene welding and cutting outfit of the portable type is one of the greatest conveniences in any repair shop.

Most of the parts, supplies, and materials come to the shop prepared and ready for use. For some jobs, however, it may be convenient and more satisfactory to construct the necessary parts, such as shims, gaskets, and small metal pieces, from stock material. It is inadvisable, however, to make anything that can be secured already prepared.

Automobile repair-shop work is varied and interesting. Jobs frequently change, with intervals of rest.

Disabilities

Hard and fast rules as to availability for this work of men with certain disabilities can not be laid down. With perseverance, skill, and inventiveness some men will succeed in lines of work which might seem entirely unsuited to their disability. For example, a man who has lost his right arm near the shoulder has been for 30 years doing successfully all of the repair work and making all of the adjustments necessary on a thrashing machine, a traction engine, 12 self-binding and 12 mowing machines on a farm in England. An all-round mechanic must usually be able to move about easily. He needs at least one good eye, and must be able to hear well for trouble testing. A man with abdominal, kidney, or alimentary canal trouble, which prohibits him from stooping, bending,

or squatting, can not do the work. Gas vapors, fumes, and dust in a garage may affect men with lung diseases. It is very necessary for the worker to have reasonably good command of neck and head movements.

Appliances

Many devices and prosthetic appliances are in use in all countries by men with arm amputations, and where previous experience, desire, and conditions place a man in a position requiring the use of an artificial appliance for gripping and holding tools one of strong and simple construction should be selected.

Previous Education, Training, and Experience

While general education will help a man in shop repair work, as in anything else, it is more essential that he shall have had some technical training acquired either in a school or in a shop. Previous experience in automobile repair or construction work will, of course, give the best foundation for re-education. A man who has worked as a helper in a garage long enough to become familiar with automobile construction and operation may through a short course of instruction easily qualify as a mechanic. Experience in other mechanical work such as machine-shop work, blacksmithing, and boiler making will be also helpful. Business experience will be a valuable asset for a repair-shop foreman or manager.

Where Re-education Will Be Given

Full-time classes may be given in the shop of a high school, vocational or trade school, college or

university, where the equipment is sufficient to provide for real instruction of a practical nature.

Re-education classes will be trained also in commercial garages under actual shop conditions. Part-time classes providing alternate weeks or months in the school and in the shop may be best in some cases, or the first or last part of the training period may be spent in the shop and the other part in school. For example, in an eight months' course four months may be spent in a commercial repair shop and the remaining four months in a school shop.

Evening classes offer a splendid opportunity for the workman who is employed during the day. These, of course, will be for those men only who are able to return without re-education or for men who have finished their re-education course and desire additional instruction. Correspondence courses may be used in some instances.

What Can Be Learned and in What Time

Although theory and demonstration work will accompany the shop practice, each man will be required to actually do the work. To say the least, the course of instruction will be such as will enable the disabled man to qualify on the job beside his able-bodied neighbor and to command the prevailing wage after completing his course. His work will include the overhauling, repairing, and adjusting of various makes and models of automobiles and parts.

The time required to complete the course of instruction will depend to a certain extent on the man's previous education, training, and experience, but may occupy from six to nine months. It will not be the policy of the Government to give just enough training to enable the man to secure a job under good but abnormal conditions or by sympathetic

favor. Sufficient time will be given to prepare each man adequately for his work.

After Training—What?

Skilled auto mechanics are in great demand, and since repair work is so diversified and widely distributed over the entire country, it is comparatively easy for a trained man to find permanent employment. Auto mechanics as a rule are poorly trained. The trade therefore presents excellent opportunities for the disabled man with expert training. The field is also wide open for capable foremen and inspectors in every community.

Hours of employment for the mechanic depend largely upon location and amount of work to be done. Shops in large cities have an 8 to 10 hour day, the total number of hours per week being 45 to 60. In small towns and communities shops are irregular as to hours, mechanics being required often to work 9 to 12 hours per day.

First-class mechanics in large shops are paid a prevailing wage of 60 cents per hour. Small shops pay from 30 to 60 cents. A mechanic who owns his shop may earn more or less. Foremen employed by the hour usually receive a little more than the mechanic, while in a position as shop manager he may be paid $125 to $175 per month.

Automobile repair shops doing general work are located in all parts of the country and usually in many different parts of a city. Work will therefore probably be available for the trained man near his home or at least in his home town.

An automobile mechanic may expect to secure a position as foreman or inspector, which is often more suitable for a disabled man than that of mechanic. Or he may be able to open up a garage and repair shop

for himself. Because of the increased use of automobiles and the lack of first-class trained mechanics future prospects in the service are good.

Qualifying as a Teacher

Teachers for automobile work are in great demand at the present time in both day and evening vocational schools. A man with a fair general education, considerable experience in the trade, and ability to impart knowledge to others, will have a good foundation for vocational teaching.

ELECTRIC STARTING AND LIGHTING SERVICE

The Occupation

The principal parts of an electric starting and lighting system are the electric starting motor, the electric generator, and the storage battery. The work of the expert in this division consists of the repair, adjustment, care, operation, and installation of these systems and auxiliary parts, but usually not including the storage battery which requires the individual attention of another specialist.

To keep the starting motor in good running condition the expert must be able to remedy grounds, short circuits, and commutator and brush troubles. The generator and all connecting parts must be kept clean in order to insure reliable action. There are many types and varying features in generators, motors, auxiliary devices, and wiring circuits, with which the mechanic must be familiar. Automobile manufacturers in altering the characteristics of their motors from year to year and manufacturers of electrical apparatus in introducing various improvements may entirely change their systems.

In addition to being able to locate trouble by tracing and testing systems for grounds, shorts, and breaks in wiring, it is necessary for the mechanic to install systems including all the wiring. He must be able to repair and keep in shape electric horns and gear shifts which are closely related to the starting and lighting systems. The wiring for starting, generating, and lighting systems involves the installation of all necessary wires, many of which must be run in conduit. It also includes the use of proper sized wire and their connection to the lights, starter, horn, fuse boxes, switches, generator, and battery. The repair and adjustment of the lighting system require considerable expert attention, as does also equipment of cars with lamp reflectors, measuring instruments, and other devices.

Tools and Equipment

All tools used in the maintenance and service of automobile starting and lighting systems are small and light. They will include screw drivers, wrenches, hammers, files, pliers, and various drilling tools. Some machines may be required to make or fit metal parts, but as a rule they will be found in the repair shop.

Disabilities

The work in this occupation is highly skilled but light. In working around the car it is necessary to bend, stoop, reach, and climb, which might be detrimental to a man suffering from abdominal trouble. The work ordinarily requires two good hands, although a man with one hand with the proper training and experience would be able to make repairs and adjustments. Good eyesight is necessary in testing for trouble, but a slight deafness

will not be a serious handicap for this work. A man with hernia or lung wounds and diseases would not necessarily be debarred from this occupation.

Previous Education, Training, and Experience

Practical experience and a technical knowledge of electricity will be very helpful in electric starting and lighting work. Some of the best men in the field have had considerable electrical experience in some other field, many of them having been with telephone companies. A man who thoroughly understands electricity will soon adapt himself to this new field of work. A general education is always an aid, and particularly so here where it will be necessary to do considerable reading to keep pace with new improvements and developments in these appliances.

Where and What Education Will Be Given

The re-education classes for training starting and lighting specialists will be given in about the same type of schools as for repair-shop men. It may also be advisable to train men in service or manufacturing shops.

The content of the course will cover the field of both theory and practice in studying and working on motors, generators, and lighting systems. That a man is fully qualified to go into a permanent position will necessarily be shown by his ability to do the work. The time required to finish the course will depend upon his previous experience and training, but it will probably be from four to six months.

After the Training—What?

The demand for skilled specialists is increasing in all parts of the country. This is true of any specialist

in automobile maintenance and service. Permanent positions will be available in all large establishments and men employed in the smaller shops will be prepared to handle other automobile work. The hours of employment will vary from 9 hours in large city shops to 10 or 12 hours in a shop owned by the mechanic. The prevailing wage for this work will be about 60 cents per hour.

Employment will no doubt be very stable both for the present and the future. There is a lack of skilled specialists now, and with the increased use of trucks and automobiles the demand will grow. The work can be done in a good, light, dry shop, which will not be detrimental to health. Because of the character of the work safety appliances are not necessary, and danger from accidents of any kind is very small. The same opportunity is open to these men for advancement and success as to the repair-shop mechanic. They can become foremen, managers, or owners of service and maintenance shops.

PLAN No. 1153. AUTOMOBILE IGNITION SERVICE

Occupation

The ignition system is usually made up of certain electrical devices which probably give more trouble to the auto man and require more expert attention than all the other parts on the automobile. To be able to diagnose a case and submit a remedy for ignition troubles, it is necessary to be thoroughly familiar with the principles of ignition and to understand how these ignition systems are operated and maintained. Ignition primarily means igniting the gas in the cylinders of an engine by means of an

electric spark as the gas mixture is compressed. An ignition expert should first of all have a practical knowledge of electricity, know the meaning of electrical terms and the method of generation and transmission of electric current. Of the two systems of ignition, high and low tension, the high-tension system is now in use in nearly all makes of motor cars. The low-tension system was formerly used to a great extent on boat engines, and is used now to some extent on stationary engines.

The ignition mechanic deals with the testing, adjustment, and maintenance of current supply, vibrators, coils, commutators and timers, contact breakers, spark plugs, condensers, distributors, magnetos, and connectors. He must be thoroughly familiar with wiring systems and their connections. Spark plugs will have to be cleaned, adjusted and repaired, as will the vibrators when they are used. Ignition timing to insure ignition at the right time requires special attention. The care, installation, and maintenance of magnetos, which brings in the proper firing order of the engine, care of the distributor, and attention to connections, is one part of the ignition expert's task. The field of ignition trouble may be covered under three heads: (1) Failure of current supply, (2) short circuits or grounds, (3) failure of ignition devices. To keep the ignition system in good working order it is necessary to locate trouble and make repairs as indicated.

Tools and Equipment

Because of the many small and complex parts ignition systems require delicate attention. This involves the use of small hand tools only, such as will be used by the electric starting and lighting experts. Although it will be necessary to make

certain repairs to broken and worn parts, it is customary to replace with new parts.

Disabilities

The work of the ignition expert is very much like the work of the electric starting and lighting expert. Bench repairs to magnetos and other devices can be made by a man whose disability requires him to sit. The work is not strenuous and consequently could be done by men with lung disease, hernia, and abdominal troubles, except where it is necessary to stoop or bend over the job, as would be necessary in testing for trouble and making connections in the installed system.

Because of the delicate work, a mechanic's eyesight must be good, but poor hearing would not debar a man from this occupation. It is quite necessary for the workman to have good use of his hands and fingers.

Previous Training and Experience

The same training and experience helpful to the electric starting and lighting expert would aid the man in training for ignition work. A man who has been employed previous to army service in any electric work, such as telephone and telegraph installation and maintenance, or the making of electric motors and devices, would have acquired electrical experience which would be of great help to him in this work.

Where and What Education Will Be Given

The classes for ignition mechanics will be carried on in both schools and shops. The time will probably be divided between theory and shop practice. The

proper equipment and practical jobs will be available for teaching the man to do the work.

The course will be from four to six months in length for about seven hours per day for five days in the week. Instruction will include all problems requiring attention of the commercial ignition shop.

After the Training—What?

The demand for the ignition expert is equally as great as for any other automobile specialist. His services are required in garages and service stations, as well as in assembly plants, and in the driving and operation of motor cars and trucks. The hours of employment are the same as in other auto repair shops, usually eight hours per day for union shops, and longer in small unorganized shops and where the mechanic owns his business.

The prevailing wage is 60 cents per hour, although this may vary from 30 cents to 75 cents per hour, depending upon labor conditions and methods of employment. It is probable that ignition experts will be employed only in the larger places, but it is necessary to have expert ignition service in any shop. This is in small shops usually taken care of by the repair-shop mechanic who has a general knowledge of the automobile maintenance and service. Employment for the trained man will be stable. Ordinarily only the better class of mechanics, those with special training are retained during the winter season, when the overhauling of cars is done. The rush season from spring to fall gives employment to a number of “roustabouts” or helpers, but these “floaters” require no special training.

Promotion and success will depend largely upon the ability of the mechanic, but it is possible for him to advance to positions of responsibility, carrying

increase of wages. The field is large and skilled mechanics are scarce, thus making it possible for the trained man to find suitable employment and to make changes for promotion.

PLAN No. 1154. STORAGE BATTERY REPAIRMEN

OCCUPATION

The sources of electricity for ignition, starting, lighting, warmers, horn, shifting gears, and application of brakes in some instances are the generators and battery. They must furnish the power. The generator produces electricity only while the engine is running, and the demands on it are comparatively light and simple. The battery must furnish power to crank the engine, to light the car, operate the horn and other electrical devices when the generator is not in motion. It is without doubt one of the most essential and necessary parts of the automobile. To be a thorough master of battery problems a knowledge of both electricity and chemistry is necessary.

A general knowledge of batteries includes the method of construction and the materials used in the manufacture of batteries. Chemistry deals with the actions producing electricity and aids in determining the reasons and remedy for trouble. The expert must know what happens in a battery standing idle, just what takes place in the charging and discharging, and what determines the capacity of batteries. A knowledge of battery diseases will help a man very materially in the proper diagnosis of battery trouble.

The shop work of the battery man includes caring for, charging, lead burning, and rebuilding batteries. Caring for batteries includes keeping the plates

covered with distilled water, brushing dirt and dust from the top, keeping cables and connections tight, cleaning battery terminals and connections and carefully inspecting and testing it frequently. Charging consists, figuratively, in feeding it electricity, which when digested gives it energy. It is necessary for the battery man to be thoroughly familiar with the charging apparatus and able to operate it successfully. Lead burning is a process of melting together the plates and straps or posts and top connectors and terminals with a special lead-burning outfit. In rebuilding a battery, it is first charged, then opened and torn down, after which the plates are repaired or replaced, assembled with the proper separators, replaced in the jars, and then carried through the charging process. The covers are next put on and sealed.

Tools and Equipment

The room for battery work should have a floor such as tile or brick, not easily affected by acid. The equipment ordinarily includes work benches, vises, a lead burning outfit, water supply, charging benches and equipment, shelves, and stoves. Proper tools, including brushes, scrapers, pliers, nippers, files, hydrometers, putty knife, wrenches, brace and bit, stock drills, center punches, hack saws, kettles, ladles, jars, screw drivers, materials and other hand tools are provided. The work is practically all hand work and consequently requires hand tools.

Disabilities

Battery work requires the use of two hands. The loss of three fingers from one hand would not seriously impair efficiency if some grip with the remaining finger and thumb is retained. In the use of

pliers, screw drivers, brace and bits, and other tools it is necessary to hold them firmly. Hearing is not particularly essential, but good eyesight is necessary. Stooping, bending, and lifting the weight of a battery would not affect men with slight hernia and abdominal trouble. A man with artificial legs should be able to do the work if he can get around without great difficulty.

Danger from lead poisoning and acid burns and fumes is prevalent in battery work, but occurs only through carelessness. A man with any skin or lung diseases or wounds probably should not undertake this work. Gloves are worn in handling lead, but they will not protect against skin wounds. The eyes may be injured by lead and acid, but by wearing goggles this can be avoided. A man with any open wounds should not enter battery service work.

Special Appliances

No special appliances can be arranged satisfactorily to handle the tools and equipment, although stools can be provided for the man who is required to sit.

Previous Education and Experience

A knowledge of chemistry and work in a chemical laboratory will help a man to become a battery expert. Experience in battery construction and in the care of starting and lighting batteries will also be an excellent start, as would experience as a helper in a battery-service station.

Where and What Re-education Will Be Given

To a large extent the instruction in battery work will be carried on in a service station where

equipment is available. A school shop properly equipped will also be made use of.

The course will contain the elements and fundamentals of battery maintenance and service. The length of the course will be from 4 to 6 months.

After the Training—What?

Permanent positions as battery experts will be open in battery-service stations. The knowledge will also be necessary for the man who proposes to set up a shop of his own. It is a general condition that battery work be done in an independent and separate shop rather than in a general repair shop. The hours of employment will not vary from those already given for other types of maintenance and service work, and the wage will also be about the same.

In cities and towns of 5,000 or over there will be found work enough for one or more battery stations employing two or more men. Employment will invariably be stable for the highly skilled battery expert. Opportunity for promotion and success will depend upon the man, but there is great demand for expert service, and there is a good field in many places for the establishment of service stations. Future prospects are exceedingly good due to the large increase in the use of storage batteries. It is also true that the average automobile driver and owner is waking up to the fact that the battery must have special care and repair to keep it in good working shape.

PLAN No. 1155. TIRE REPAIRING

The Occupation

The repair of automobile tires, including casings

and tubes, is almost invariably assigned to a specialist, although many of the minor repairs, such as patching tubes, are done by owners or amateur repairers. Tires are probably the most delicate and the most misunderstood part of the car, as well as being the part receiving the hardest use. To secure the greatest mileage and the least trouble from tires they must receive proper treatment and have the attention of a specialist when trouble develops.

The tire repairman should have a knowledge of tire construction and be well versed in tire troubles and their causes in order to make proper diagnoses of the cases. This knowledge is necessary also in making adjustments on tire mileage, which is, in connection with the tire sales agency, a business very often established as an adjunct to the repair business.

The shop work of the repair man deals with casing troubles from punctures, blow-outs, rim cuts, blisters, stone bruises, and with the preparation of the tire for repairing, relining, retreading, and vulcanizing. Tubes have to be patched, spliced, and vulcanized. Valves in the tube stem will often cause trouble by leaking, but can be remedied by replacing with new valves. Sand blisters can be cured by opening the blister with a sharp knife, cleaning out the dirt and filling the hole with a self-curing rubber filler. A blow-out caused by a weak place in the casing usually due to a sand blister or stone bruise can be remedied by the inside method or a combination inside and outside method. Both methods consist in removing layers of fabric and applying fabric patches. When the outside has been properly built up with fabric and the chafing strips applied the cushion gum unit can be applied and the whole casing then placed in a sectional mold, where heat applied to both the inside and out will cure the job. Rim cuts

are repaired in a similar way. Retreading is done by first cleaning down to the carcase and applying coats of vulcanizing cement upon which the tread can be built up and vulcanized. Reliners are vulcanized to the inside of a casing to take care of inside fabric breaks.

The work on the inner tube consists in patching to cover small holes, cuts, pinched tubes, and minor injuries.

Vulcanizing, which should be done on large patches, is also the best remedy for any repair. It is done by first cleaning the hole, preparing the patch, and placing and vulcanizing. Inserting new sections or splicing tubes is done by removing the damaged section, inserting a new one, and vulcanizing, one splice being made at a time.

Tools and Equipment

The equipment of a tire repair shop contains vulcanizers of many sizes which apply the heat through the use of gasoline, steam, or electricity. Vulcanizing moulds which are made to fit the tire are necessary for applying casing patches. Vulcanizing kettles, sidewall and retreading vulcanizers, benches, vises and holding forms are also to be found. The small tools required include flat and concave rollers, awls, stickers, rubber knives, large shears, wire brushes, tread gauges, fabric knives, pliers, scrapers, tread chisels and cement brushes. Splicing mandrels, try squares, tweezers, rules, spreaders and other devices and tools may be found in the equipment.

Disabilities

The work in a repair shop is not very strenuous, although it requires careful attention and speed. It is necessary that the man have the use of both hands

and be able to see his work clearly. Deafness will not interfere to any great extent with his success. Lifting, stooping, or bending, while necessary to a small degree, is not common. The weight of a tire is the heaviest weight to handle around the shop.

There is little danger from poisoning or injury to skin, except as infection may be brought in with dirt on the tires. A man with leg disabilities will certainly not be debarred from this occupation if he can get around without great difficulty. It is possible to do some of the work while seated. A man having lost the use of certain neck movements would be able to handle tire repair work.

Previous Education and Experience

A general education will be of much help in handling the business end of the shop, while technical knowledge of automobile tires will be a good basis for repairing. Experience in a tire manufacturing plant or rubber industry, and in a repair shop as a helper will be very valuable to a man entering this field.

Where and What Re-education Will Be Given

Classes for tire repairmen will be carried on in schools where equipment is available, but probably to a large extent in the commercial repair shop where actual working conditions exist. Both full-time and part-time schemes may be used.

The course will include practical work on all kinds of repair jobs. Tires will be studied to help a man to determine the cause and remedy of tire trouble and to make adjustments. The time necessary to qualify as an expert tire repairman will be from 4 to 6 months.

After the Training—What?

Employment in tire repair shops for a skilled man will be easily found. The field is large and shops are required in nearly every village, town and city. With the increased use of cars the year round will come increased demand for tire repair service and hence year round employment for the tire specialist. The daily hours of work will be from 8 to 10 depending upon local conditions.

The wage of the skilled workman will be about 60 cents per hour, but a man owning his business can make it more profitable. Opportunity for promotion will come through increase of the man's own business, or through advancement to the position of foreman or manager in a large shop.

PLAN No. 1156. AUTOMOBILE AND TRUCK DRIVERS

The Occupation

Chauffeurs and motor-truck drivers are employed to drive cars and keep them in good running condition. It is very essential that anyone operating a car shall know its construction and the function that each part performs. He should know how to care for the machine and how to make minor adjustments. Lubrication of all parts properly at regular intervals is an important task of the driver. The location of trouble and the detection of its cause and remedy is even more important than driving upon the highway.

The operation of the car includes starting and stopping the engine, starting and stopping the car, and driving. One of the first things to know is how to stop the car. The use of the emergency and service brakes, as well as braking with the engine, requires

considerable skill and experience. Cranking and starting apparatus must be understood if it is to be used with ease and without injury. Skill in shifting gears and in controlling the car is attained by experience.

A good driver must have a knowledge of road regulations and precautions, and must also be familiar with city ordinances in regard to the driving and parking of automobiles. He must be cautious, able to see danger, and to avoid it.

Tools and Equipment

An automobile should always be equipped with a complete set of tools for making repairs and adjustments. A tire repair outfit is a valuable addition to the driver's equipment. The tools and equipment are of the portable type, easy to manipulate, and convenient to carry around.

Disabilities

A chauffeur or truck driver should have good eyesight and be able to hear distinctly. It is necessary to locate trouble and remedy it by seeing or hearing. Danger is averted by carefully watching the road and things likely to interfere with travel, and also by listening for approaching trains and cars.

A man in this employment should have two hands, although he might have lost some of his fingers. It is also well for him to have the free use of his arms and legs. A man with leg amputation below the knee would be able to operate the brakes, clutch, and accelerator without difficulty. Lung diseases and wounds, hernia, and abdominal trouble would not debar a man from work of this kind. It is necessary that he be able to have the full use of his neck and head. A man suffering from shell shock, who is

subject to nervousness, loss of memory, or inability to control his actions should not be employed as a chauffeur.

Appliances

A man so disabled that he must have special devices or appliances to operate an automobile should not enter the occupation. Artificial legs which can be properly controlled would not, however, debar him.

Previous Training and Experience

A man who has had experience in operating or repairing automobiles, motor boats, motorcycles, or gas engines will have some knowledge necessary for chauffeurs and motor-truck drivers. A man with ability along mechanical lines and training, also, enabling him to learn the principles of motor-car operation and care readily will have a good foundation for this occupation.

Where and What Re-education Will Be Given

Classes for motor-car care and operation will be conducted very largely in schools having the necessary space and facilities for work. Instruction will include class-room instruction and study, shop-repair work, and driving. Operation instruction will be conducted on the road.

The course will be arranged to prepare a man adequately for successful motor-car care and operation. He will have an opportunity to come in contact with all problems usually confronted by the automobile and truck driver. It will require from two to four months to complete the course, depending upon the man's previous experience and ability.

After the Training—What?

Good automobile and truck drivers are in demand. It has been predicted that many of the truck drivers now in Government service will take positions of that type after the war. This condition would probably cause an excess of men for this work, and it is well to say that the men who have the best training and qualifications will ordinarily secure the positions.

The hours of employment will depend upon the man's position but usually the time is 8 to 12 hours per day. Drivers of pleasure cars are employed for a greater number of hours usually, but much of the time while on duty they are idle. Men in these jobs are paid at the rate of $10 to $35 per week.

Work as driver of light or heavy trucks and pleasure cars is available in nearly all towns and cities. Employment is stable, except for the fact that the cars may be out of use during the season of snow. The work is healthful, inasmuch as the men are out in the air most of the time. Severe weather may cause inconvenience and hardship to some people. There is very little opportunity for promotion, except that gained through changing jobs.

PLAN No. 1157. CONCRETE CONSTRUCTION AND CEMENT MANUFACTURE

Acknowledgment

This monograph was prepared by A. J. R. Curtis, of the Portland Cement Association, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

Development in the field of concrete construction during the past two decades has been little short of marvelous. This increase may be accredited to the wide variety of uses to which concrete may be put and to the demand on the part of the American public for construction that is permanent, reasonable in cost, and fireproof. The concrete industry has brought in to the field of labor a new type of skilled workmen and its varied phases each call for men with distinct, definite training. Indications point to a greatly increased demand for men in this line of industrial activity. If the increase in the production of Portland cement during the last few years is reviewed one can easily see the constantly increasing importance with which concrete construction is being regarded. The shipments of cement leaped from 8,000,000 barrels in 1900 to 92,000,000 in 1917. A vivid imagination will not be needed to picture a still greater and wider field for its use in the future.

With the cessation of hostilities new construction work of many kinds is being planned in every section of the country. Millions of dollars will be spent for new buildings, highways, bridges, and various other types of public and private improvements. There will be a demand for trained workmen which will probably tax every effort to supply. A large percentage of the occupations in this line of work can be filled efficiently by men who have suffered some disability in the service of their country. The handicap in the loss of a leg or an arm on the battlefields of France can be overcome with the aid of a “Made in America” leg or arm, fitting the wearer to fill efficiently many occupations in the concrete industry.

A careful study has been made of the limitations

imposed by various injuries. There are many cases on record where injured men have overcome all handicaps and have made good in positions which from the survey of the re-educationist appeared quite impossible. Many instances have come to light which show that the statement, “A handicap is merely a state of mind,” holds true for a great variety of cases.

The wage question is no doubt one of the first which arises in your mind. It is natural that one should ask, “What wages or salary does this job pay?” and, “What are the chances for advancement?” In a review of the wages of men engaged in concrete construction as compared with the men engaged in other lines of construction work this fact was noted, that although in 1913 the average wage for the concrete worker was somewhat lower, during the year 1916 wages for concrete workers advanced 60 per cent while for workers in the other line the advance was only 20 per cent. For the man with training in this work the salary will average near $150 per month. As regards opportunities for advancement, few other lines of activity seem to hold forth comparable opportunities, when it is considered that a large proportion of competent workers eventually become partners or managing owners in contracting concerns, while the demand for construction superintendents is usually greater than the supply.

For convenience, concrete-work employments may be classified in three distinct groups, namely: (1) Structural group, including the building of reinforced concrete structures, ships, bridges, dams, retaining walls, and a multitude of small structures; (2) roads and highway group, including the construction of concrete roads and highways, pavements, and alleys; (3) products plant group, including the making of

blocks, brick, tile, sewer and pressure pipe, and ornamental trim work.

PLAN No. 1158. STRUCTURAL GROUP

Engineer or Architect

In large structural work the man in charge is usually a civil engineer or an architect, who has specialized during his course of training in structural or reinforced concrete engineering. He is the designer or the creator of the proposed structure. Before any work is done he must picture in his mind the finished product in every detail of its construction; he must be able to design and lay out the plans for the work in its entirety; he must be familiar with the cost of labor and materials, in order that he may know when the contractor is placing a fair price upon the construction. He must know the building laws and codes in any part of the country in which he may be working. He should have business training and experience, as practically all his associations will be with business men, and he must be able to talk intelligently and in business terms to them.

A large percentage of his time will be spent in the office or designing room.

His training is received in one of two ways, namely: By full-time course of training in the civil engineering department of a university or college, or by part-time study in a technical school. Many schools of this last-named type are now giving evening work, which enables young men to attain the degree of a civil engineer or architectural engineer while working. Thus, a man who is working during the day, may increase his efficiency and

attain the same end as his brother, who has been more fortunate in that he has received a full four years' training.

To reach the position of engineer architect, the training described above is an absolute necessity. As a usual thing a civil engineer who has just completed his course starts work in the capacity of draftsman, foreman, inspector, or assistant superintendent, and as he gains in experience is given more responsible positions. His wages range from approximately $100 at the start to $400 or $500 per month as he gains in efficiency and experience.

Often, after gaining experience an engineer will establish a clientage, and gradually work up a business of his own. This is a goal toward which to strive, as it means greater independence and a larger income. His services are in demand in every part of the country the year round.

PLAN No. 1159. INSPECTOR

After designing a structure the engineer lets the job of constructing to a contracting firm. He places as his representative on the job an inspector whose duty it is to see that the engineer's plans and specifications are properly carried out. The duties of an inspector are not difficult, but it takes a man with diplomacy and consideration, yet one who is sufficiently firm to safeguard his employer's interests and make sure that every part of the work is performed in a thoroughly acceptable manner. It goes without saying that he must be acquainted with every feature of the construction work as planned by the engineer.

His training is practically the same as that of the engineer or architect. However, it is possible for a man who can not complete his entire training at one

time to accept a position as inspector, and gain some very valuable experience in this way. There are also men who work up from the ranks to this position. The demand for his services is greatest in connection with large industrial and public projects and in the general construction work in cities. His wages range from $100 to $200 per month.

PLAN No. 1160. CONTRACTOR

The contractor or firm of contractors are equipped to handle the construction work. At such a time as the engineer or architect has his plans completed he advertises among the contractors for bids on the construction according to his plans. As a rule the responsible firm making the lowest bid gets the job.

PLAN No. 1161. SUPERINTENDENT

The first thing the contractor does after accepting the job is to select a superintendent of construction. Superintendents are usually engineers who have grown up in the service of the firm. The successful superintendent must have resourcefulness, technical knowledge, tact, energy, honesty, and judgment. He must have a personality which drives to activity several hundred originally unorganized men who are without special interest in the company they work for or in the results accomplished, and with tact and judgment he must weld them into a unified working organization, cheerful and self-respecting, with a high morale and finally with enthusiasm for the work at hand. He must be able to build in full size, with permanent materials, a structure the design of which troubled the engineer or architect to show clearly on paper; he must be honest, since his company must leave their reputation in his hands and trust him with funds; he must, through attention

and experience, be so trained that dangerous operations are carried on as a matter of routine without worry either to himself or his company; he must have ability to foresee and provide for the problems which are perhaps to come up months later; he should have his temper continually under control, even under the most provoking circumstances; he should have as much pride in the structure he is erecting as the engineer who designed it; he must be able to handle labor and cope with the various labor problems that may arise.

His training is practically the same as that of the engineer or inspector, but he has been fitted by experience for the position of superintendent. He may have served in various capacities with the same contracting firm or with other firms. In some cases men with extraordinary ability have worked up from the ranks by hard work and home study or night-school training. The salary of the superintendent varies in different localities and upon different jobs. It usually ranges from $150 per month upward.

PLAN No. 1162. ASSISTANT SUPERINTENDENT

On the larger jobs the superintendent has an assistant. His duties are dependent largely upon the man under whose direction he may be working. From a study of the duties and qualifications of the superintendent an idea may be gained of the nature of the assistant's work. The educational requirements are the same as those for the superintendent, but his responsibility is less and therefore as great and varied experience is not required. The opportunity for his services depends upon the number of large jobs under construction. His salary usually ranges from $100 to $200 per month.

PLAN No. 1163. TIMEKEEPER

On all large jobs a timekeeper has a position of responsibility. His duties are clerical in nature; in fact he might be called the superintendent's clerical assistant. As his name implies he is keeper of the time of the men, and each day checks up the men on the job in order that no mistakes may be made in figuring their time. He handles a large amount of clerical work in connection with the pay roll, and may also be called upon to do other work in connection with construction. He must be a man who is absolutely honest and trustworthy. He has a wonderful opportunity for observation and study of construction operations, and can by application and study advance to a position of greater responsibility and trust. His wage varies somewhat, and is dependent on the amount of responsibility placed upon him and of work required of him. Experience is of secondary importance.

PLAN No. 1164. FOREMAN

On a large job there will be several foremen, usually a general foreman, a concrete foreman, foreman of reinforcing placing, and a carpenter-foreman.

First and most important a foreman must be able to *handle men*. His duties are more than just to hire and fire. He must be acquainted with the problems of his men and spend some time studying their viewpoint of all questions in which they may be interested. As he is ofttimes a man who has advanced from the ranks by hard work, study, and superior ability, he will be acquainted with the men's side of the various labor questions. However, he must be fair minded and not see the viewpoint of the men alone, but must regard that also of his employer. He must

be able to weigh carefully any situation, and to make a fair and just decision.

He must be able to read designs and put them into operation. He may not be called upon to perform actual mechanical operations, but he must be able to tell and to show his men how the work is done. He is, in fact, the superintendent's right-hand man on the particular portion of the work which has been assigned to him. All of his time will be spent out in the open upon the job. Wherever there are concreting operations in progress, there you will find him.

The general foreman has active charge of all operations. The other foremen, as a rule, come directly under his jurisdiction.

The concrete foreman has charge of all concreting operations; the reinforcing foreman has charge of the placing all reinforcing; and the carpenter foreman has charge of the building of the forms and erecting of all staging and hoist towers necessary for carrying on the concreting operations.

Generally speaking, the foremen gain their training from experience and study; night schools have been started in some of the cities of the country, which are giving courses in concrete work, particularly for the man who is anxious to better his position.

PLAN No. 1165. FINISHERS

The repairing of imperfections in the concrete surfaces and the finishing or floating of flat surfaces requires the work of the finisher. He must possess manual dexterity so that he can handle a float skillfully and must know when a surface has been worked sufficiently. Skill is also required in pointing up or repairing imperfections in surface from which forms have been removed. His wages range from 50

to 60 cents per hour. His training is received on the job.

PLAN No. 1166. MIXER OPERATOR

Several things are required of a mixer operator. First he must have some mechanical skill and be able to handle and to take care of a steam or gas engine or an electric motor. He should be able to repair the mixer in case of a breakdown. He must also know something of proportioning and of consistencies required for different mixtures and under different conditions. Wherever any considerable amount of concreting is done the services of a mixer operator are required. The wages are practically the same as for finishers. His training is gained through experience on the job.

PLAN No. 1167. FORM BUILDERS

Form builders are carpenters and must have the experience and training required in that trade.

PLAN No. 1168. REINFORCING PLACERS

Reinforcing placers are very often laborers under the direction of a skilled foreman. Their duties are to place the reinforcing steel according to the specifications prepared by the engineer. In some of the larger cities the Structural Steel Workers' Union requires that all placing of reinforcing be done by men from their union. The wages vary according to locality. Very little training or experience is necessary.

PLAN No. 1169. RURAL CONTRACTORS

Rural contractors comprise a very numerous group, handling concrete jobs in the smaller cities

and towns throughout the country. Endowed with an ordinary amount of business judgment, the rural contractor usually becomes a well-to-do business man. He usually acts as his own superintendent directing his jobs personally. The average rural contractor is independent and commands the respect of the business men of his community. His income is variable but always affords a good living if his business is well managed. His income is often comparable with that of the larger merchants in the community.

Road and Highway Group

A large number of the occupations in this division are analogous to the positions in the structural division.

PLAN No. 1170. ENGINEER

On practically all public highways the outlining of the plans and specifications are left to the county or state highway engineer. His course of technical training should include specialized work in highway engineering. He must be thoroughly reliable and of unquestionable integrity, as his judgment in matters pertaining to the construction of highways and roads must be faultless.

Only recently the states of Illinois and Pennsylvania voted enormous bond issues to be used in the construction of permanent hard-surfaced roads. Many other states are planning to appropriate huge sums for the same purpose. Never before has the opportunity for the highway engineer been so great. The training required and the salary paid are very similar to those of the structural engineer.

PLAN No. 1171. INSPECTOR

As in structural work the building of highways is usually let to a contractor and the engineer places an inspector as his representative on the job. The duties of the inspector are practically the same as upon structural work.

PLAN No. 1172. SUPERINTENDENT

In a general way all that has been said regarding a superintendent of structural work applies to the superintendent of highway work. He should understand how the grading in preparation for the building of roads should be done and be able to carry on the construction of the road efficiently, with as little delay and as economically as possible.

PLAN No. 1173. FOREMAN

The foreman on road work has usually been trained in the school of experience and has learned the various requirements of good concrete road building. He has shown by hard work and superior ability that he is able to handle the position of foreman of the highway building gang. In a general way his requirements are the same as heretofore mentioned.

PLAN No. 1174. MIXER OPERATOR, FINISHER, REINFORCING PLACER

The requirements are the same as in structural work.

PLAN No. 1175. FORM SETTER

Before it is possible to place any concrete it is necessary to build side rails to contain the concrete. This work is done by form setters. No special training is required.

Products Group

The making of various concrete products is a field which is increasing in importance. The construction of block, brick, tile, sewer, and pressure pipe, silo staves, ornamental trim, structural units, lamp posts, fence posts, telephone and telegraph poles, burial vaults, kitchen sinks, bath and laundry tubs, garden furniture, roofing and floor tile, cribbing fences, columns and grindstones are included in this group. The concrete products industry is coming into a position of dignity and importance. The day of the incompetent man is passing, and his product—the pasty looking, porous cement block—is giving way to the real concrete unit, structurally sound and architecturally beautiful. The factory-made concrete block of quality has made its way against the prejudice created by inferior products and against a conservatism which requires a new material to prove beyond any possibility of doubt its superiority to materials with which builders are acquainted. Concrete units have suffered through the ignorance which has placed them upon the market as substitutes and imitations rather than as products of a material having its own distinctive qualities and characteristic charm.

The development of concrete stone manufacture depends upon the possibility of the market, skillful workmanship, economical operation and competent management; upon the utilization of the best available materials and equipment in preference to makeshifts and clumsy manual labor. It depends on artistic perception, and also upon the appreciation of public demands.

This line of work presents a wonderful opportunity for the man who desires to eventually go into business for himself. The amount of capital required

for the start is comparatively small. However, before entering this line of business a very careful study should be made of the management, manufacture, and marketing of concrete products.

PLAN No. 1176. MANAGER

In large plants a manager is employed by the operating company, but in smaller plants the proprietor usually acts as manager. The man who undertakes the management of an enterprise of this kind should understand business principles and have training and experience in business life; he must be familiar with the requirements of the product which he is manufacturing; he should not attempt to manufacture too large a line of products, but should specialize according to the demands of the locality in which he is situated.

PLAN No. 1177. FOREMAN

The foreman is in active charge of the manufacturing of the products and has direct charge of the labor employed. The requirements for his position are the same as have already been mentioned for a foreman.

PLAN No. 1178. MACHINE OPERATORS

A large percentage of concrete products are manufactured in specially designed machines which require some skill in operating. The operator must know the machine thoroughly. His training is gained by experience.

PLAN No. 1179. MODELER

If ornamental work is undertaken the services of a modeler are absolutely necessary. To produce

products artistic in design requires the services of a man trained in an art school. From a clay model, molds of plaster or glue are made in which the concrete is poured. Most of the modeler's work is done indoors, usually in a well lighted studio. His salary is variable and dependent upon his ability. Demand for his services is not very general at the present, but the occupation holds many very promising allurements for the man who has ability.

PLAN No. 1180. PATTERN MAKER

In some cases it is necessary to make wooden forms for ornamental trim work. The making of these forms requires the services of a pattern maker. The requirements and qualifications for this position have been discussed in other monographs.

PLAN No. 1181. PLASTER AND GLUE MOLD MAKER

It is the work of a plaster and glue mold maker to take the model which has been designed and make a plaster or glue mold in which the concrete will be placed. His experience and training is gained by actual work with the material, either in the shop or in the school. This occupation requires considerable mechanical ability. In smaller plants the modeling and mold making are frequently done by one man.

Miscellaneous

Each one of the various groups which have been mentioned requires an office force, and commonly in the case of the concrete products group salesmen are employed.

Re-education

To the man who has been disabled, some place in the field of concrete construction activities may present a life work which has a future both big and bright. The work is vitally interesting and alive. If you have the determination and ability the way is clear to assume almost any of the responsible positions reviewed in this monograph. Do not expect to step from the hospital or from the vocational institution into the highest position; the minor jobs are stepping stones to the bigger ones. Make up your mind that you will attain the highest possible position in that phase of the construction industry in which you are engaged, and by diligent application you will ultimately reach this goal. The industry is large and there are opportunities for everyone to whom the doing of big things appeals. Talk with the re-educational expert with whom you should in any case get acquainted, and learn of schools near your home that are giving instruction in the various phases of concrete construction.

PLAN No. 1182. CEMENT MANUFACTURE

With the increase in construction activities the demand upon the manufacturers of Portland Cement becomes greater. However, the manufacture of this product does not present as large an opportunity to you as does the field of concrete construction. In the actual manufacture of this product there are few positions which make a direct appeal.

However, in the laboratories, which are maintained by all manufacturing companies there is an opportunity for you if you are interested in chemistry or physics. Elaborate tests, both chemical and physical, are made of this product. If you have had training in chemical engineering, here is an

opportunity for you to get into work which is interesting, of which the future is assured. If you have not had the training, the chemical engineering departments of our colleges present the opportunity for study and research work. If your mind is made up to enter the cement testing laboratory, specialize on this subject while taking your course of training.

PLAN No. 1183. THE LAW AS A VOCATION

Acknowledgment

For the material of this monograph the Federal Board for Vocational Education is indebted to the Vocation Bureau, Boston, through its publication The Law as a Vocation, of which this pamphlet is largely an abstract. The monograph was prepared by Dr. H. L. Smith, under the direction of Charles H. Winslow, Chief of the Research Division of the Federal Board. Acknowledgment is due to Dr. John Cummings of the Research Division for editorial assistance.

Are You Thinking of Becoming a Lawyer?

If you are and have not yet made up your mind, you will want to read this pamphlet, because it tells what the leading men in the profession of law say about law as a vocation. It tells you the answers that these men give to questions that are in your mind.

If you are thinking of entering the profession of law, you want to know the answers to these questions:

1. What kind of work should I have to do as a lawyer?

2. What personal characteristics should I possess to be successful as a lawyer?

3. How much general education ought I to have as a basis for a course in law?

4. What specific training should I need if I decide to become a lawyer, and how long would it take?

5. How should I be admitted to the bar?

6. What income may I reasonably expect to earn if I am successful in practice?

7. What are some other rewards to a lawyer in addition to the earnings from practice?

8. How many years would it take me to establish myself in practice?

9. How great a need is there for lawyers?

10. How much will it cost me to get an education suitable for the practice of law?

What Kind of Work Should I Have to do as a Lawyer?

"The work of the law is to establish rights, satisfy claims, protect the innocent against wrongdoers, secure convictions for the guilty, and to maintain a cause in the face of all forms of opposition and misrepresentation."[35]

[35] The Law as a Vocation, p. 68, Vocation Bureau, Boston, Mass.

The profession of law, therefore, is a profession of action rather than inaction, of fighting for a cause. In this fight the lawyer finds his work in two rather distinct fields, office practice and court practice. Office practice again subdivides itself into practice of a public nature and practice of a private nature. Office practice of a private nature consists very largely in the examination of titles to property, the drafting of legal papers, such as deeds and contracts, the acting as trustee or guardian, the collection of accounts, and the giving of general legal advice. In

the office practice of a public nature, the lawyer acts as public administrator, referee in bankruptcy proceedings, auditor of public accounts, etc.

In the field of court practice the lawyer deals with criminal cases, damage suits, etc. It is in this field that there is the greatest nervous strain, but at the same time the greatest opportunity for building up a wide reputation. In court practice an attorney conducting a case usually consults other lawyers and has their aid and counsel as associates in the case.

Both in office and court practice lawyers usually become notaries or justices for the convenience of clients in the acknowledgment of deeds, the making of affidavits, etc. Classified on a still different basis the principal fields of practice in law are five in number. Any lawyer would usually have the bulk of his practice in one of these five fields, acting in one of the following capacities: General practitioner, criminal lawyer, tort lawyer, real estate lawyer, patent lawyer. All but the first of these represent specialized fields.

The general practitioner performs various kinds of legal services, any kind in fact that may be called for in the community in which he lives.

The criminal lawyer limits his practice chiefly to work in criminal courts and deals with offenses that have been committed against society.

The tort lawyer deals with damage suits. The work of the tort lawyer is often divided into two fields, that of the plaintiff lawyer and that of the defendant lawyer. The plaintiff lawyer does work for those parties who are claiming damage. The defendant lawyer does work for those individuals or organizations that are sued for damage. Generally the defendant lawyer serves a liability or insurance company, corporation or other employer.

The real-estate lawyer is engaged largely in examining titles, and in acting as trustee and thus holding funds for investment. His work naturally brings him in close touch with both the buying and the selling end of the real-estate business, so that he usually, himself, engages to some extent in that business.

The patent lawyer assists in getting patents from the National Government, and in acting as an attorney in patent cases.

The following quotation affords a description of the work of a lawyer from another point of view:

"The lawyer spends a part of his time in studying law, reading statutes, decisions, reports, and treatises. The printed decisions in various States range from 1 to 18 or 20 volumes a year. With these and other legal material the lawyer is bound to have some acquaintance. Furthermore, the lawyer spends part of his time studying miscellaneous topics, which become the subject of litigation, such as street paving, the coal business, the chemistry of wall paper, and so on. Every science may have something to say to the lawyer. Part of his time is spent in consultation with his clients; first of all to ascertain the facts of their cases, and afterwards to explain to them their rights on the facts. He also spends time in writing letters and doing sundry business incidental to giving advice to his clients. This work for the client branches out into a search for missing witnesses, examination of records of deeds to discover the ownership of real estate, the perusal of the account books of a client to find out the balance of a claim or similar investigation. Furthermore, part of his time is spent in writing of pleadings and briefs; the pleadings are the statement of claim or defense made by him to the court; the briefs are his written

arguments of law giving the legal reasons why the law favors his client's case. Finally, he spends much of his time in arguments to the judge and jury, and in the examination of witnesses and other proceedings in court. Here, as in all occupations, nine-tenths of the work is what may be called routine work or even drudgery. This can not be escaped. The lawyer does not spend his time in preparing and delivering eloquent orations. As in other occupations, the really interesting work, full of perpetual zest, is usually a small part of the whole."[36]

[36] The Law as a Vocation, pp. 24-25, Vocation Bureau, Boston, Mass.

What Personal Characteristics Should I Possess to be Successful as a Lawyer?

The answer to the first part of this question is best given in the following quotation:

Certain personal qualities are fundamental for a success in the law; others though of high value are secondary.

The fundamental qualities are as follows:

1. *Moral integrity*, worthy of the trust often involved in handling the property and other interests of clients, or able to withstand inducements to unprofessional conduct. This involves intellectual honesty.

2. *Persistence*, to carry on to completion any piece of work undertaken. This means unlimited capacity for hard work.

3. *Sound judgment*, to take a right and well-informed attitude in questions involving law and facts.

4. *Self-confidence*, a belief in one's ability successfully to handle a task when once entered into.

5. *Concentration*, power to bring all one's thought and activities to bear on a case in hand.

These basal qualities, with adequate training in the profession are likely to bring at least a fair degree of success; the lack of any one of them is a serious handicap, and accounts for most failures.[37]

[37] Vocational Studies, U. S. Bureau of Education, pp. 6-7, Collins Publ. Serv.

The loss of an eye, a hand, an arm, a foot, or a leg would not seriously interfere with one's success as a lawyer. Good health is highly desirable but physical strength is not an essential to the practitioner.

How Much General Education Ought I to Have as a Basis for a Course in Law?

Some years ago even the best law schools did not require any definite amount of education for entrance into the school. In fact many individuals with only a common-school education read law in an office and took up the practice without any training in a law school. At the present, however, every person looking forward to the practice of law is urged to graduate from a law school. All reputable law schools now require at least a four-year high-school course for admission. Many of these law schools, especially those connected with the large universities, require in addition to the four-year high-school work one year, and in some cases two years, of college work as a preparation. Two law schools admit only students who have a college degree of A. B. or B. S.

What Specific Training Should I Need, If I Decide to Become a Lawyer, and How Long Will It Take?

There was a time when by reading law in an office one could get a fairly adequate training for the practice of law. Particularly was this true of preparation for practice in small towns. Even at the present time this method is followed to some extent in small towns that are long distances from law schools. The rapidly increasing complexity of the law, however, now practically necessitates at least a partial course in a law school and makes desirable a complete course. The late Chief Justice Waite said:

"The time has gone by when an eminent lawyer, in full practice, can take a class of students into his office and become their teacher. Once that was practicable, but now it is not. The consequence is that law schools are now a necessity."[38]

[38] The Law as a Vocation, p. 40, Vocation Bureau, Boston, Mass.

The method of training for the law now recommended, therefore, is training in a law school rather than in a law office. The practical experience of the office has recently been supplied in the best law schools by the practice court, thus doing away with the former objection to the law school, namely, that it furnished to the student no experience in methods of handling and conducting cases. The practice court or moot court, as now introduced into the progressive law schools of the country, is described by one of our State universities as follows:

"The work of the practice court is divided into three parts, that of the law term, that of the jury term, and that of the appellate jurisdiction. The court is provided with a full corps of officers, including the members of the faculty who may sit from time to time as a presiding judge, the full bench of judges sitting as a supreme court, a clerk, a sheriff, and the

necessary deputies. Ample and commodious rooms have been provided for the use of the court, including a court room furnished with the fittings necessary for the trial of jury cases, and a clerk's office. The latter is provided with the books and records used in actual practice. The purpose of the court is to afford to the student practical instruction in pleading and practice both at law and equity under the common-law system and the "Code" or "reformed" procedure, and actual experience in the commencement and trial of cases through all stages. In commencing the actions the students assigned to the cases are permitted to select the State in which the action is supposed to be brought, thus enabling the student to acquire the practice as prevailing in his own State. All questions of practice, pleading, and procedure are governed by the law of the State in which the action is so laid, but the questions of substantive law are determined according to the weight of authority."[39]

[39] Vocational Studies, U. S. Bureau of Education, pp. 6-7, Collins Publ. Service, Philadelphia, Pa.

The degree LL. B., which is the principal degree given by the American law schools, was granted by 96 schools according to the report of the committee on legal education of the American Bar Association for 1906. Of these 96 schools, 48 required a three-years' course of study beyond the full four years' high-school course. Nineteen of these schools granted the master's degree LL.M., after one year of postgraduate study.

How Should I Be Admitted to the Bar?

Each State has its own bar or legal society and

admission is granted to the applicant in accordance with the regulations in force in each State. Twenty-eight States have an examining board; 19 States require the approximate completion of a high-school course; 17 States prescribe no definite period of study; 1 State prescribes a period of 18 months; 12 States prescribe a period of two years; 23 States prescribe a period of three years; and 10 States accept graduates of certain law schools without examination.

The tendency at the present time is to continue the past practice of raising standards of admission. This tendency has been supported by the American Bar Association, and with its promise to continue interest in this matter it should not be long until there are evolved uniform requirements that will constitute a national standard on a high plane.

What Income May I Reasonably Expect to Earn if I am Successful in Practice?

It is difficult to estimate, except very generally, what the average yearly earnings of a lawyer will be. It is difficult to do this, because the income will vary according to the locality and the character of the service in which one is engaged. Generally speaking, during the first year of his independent practice a lawyer's earnings will seldom net him more than a few hundred dollars. With experience and acquaintance, however, his competence will increase. If a lawyer chooses to serve an apprenticeship as it were with another firm, he may reasonably expect from $3 to $10 a week at the beginning, with an increase after three or six months according to the amount of practice in the office in which he is engaged.

The following quotations would tend to discourage

one from entering upon the profession, unless he is by nature and training well prepared for the work:

"Its (the profession of law) demands are so high and the conditions of genuine success so exacting, however, that it is inevitable that many of the ill-equipped and misguided beginners who flood the ranks of the legal profession should fail of success."[40]

[40] The Law as a Vocation, p. 13, Vocation Bureau, Boston, Mass.

"The field is greatly overcrowded and the average earnings very small. This is the great objection. Only the more able and fortunate in securing profitable legal practice can hope to win more than a bare competency. Young men may not only be indebted to their family and friends for a course of study covering three or four years in preparation, but after that for a period of 5, 10, or even 15 years consumed in acquiring a competent practice. Many never reach such a practice, and are obliged to turn to some other occupation for part or full income, or to come down to the end of life in straitened circumstances, unable to do for their families what was earlier done for them to place them in the profession."[41]

[41] The Law as a Vocation, pp. 66-67, Vocation Bureau, Boston, Mass.

"In 1912 the secretary of the Harvard Law School sent letters to all of the graduates of the school from 1902 to 1911, inclusive, asking for their net earnings each year since graduation. The reports returned are indicated in the following table, although it is to be remembered in this connection that less than half of those written responded and it can reasonably be assumed that these represent the more

successful."[42]

[42] Vocational Studies, pp. 15-16, U. S. Bureau of Education, Collins Publicity Service, Philadelphia, Pa.

Year.	Number of replies.	Average earnings.
First	694	$664
Second	609	1,110
Third	497	1,645
Fourth	411	2,150
Fifth	317	2,668
Sixth	249	3,118
Seventh	162	3,909
Eighth	112	4,426
Ninth	62	5,321
Tenth	40	5,825

What Are Some Other Rewards to a Lawyer in Addition to Earnings From Practice?

Legal training fits a man not only to practice law but to enter other fields of activity. The lawyer may enter into commercial affiliations and into political life through the judiciary, legislative, or executive branches of the Government. Men trained in the law may serve the public as attorneys for towns, cities, counties, districts, States, or the Nation. These positions in the State and Federal service are as follows:

(1) Town or city solicitor.
(2) County or district attorney.
(3) Attorney general for the State and his assistants.
(4) United States district attorney and his assistants.

(5) Attorney General of the United States and his regular and special assistants.

Many lawyers also are connected with various National Government bureaus, such as the Bureau of Insular Affairs, etc.

Practicing lawyers are also often chosen as professors or lecturers in law schools and other schools, such as schools of commerce and finance, medical schools, colleges, and universities. For those lawyers who have a literary inclination there is opportunity for its exercise in writing for law journals, secular magazines, daily press, etc. A lawyer's training naturally brings him before the people as a leader in movements for public good, if he is at all public spirited. Finally many lawyers have an opportunity for becoming counsellors for the people in general in the practice before legislative bodies considering public interests. Special economic and industrial problems demand for their best solution legal ability of the very highest order.

How Many Years Would It Take Me to Establish Myself in Practice?

The young lawyer may get into practice in one of two ways: First, as an employee; second, as an independent practitioner. In the first case, he usually becomes an assistant in some law office, where he stays from one to five years, possibly permanently by becoming a member of the firm. In the second case, as an independent practitioner, he gets into the practice primarily through the business of his own personal friends, through the advertising that these friends give him to their friends, and finally through his own clients, one client leading to another. The lawyer's advertising, therefore, is of an indirect

nature. Every ambitious young lawyer looks forward to the time when he can get into the profession on his own account, and to this end he should strive at all times to build up a good reputation and to become generally known in his community. One must count on working faithfully for several years, particularly if he is an independent practitioner, before he can enjoy a comfortable income.

How Great a Need is There for Lawyers?

The legal profession is rapidly becoming overcrowded. During the period from 1870 to 1900 the percentage of increase in the number engaged in the practice of law was 180.1 per cent. The following table sets forth the growth and percentage of increase in membership of the professions of medicine, theology, and law from 1870 to 1900:

Growth and per cent of increase in memberships of the professions of theology, medicine, and the law from 1870 to 1900. Statistics of Occupations, Twelfth Census of the United States.

Year.	Theology.	Medicine.	Law.
1870	43,874	62,449	40,736
1880	64,698	85,671	64,137
1890	88,203	104,805	89,630
1900	111,638	132,002	114,460
Per cent of increase	154.4	11.5	180.1

In the opinion of the leading members of the American bar to-day the practicing of law is a very poor vocation for the incompetent and poorly equipped.

How Much Will It Cost Me to Get an Education Suitable for the Practice of Law?

If you are a soldier or a sailor discharged from the service since October 6, 1917, with a disability for which the War-Risk Insurance will grant you compensation, your education will be furnished free by the Government. The War-Risk Insurance Bureau, through its compensation, will meet a part of the expenses, and the Federal Board for Vocational Education will supplement that amount to a minimum of $65 a month, with the purpose of meeting all of your expenses for living, clothing, transportation, tuition, and incidentals.

It is the hope that this pamphlet may serve the double purpose of discouraging the incompetent and poorly equipped from entering the profession of law, and of encouraging the competent and well equipped by strengthening the desires of such to enter the profession, and by holding out to such the promise of ultimate success in the profession.

PLAN No. 1184. ELECTRICAL CONSTRUCTION, MAINTENANCE, AND REPAIR OCCUPATIONS

Acknowledgment

This monograph was prepared by Terrell Croft and L. A. Emerson, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

Demand for electrical men is increasing constantly, and a returned soldier, whatever his disabilities and whether or not he has had previous experience, will be able in nearly every case to find some electrical job which will be interesting to him and at which he

can make good wages.

To describe occupational possibilities in different lines of electrical work, the Federal Board has issued several monographs, of which this is one. If you desire to follow an electrical vocation, and do not find discussed in this monograph the specific occupation in which you are interested, obtain from a representative of the Federal Board one of the other publications dealing with electrical employments.

Electrical construction, repair, and maintenance occupations discussed in this bulletin cover the following related activities:

Electrical contracting and repairing.
Plant and factory electrical maintenance.
Electrical inspection.
Work in storage battery service stations.
Electrical automobile work.

Vocational opportunities in each of these fields are described in some detail on the following pages.

PLAN No. 1185. ELECTRICAL CONTRACTING AND REPAIRING

A man or a company engaged in electrical contracting and repairing installs wiring, generators, motors, and other electrical equipment in buildings. Some concerns install power plants complete. The organization may also include a repair shop wherein are rehabilitated motors, generators, and similar devices. Frequently, such companies have a retail store where energy-consuming devices, such as fan motors, sad irons, electric heaters, incandescent lamps, and other similar articles are retailed to the

public. This merchandising feature is one of great importance because it affords a possibility of considerable additional income. The organization which formerly called itself the "National Electrical Contractors' Association" has now adopted the name "National Association of Electrical Contractors and Dealers." Some firms do electrical construction only, others electrical repairing only, and still others merchandising only. Or one may combine in its business any two or all three of these activities.

Often a contracting concern is a large company which does business in several cities. Again, it may be a small corporation operating locally. Or it may be an individually owned business employing only a few men.

The several vocational groups which may be distinguished in the contracting and repairing business include (*a*) owners, (*b*) inside wiremen, (*c*) estimators, (*d*) salesmen, (*e*) general repairmen, and (*f*) armature winders.

PLAN No. 1186. OWNERS

An owner of an electrical contracting business is usually a man who has worked himself up from a position as wireman or salesman. For success, however, it is not sufficient that the man be merely a good mechanic. Yearly, hundreds of men set up for themselves in the electrical contracting business and, while some succeed many fail, principally because they are not good business men. If a small contracting business is to prosper, the owner should have a good working knowledge not alone of electrical construction, but also of bookkeeping and selling. Pluck, industry, and honesty are prime essentials.

Not all owners earn large incomes. Some, in fact, earn little if any more than a journeyman wireman, who works for wages of from $60 to $125 per month. For a returned soldier who has had electrical-construction experience, and who possesses the requisite qualifications the field is promising. It requires some capital at the start, and the first years will practically always be lean ones. A man who is entering or who is serving in the electrical contracting field as a workman may look forward, if he has the proper capacity, to some day owning a business of his own. If he has this aspiration, he should become interested in bookkeeping, salesmanship, advertising, and in the technical aspects of the business, such as electrical machinery installation and wiring.

PLAN No. 1187. DEMAND FOR INSTALLATION OF WIRING

Wiring for electricity requires for its installation the services of many skilled men. In cities and towns where electric-company service is available, practically every house which is erected is wired. Out in the country, also, many farm buildings are now being wired. Furthermore, while it was common practice a few years ago to arrange for only one light or outlet in each room, the present tendency is to provide for several. All of this is creating a demand for more wire men.

PLAN No. 1188. SIGNAL WIRING

In wiring for electric doorbells, fire and burglar alarms, and other so-called signaling circuits dry cells are ordinarily used to provide the voltage. With

this low pressure the fire risk is almost negligible. While the signal wiring in a large factory or institution may be complicated, in smaller buildings or residences it offers few difficult problems. To install signal wire economically and properly, however, requires some skill and experience.

PLAN No. 1189. LIGHT AND POWER WIRING

Installation of light and power wiring is more skilled work. On these circuits the electric pressure is always relatively high—110 volts or above—and there is the ever present danger to be guarded against of fire caused by short-circuiting. Not only may improperly installed wiring involve great fire hazard, but it may involve life hazard also. To minimize these dangers, codes of rules indicating the proper and safe methods of installing wiring and electrical equipment have been formulated. The National Board of Fire Underwriters has prepared and revises periodically such a compilation of rules, called the "National Electrical Code." This, or some modification of it, is in force in practically all communities. These rules specify the conditions under which wiring of certain types may be used and indicate rigid requirements for the protection of circuits and the installation of electrical machinery.

Methods of wiring.—The several methods of wiring include the following: (*a*) open wiring; (*b*) knob and tube wiring; (*c*) rigid conduit wiring; (*d*) flexible conduit wiring; and (*e*) molding wiring.

Open wiring was the earliest form. It is the lowest in first cost and is, if properly installed, safe. The insulated conductors are supported along the surfaces of the walls and ceilings on porcelain knobs or cleats. In many factory buildings, particularly in

those of the wooden mill type construction, much open wiring is used. For this service it is economical and quite satisfactory.

The knob and tube method provides a concealed installation, but is more expensive than the open type, and is applicable only in frame buildings. The wiring is placed while the structure is under construction. Where the conductors are carried along the sides of joists or other timbers, they are supported on porcelain knobs. Where they pass through studs or other wooden members the holes are bushed with porcelain tubes.

The principal tools used in both knob and tube and in open wiring are the screw driver, brace and bit, knife, saw, soldering iron, and blow torch.

PLAN No. 1190. MOLDING WIRING

In molding wiring conductors are held in a flat wooden or metal molding screwed to the wall or ceiling surface. Wooden molding, however, is not now commonly used, and in many cities its use is prohibited. The metal molding which is superseding the older nonmetallic molding is small, unobtrusive, and readily installed. It is used principally for extensions to existing wiring installations. By its use the cutting of holes and channels in walls and ceilings, which is necessary for the installation of concealed wiring, is eliminated.

PLAN No. 1191. STEEL CONDUIT WIRING

This is the most expensive, but the safest and best method. In fireproof buildings it is used exclusively, and in some communities wiring of other types is prohibited. Many frame buildings are now being

wired with metal conduit, either of the rigid or the flexible type. Rigid conduit is merely wrought iron or steel pipe of the usual trade dimensions, which has been specially treated to prevent its corrosion and to render its interior smooth. Flexible steel conduit resembles metal hose in construction. Metal conduit is installed while the building is under construction, and subsequently rubber-insulated conductors are pulled into it. Usually the conduit is concealed within floors and walls, but it may be supported on surfaces. In concrete construction buildings the conduit is embedded in the concrete, being placed in the forms before the concrete is poured. At outlets where the conductors must be carried from the conduit system to feed lights and switches, steel or cast-iron outlet boxes are connected to the tubes. Pipe tools, such as dies, reamers, hack saws, drills, and bending “hickeys” are used in working conduit.

PLAN No. 1192. WIRING AS AN OCCUPATION

Wiring work is interesting and diversified. Some wiremen in the cities specialize on one type of work. For example, certain journeymen may ordinarily do nothing but conduit work day in and day out, while others may do all sorts of installing. Some men specialize on power wiring for motors, generators, switchboards, and similar equipment.

Usually a wireman must rely on his own experience and judgment for the detailed layout of the wiring installation. The architect’s plans generally indicate merely the locations for the different lights, switches, motors, and other devices. The wireman must then plan his circuits so that these devices may be served with the minimum expenditure of time and material.

Wiring of finished buildings, that is to say of the structures which were not wired at the time they were built, is almost a specialty in itself. Much of this work is done, because the electric utility companies expend considerable effort in their endeavor to see to it that all buildings, old and new, are wired, so that they may become possible customers. In wiring finished buildings much ingenuity may be exercised by the wireman in routing of conductors through the structure so as to insure the least removal of flooring and cutting of walls.

Qualifications of wiremen.—Requirements for wiring are determined to a large extent by the special line or lines of the activity taken up. While some wiring work requires little physical exertion, often considerable lifting and pulling is necessary. The necessary boring, sawing, and bending all require strength and endurance. Also it may be necessary to climb from floor to floor of buildings under construction. Some of the jobs may be in heated inclosed buildings, but the bulk of it is in structures under construction which are open to the weather.

As to technical qualifications, a good wireman should be able to read the architects' blue prints, which specify the panel box and outlet locations, and he should be able to route his conductors properly. This requires that he have some general knowledge of electrical circuits, and be quite familiar with wiring methods and wiring code requirements. Often the wireman must order his own material for a job. Hence, he should be able to select and specify this intelligently. It follows that there is little opportunity in cities for a person who has had no previous experience or wiring training to immediately assume the duties of a journeyman wireman. But each

wireman usually has working with him a helper. A helper can start with little or no previous experience, and work up. As in practically all other vocations, some theoretical and practical training will be of great value, and such training a prospective wireman can obtain at a trade school.

Wages of wiremen.—Compensation varies in different communities and with the skill of the workman. In practically all cities wiremen are unionized, but not usually in the smaller towns. An eight-hour day with time and a half for overtime prevails. In the cities the rate per day for a journeyman wireman will vary from $4.80 to $6.40, and in the smaller towns from $3.60 to $4.80. In cities a helper will receive from $2.80 to $4, and in the smaller towns from $2 to $4.40.

PLAN No. 1193. ESTIMATORS

Estimators in electrical contractors' organizations compile estimates of the labor and material required and the cost thereof, for each job on which a bid is to be submitted by the contractor. On the basis of this cost of time and material the estimator determines the price which is quoted to the prospective purchaser. Most successful estimators are men who have worked at the wiring trade and thereby appreciate how much work can be accomplished under given conditions in a given time. Cost of material can readily be determined with accuracy, but to estimate closely the cost of labor—the time that will be consumed in putting in the job—requires experience and judgment. A returned soldier who has had previous electrical construction experience but whose physical qualifications are such that he can no longer do heavy work, should be able to qualify

ultimately as an estimator. It may be that before he actually accepts such a position, he should have some supplementary theoretical training in a trade school in drawing, mathematics, and electrical theory. But after he has this training and some estimating practice he should, if his natural qualifications adapt him for the work, be able to do well at it. The work is mostly indoors, although the estimators sometimes visit sites of jobs under construction. The work is usually eight hours a day, and the salary may range from $100 to $250 per month. A competent estimator may make a great deal of money for his concern and an incompetent one can lose much more.

PLAN No. 1194. SALESMEN

A salesman for an electrical contracting business may be either an inside man or an outside man, or combine inside and outside duties. An inside or store salesman will sell the various electrical appliances and devices which the contractor may stock. Such may include electric fans, electric-washing machines, small motors, irons, heaters, incandescent lamps, and similar devices and material. He should be well informed as to the uses and applications of this equipment, and he should also be competent to advise prospective customers about any wiring and the cost thereof, which may be required for the installation of the equipment. Outside salesmen are frequently assigned territories or districts which they are expected to cover and from which they obtain orders for about the same equipment and services as do the inside men. Their work is somewhat similar to that of an electric-company solicitor.

This sales work offers attractive possibilities for

returned soldiers who have had some previous electrical experience, and whose physical disabilities are such that they can no longer do heavy work. While technical knowledge is an extremely valuable asset to a salesman, the essential qualification of a man who is selling anything is that he have the "selling instinct." He should like to meet people of all sorts, and feel at ease when talking to them. For a man who has the qualifications, the opportunities for him in sales work are probably better than those in any other line. If a man can get around and see and talk to people, hear what they have to say, and write, he should be able to qualify physically for this work. Many salesmen earn very moderate salaries, but others command very high ones. The compensation depends very largely on the man. Often it is on a salary and commission basis. In this selling work, a man may expect to earn from $70 to $150 per month, or even more, depending upon his abilities and application. Sometimes a man may combine the duties of salesman and estimator.

PLAN No. 1195. GENERAL REPAIRMEN

General repairmen of a contracting company must be versatile. They are the "trouble shooters" for the company, and may be called upon to locate trouble in, and to repair burned-out motors, worn or damaged controllers, and many different sorts in interior electrical installations. They should be able to judge whether a machine needs a new bearing, or rewinding, or what. Frequently the repairs must be made to the equipment in the building where it is installed, since it may not be practical to remove it to the shop. A repairman may also have advantageously some knowledge of armature winding, although his

duties ordinarily are to handle only the troubles which can be corrected with the expenditure of comparatively little time. The repairman's most necessary qualification is the ability to locate a trouble quickly, and either remedy it at once, or recommend authoritatively such action as is necessary for permanent repair. This requires resourcefulness and a good understanding of the operating characteristics of electrical machines and devices of all sorts. Jobs involving the rewinding of machine are generally sent to the shop and handled by an armature winder, as described in the following paragraph. A general repairman may expect compensation ranging from $80 to $125 per month. The day is usually eight hours. Some time is spent outside traveling from job to job, and the remainder inside.

PLAN No. 1196. ARMATURE WINDERS

Armature winders are now employed by many of the electrical contracting companies in their repair departments. Some concerns make a specialty of and do no other work except the winding and rewinding of electrical machines. To become a competent armature winder, a man must have a great deal of experience, which can be acquired only in the shop. However, a trade school course in this vocation will be of great assistance, and should increase materially the rate of a man's advance and his ultimate earning capacity. It is impossible for one to do armature winding intelligently without some knowledge of electrical theory. Without it he may be able to work along like a machine, but unless he possesses some of this theoretical information he will not know why he is doing certain things certain ways and will never be

competent to act independently.

An individual can start as an armature winder's helper at making and taping coils with little or no previous experience, and can from this position gradually acquire an extended working knowledge of armature winding.

In an electrical repair shop, the armature winder must work on machines of many different types. It is often necessary for him to do lifting, and he must have full use of his fingers. He may be compelled to stand at his work for long periods. A lack of hearing is not a material detriment, and the blind have been taught to do this work successfully. Men with certain minor disablements can qualify for this service. The work is almost wholly indoors, although it may occasionally be necessary to work on a machine in a building which is under construction and open to the weather. An eight-hour day prevails. In cities the vocation is largely unionized. An armature winder helper or apprentice will receive from 20 to 40 cents per hour; a journeyman, from 60 to 75 cents per hour; and a superintendent, from $150 to $250 per month. Expert, rapid armature winders for coal, steel, and similar companies often receive as much as $200 a month. Time and a half is paid for overtime. Usually the jobs in these repair shops are steady, the men being retained in slack times at routine work of some sort or other. A competent electrical machine repair personnel is difficult to assemble, and when a repair shop has acquired one, it takes precautions to provide the men with steady work so that they will not leave.

PLAN No. 1197. PLANT AND FACTORY ELECTRICAL MAINTENANCE

Nearly all factories of any consequence now employ electrical power distribution. Electrical energy is produced economically in a centrally located generating station and is distributed by the wiring throughout the plant wherever power is required. In the many plants in this country great numbers of electric motors drive the machines. Thousands of incandescent lamps are utilized for lighting. Also electrical energy may be used for electroplating, galvanizing, welding, heating, and other services. For the installation and upkeep of all this equipment, thousands of electrical maintenance men are required. The work of an electrician in a paper mill may, in detail, be quite different from that required of one in an office building or in a printing establishment. Yet each of these is an electrical maintenance man.

Duties of maintenance men.—These are extremely diversified. A good maintenance man must be a broad-gauge fellow having on tap a lot of electrical experience and information. The repair of minor electrical troubles or motors and other equipment are always under his charge. Much of the work consists of "trouble shooting," that is of locating and correcting electrical difficulties of various sorts. Fuses blown due to sudden overload may have to be replaced. Loose connections may have to be tightened. Possibly a machine may for no apparent cause refuse to start. Then the electrician must at once locate the trouble and repair it, or arrange for the installation of a substitute machine while the faulty one is sent to the shop. Often also he may be called upon to install new wiring and equipment. In some plants the electrical maintenance department may also rewind armatures.

PLAN No. 1198. QUALIFICATIONS OF PLANT AND MAINTENANCE ELECTRICIANS

Maintenance work involves not alone a good understanding of electrical practice but also, for the first-class man, a knowledge of the industry and its manufacturing processes. The electrician should be sufficiently familiar with the machinery in the plant to determine quickly whether a trouble lies in the motor or in the driven machine. In many plants, where continuous process production prevails, those of the steel industry for example, time is an extremely important factor. The shut-down of one machine may render idle several hundred men and clog the operation of the entire factory. Efficiency naturally increases with experience in the given plant.

An electrician who has the ability to replace in service, in minimum time, an inoperative machine should and does receive high compensation. A fair degree of physical ability is required for this work, because the electrician may in the course of his regular duties have to do many different kinds of jobs. Sometimes the removal of a motor requires lifting. The installation of heavy conductors requires pulling. On the other hand, much of the work, such as the replacing of fuses or the installation of electric light wiring, necessitates but little physical exertion.

While many plant electricians have acquired all they know solely through experience, theoretical training will enable a man to progress quickly and to increase his earning capacity. The work is largely indoors, although some of it is outside in the plant yards and in open buildings. In many of the plants an eight-hour day prevails but there are still some where the men work 9 or 10 or even 12 hours on the night shift. The work is very steady. If the plant shuts

down the electricians are ordinarily employed during the nonoperating period on such reconstruction and maintenance as can not be effected conveniently while the plant is running.

PLAN No. 1199. PROMOTION

In some of the large steel and other manufacturing plants, electricians who have risen to the position of chief electrician earn as much as $300 or more monthly. Such a job involves ability to handle successfully many electricians, and to "keep the plant going" at minimum cost. Frequently men start in a plant as wireman's helpers or as motor tenders, for which little knowledge or experience is necessary. As the beginner gradually becomes familiar with the equipment and the processes of the industry he may be advanced to more responsible and remunerative work. A man commencing factory electrical maintenance work as a motor tender or wireman's helper may expect to earn from $50 to $80 per month. An experienced plant trouble man may command from $80 to $175 or more per month.

PLAN No. 1200. ELECTRICAL INSPECTION

Nearly all electrical installations are now subject to inspection. Most fire-insurance policies provide that electrical work in the insured building must be installed in accordance with the National Electrical Code, and insurance may be refused on any building not wired in accordance with the code. Sometimes in the country districts, installations are not inspected, but in the cities and in most industrial plants periodical inspections are made. Many cities have wiring codes of their own, which are enforced by

ordinance and which are based on and are in general similar to the National Electrical Code.

To insure that the code rules are observed it is in most cities required that the wiring, fixtures, motors, and other electrical equipment be inspected by a municipal or an insurance inspector before electric service is given. Large industrial plants located outside the cities are examined by insurance inspectors.

Duties of inspectors.—The duties of the inspector are to scrutinize work in detail and, if it is properly installed, to approve it and recommend that a certificate of inspection therefor be issued. If it is not in accordance with the code, he suggests the necessary alterations. Upon the issuance of an inspection certificate, the local electric company is authorized to give service.

To handle his duties effectively, an inspector should have an extensive knowledge of electrical construction. Furthermore, he must be familiar with the wiring rules specified by local ordinance or by the code. The rules relate to signal systems, lighting circuits, power wiring, installation of motors and generators, high-tension machinery, transformers, switchboards, substations, and the like. In every municipal underwriters' inspection organization, it is often necessary to make rulings relating to features of electrical work which are encountered infrequently and which are, therefore, not covered in detail in the regular printed rules. The inspector must also be familiar with these. In other words, he must know after inspecting a job whether or not it has been installed in accordance with the "Code" under which he is working. Ordinarily this knowledge can be obtained satisfactorily only through extended experience in electrical

construction.

Opportunities for disabled men.—Possibilities offered by electrical inspection for returned soldiers are very promising. The inspector spends probably half of his time out of doors and half indoors in finished buildings. In the larger cities, inspectors are usually provided with motor cars so that they can move quickly from job to job. Little physical exertion is required, and there is no lifting or pulling. But an inspector should be able to climb around buildings under construction, and into attics. Both hands are required for testing, but one arm may be artificial. A returned soldier who has had previous electrical-construction experience, but who because of some physical disability can not follow his old vocation, should find electrical inspection a means of earning a good livelihood at interesting work.

The work is normally eight hours per day, with Saturday afternoons off but, since the men are usually paid monthly salaries, sometimes they will do little work on one day and have to spend overtime on the next. Theoretical training in a school which teaches electric wiring is very desirable for a man who has not made a study of the code requirements. The salary for an inspector will range from $100 to $175 per month. A chief inspector to whom several men report may receive from $150 to $250 per month and possibly more. In some cities the wiring inspectors must be members of the wireman's union and receive the prevailing rate of pay for wiremen.

PLAN No. 1201. WORK IN STORAGE-BATTERY SERVICE STATIONS

Thousands of automobile electric service stations

are now in operation, while a few years ago there were none. This phenomenal development has been due to the increase in the use of automobiles and to the popularity of electric-starting systems. Many stations specialize on only one component of the starting equipment, as for example the storage battery. Storage-battery stations have become so necessary that almost every city has at least one station which handles exclusively storage batteries. It charges, repairs, or rebuilds the batteries as occasion demands. Since the service station is becoming an established and rapidly growing institution, it affords many promising openings.

A storage-battery service station should be equipped for handling battery work of all kinds. Often because of a defective switch or some similar trouble a battery will run down. Then it is brought to the station to be recharged. In the station specially designed equipment is utilized so that a number of batteries can be charged simultaneously. The workman who directs the charging department arranges the battery on the bench and connects it into the circuit with others, all of which may be recharged simultaneously. As the batteries become charged, certain chemical actions occur. The density of the acid solution changes, and by observing with a hydrometer the specific gravity of the solution, the battery man knows when to disconnect the cells from the line.

On the service floor where the cars are driven in for examination or adjustments are the inspectors who are familiar with the general performance of storage cells. Often an inspector must locate causes of a trouble which does not originate in the battery, but which is due to a defect in some other element of the system. He must be able to diagnose quickly the

difficulty and its origin and to recommend the corrective action necessary. Work of this character demands men with battery and general automobile experience. They should be familiar with all of the motor car electrical equipment. A detailed account of service station work is given in the monograph on "Automobile maintenance and service."

In the repair shop worn batteries are rebuilt and damaged batteries are repaired. In the repairing process, often the only thing required is the replacement of the wooden separators which separate the lead plates of the cell. These separators rot quickly when a battery is mistreated, a short circuit results, and this, if not promptly remedied, will ruin the battery. Other trouble cases may be caused by the plates having become "worn," either through a long period of normal service or because of abuse. A worn battery can by utilizing the old jars be rehabilitated by substituting new plates and separators for the old. When a question arises as to whether it will be best to repair a cell, or to replace the plates, or to substitute a new cell, the repair man should be able to judge accurately as to the most economical procedure. In repairing a cell the sealing compound is removed by heating, and the lead straps which effect the electrical connection between the various cells of the battery are drilled or cut off. The element, as the group of plates is called, is then taken out. If the plates are in poor condition they are thrown away, new ones are substituted, and new wood separators are inserted. The jar is washed, the plates and element replaced, and the covers sealed on the cells. Finally the connectors are burned securely to the posts.

Lead burning by the hydrogen or acetylene torch is necessary in connecting cells. This requires great

skill. A man must usually do battery work for a considerable period before he becomes a competent lead burner. After the battery is sealed, it is filled with a new sulphuric-acid solution and placed “on charge.” When readings of the hydrometer and voltmeter indicate that it is fully charged, it is delivered to its owner or is placed in stock.

It appears that the demand for men in this vocation has never been satisfied. Some of the work requires physical exertion because the heavy batteries must be lifted on and off the charging bench. In the charging room the air may be permeated with sulphuric-acid fumes. These are irritating to the nostrils of some individuals but do not seem to affect others.

The workman should be familiar with the action of batteries and with electrical circuits as well. He should be able to observe readings of meters, thermometers, and hygrometers. To become a skilled battery repairman, considerable practical experience on the job is necessary. However, a beginner with little experience can start in as a helper and gradually work up in the trade. Some theoretical training will be of great assistance. It can be obtained in the storage-battery departments of those schools which have automobile courses.

The work as a rule is eight hours. The compensation of a beginner or helper will range from $60 to $80 per month; an all-around experienced battery man will receive from $80 to $125 per month, and a foreman in charge of a shop may receive from $100 to $200 per month. There is always the possibility that a man following this work can branch out into a service business for himself.

PLAN No. 1202. ELECTRICAL AUTOMOBILE WORK

The automobile repair men who are receiving highest wages to-day are those who are familiar with the electrical as well as the mechanical equipment. Electrical starting and lighting is now regarded as so essential and has been adopted so universally that a large number of men are employed exclusively in its maintenance. The demand appears greatly to exceed the supply. Many garages are seeking constantly thoroughly qualified automobile electricians. They are willing and expect to pay good wages to well-qualified men. Probably some of the best possibilities in the automobile field to-day are waiting for specialists in electrical starting and lighting equipment.

Necessary qualifications for an automobile electrician are that he be thoroughly familiar with the electrical equipment, and also with the operation of the car as a whole. To diagnose a case of electrical trouble, it is usually necessary first to determine what effect it has on the general operation of the car. This requires a knowledge of the valves, timing, and many other elements. Obviously such a specialist should be able to disassemble the electrical equipment, and to effect such adjustments in it as may be required. Some acquaintance with electrical theory is of great assistance. An extended knowledge will prove a paying asset, because of the greater ultimate compensation which it will insure its owner. Much of this information can be acquired through practical experience in the shop, but a large part can be secured only through study at home or in a suitable school.

Repair men should understand the principles of the magneto, induction coil, generator, regulator,

starting motor, condenser, and the like. They should appreciate how these principles are utilized in the normal operation of the equipment. Frequently a service station will specialize on one type of equipment. Its work may comprise only coil repairing, or magneto work, or motor repairing. In a shop which assumes repairs of all kinds there may be, in addition to the three branches just enumerated, also motor and generator work, storage battery repairing, light wiring, and other special lines.

Electrical automobile work offers a very promising field for the returned soldier who is familiar with automobile repairs in general, but who because of some disability is not competent to do heavy work. With his background of general automobile repair knowledge, and with the theoretical training in practical electricity which he may acquire through a Federal Board course, rapid progress should be possible. The opportunity is there, and the man who likes and is qualified for this vocation, a very satisfactory reward is awaiting. The work is usually eight hours. Most of it is indoors, but sometimes it must be done outside. A beginner or helper, who is not expected to do much work without supervision, may expect to receive from $60 to $80 per month; a competent experienced repairman will probably receive from $80 to $150; and an expert or foreman from $125 to $200. Employment is steady because a concern which has obtained and trained good men endeavors to keep them week in and week out. There is always the possibility, for an individual who understands this work, of starting an electrical automobile repair business for himself. See monograph on “Automobile maintenance and service.”

PLAN No. 1203. ELECTRICAL EMPLOYMENTS WITH UTILITY COMPANIES

ACKNOWLEDGMENT

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If a man who was doing electrical work before his enlistment has a natural liking for it his tendency will and should ordinarily be to return to it when he resumes his place in civil life. For the inexperienced man also there are many opportunities. The necessary qualifications and the duties are exceedingly diverse. Hence whatever disabilities a man may have incurred, he can in all probability find some electrical employment at which he can earn an adequate livelihood. It may very well be advantageous for him to take an electrical course at Government expense before he starts practical work. The demand for electric men is increasing constantly.

This monograph is written to outline in a general way the possibilities of employment with utility companies in electrical pursuits. Utility companies include:

Electric light and power companies.
Electric railway companies.
Telephone companies.
Steam railroads.

The desirability of some theoretical training for electrical workers should be appreciated. A soldier who is returning to civil life may be able to obtain work at some electrical vocation whether or not he has had previous experience in this line, and may be able to earn a good living. But any man who has not had theoretical training, whether or not he has had electrical experience, can increase very materially his future prospects and earning capacity by taking such training before he begins practical work.

The probable tendency of the average man will be to get a job as soon as possible. He should think carefully before he does this. Why? Because statistics show that men who have had some theoretical training earn considerably more in the long run than those who have not. This is true particularly in electrical work. Electrical constructions and operations appear very complicated to one who does not understand the fundamentals, but to one who does, these things are relatively simple. Some theoretical knowledge enables an individual to proceed independently, without detailed supervision, and his earning capacity is increased accordingly. The man who has had theoretical training will not only earn more money, but he will have more agreeable work, and the probability of his being promoted to responsible jobs, such as foremanships, are much greater.

Endeavor to select a specialty and to become proficient in some field which is not overcrowded, and in which the demand for trained men will

probably increase. There is always a call for men who are better equipped, as to experience and training, than the average fellow, and specialists in lines which are not overcrowded earn good wages.

A most effective arrangement under which a man may receive his theoretical training is one whereby he spends alternately part of his time in a school, and part doing actual work in the industry at the vocation which he has selected. Thus he receives simultaneously theoretical instruction and practical experience. Probably, a real working knowledge is acquired more rapidly in this way than in any other. Several of the Federal Board schools are equipped to provide instructional training of this character.

The rates of pay in public-utility work are often not as high as in manufacturing or certain other lines of endeavor. But to offset this the employment is very steady. Furthermore, the working conditions are often more satisfactory than in other companies. It is an established policy of practically all utility companies to “take good care” of their employees. Many such companies maintain sickness and death benefit associations for employees. Some companies assume the entire expense of such associations while in others each employee contributes regularly small dues and the company also contributes. Many utilities pay pensions to their older men, and frequently free medical attendance and legal advice are provided. Some concerns maintain building and loan associations. Others operate profit-sharing plans, or sell stock at low rates and on the installment plan to their people.

Employment managers are now found in all large organizations. Their function is to hire the right men for the right jobs. Returned soldiers who are familiar with the industry but are physically disqualified from

pursuing their old vocation may qualify for this service. It requires practically no physical exertion but much head work. (See monograph on "Employment Management".)

PLAN No. 1204. ELECTRIC LIGHT AND POWER COMPANIES

An electric light and power company is a corporation which generates and sells electrical energy for lighting and power. Because of the economies which result in the generation of electrical energy in large central stations, the demand upon these power companies is continually increasing. They can usually develop energy, transmit it over their lines, and sell it to the customer cheaper than he can, in his relatively small plant, develop it for himself. However, very large factories or plants may require such large power stations that they can generate for themselves cheaper than they can buy. To provide this central-station service, the stations and lines must be built; energy must be generated in the central station, transmitted over the lines to the consumer, and metered at the consumer's premises. Hence, men of many vocations are required.

The different departments of an electric company, into which a large concern of this character is ordinarily subdivided include:

Manufacturing or power department.
Construction or distribution department.
Meter department.
Sales department.
Engineering department
Accounting department.

In addition there may be a “purchasing and stores department” and a “garage department.” But these will not be discussed specifically herein because the vocations involved are not, essentially, electrical.

Manufacturing or power department.—This department operates the steam or water power generating stations which develop the electrical energy. Where small substations, which transform the energy received from the large stations, are required these may also be under the jurisdiction of the manufacturing department. It handles the maintenance and operation of boilers, steam engines, turbines, generators, rotary converters, switchboards, and all power “manufacturing” equipment.

In the steam division of the power department work about the station which requires no skill, such as handling of coal, removal of ashes, washing of boilers, and similar tasks, is performed by laborers. In this division are employed also water tenders and engineers.

In the electrical division operators and their assistants maintain and operate the electrical equipment in the station. This includes generators, motors, rotary converters, switchboard, and the like. Switchboards must often be quite elaborate. This is necessary to provide for the proper electrical interconnection between the various machines in the plant, and the outgoing lines which feed the substations and the customer’s premises. A principal duty of a station operator is to “tend” the switchboard, operating the switches and devices on it as may be necessary. In general the control of all the electrical apparatus in the station is effected from the switchboard, by which machines are started and stopped, and circuits cut in and out.

Switchboard operating in the power department.—The

qualifications of a switchboard operator are that he be familiar with the use and operation of the different machines and electrical equipment in the station. Particularly he should be familiar with the switchboard. He should understand something of electrical theory. The requisite training is obtained often by men working up from the ranks, through experience in the station. However, such knowledge can be acquired much more quickly and readily if one has had a short course in electricity such as that which may be obtained at a Federal Board school. Ability to handle the more important duties of these positions must, however, be acquired by experience on the job. A disabled man who can hear, see, move about, and throw switches quickly may develop into a good station operator.

The work is not heavy, and it is indoor work. Sometimes the shifts are 12 hours, but the tendency is toward eight-hour shifts. Promotions are from assistant operator to operator, and then to chief operator. The salary for an operator will range from $80 to $125 per month. A man who is familiar with steam as well as with electrical equipment will be qualified for promotion to the responsible position of chief engineer.

PLAN No. 1205. LINE CONSTRUCTION OR DISTRIBUTION DEPARTMENT

This department builds the lines, either overhead or underground, which convey the electrical energy from the generating station to the substations and to the consumers. It also maintains the lines and for this work there may be a separate maintenance division of the construction department. The work is almost wholly out of doors. It involves the setting of poles,

placing of cross arms, stringing of wire, building of underground-conduit systems and manholes, erection of switchboards, and installation of inside wiring. The labor is usually strenuous. However, some of the work, such as inspecting, planning, drafting, and supervision requires little physical effort. Men having minor disablements, particularly if they have had previous experience in construction work, should be able to qualify. In this, as in all other electrical branches, it will be found a paying proposition to take a short theoretical course before resuming practical work.

Construction departments usually work eight hours a day, although in some companies a nine-hour or even a ten-hour day is the rule. A construction inspector will receive a salary ranging from $90 to $125 per month, foreman from $100 to $175, and a draftsman from $60 to $150. An inspector, if he has sufficient experience and also the ability to handle men, can often become foreman. The work is very steady. If bad weather prevents outside operation, they are given indoor work.

PLAN No. 1206. METER DEPARTMENT

Installation, removal, testing, and repair of the meters which measure consumed electrical energy is the work of the meter department. After a meter has been installed in a building it should be tested periodically to insure its continued accuracy. These periodical tests are made on the customer's premises. If the instrument is shown to be inaccurate it is replaced by one which is accurate, and is taken to the repair shop for overhauling. Thus the meter department does some of its work outside and some in the shop. In the larger companies the men who

test the meters in the customer's buildings ordinarily do nothing else. A different group of men repair and test the meters in the shop. With the smaller companies the same men or man may have to do both the inside and outside work.

The outside meter tester should be familiar with wiring practice, understand the connections necessary in installing meters and how to test them. A meter tester frequently has a helper who can start at this work with very little electrical knowledge or experience. This is primarily outdoor work, and is suitable for a returned soldier whose disabilities require that he have considerable open-air exercise. The hours are eight or nine a day. The wages of a helper vary from $50 to $76 and of a tester from $70 to $125 per month.

In the meter-repair shop the returned meters are dismantled, cleaned, repaired, readjusted, and retested. This work is in reality a branch of electrical instrument repairing and manufacturing. It requires dexterous workmanship and accurate handling. Men in the meter-repair department are usually those who have been outside meter testers. They understand, in addition to installation and testing, something of meter construction and manufacture. Wages for an inside meter tester range from $80 to $150. The position of meter department foreman or superintendent, for which a competent meter man may after a number of years of experience qualify, pays from $125 to $180 monthly. In meter departments of large companies there is some bench work which can be done by a man who has the use of his hands and eyes, even though he be otherwise materially disabled. Soldiers who have had previous electrical experience or who like to manipulate fine instruments and tools should be able to handle

effectively some of this work.

PLAN No. 1207. SALES DEPARTMENT

As its name implies, this department obtains customers who consume electrical energy. Such light and small appliance business as does not come unsolicited is secured by solicitors. Each solicitor is ordinarily assigned a certain district. To be a success at selling, a man must first of all be competent to meet tactfully people of all types. Furthermore, he should be familiar with electric lighting requirements and rates, so that he can discuss these with prospective customers and advise them authoritatively. Experience, however, has shown that men with no previous electrical training can, provided they have the "selling instinct," be trained in a few weeks so that they can strike out for themselves and procure lighting contracts. Probably selling pays better, considering the relatively small amount of technical training that it requires, than does any other branch of public-utility work. Solicitors are frequently paid on a salary and commission basis. Their incomes may range from $60 to $150 or more a month. The field is an attractive one for men whose disabilities will permit of their entering it. Such technical training for solicitors as is absolutely necessary is usually furnished by the company which proposes to employ them, but all of the electrical education that a man can acquire will be of material value. By all means take a theoretical electrical course if you can.

The job of the power-sales engineer is to solicit contracts for power loads for the central station. Considerable engineering training is necessary for effective work. The man should be familiar with

steam and gasoline power-plant installations. He should know how to apply effectively electric motors in the different branches of industry. Furthermore, he must meet people easily and be able to express his ideas accurately. In other words, he also should have the selling temperament. A man who has had considerable electrical experience and possesses the other qualifications can easily prepare for this vocation. The company which engages him will, usually, train him for it. Ordinarily, a salary and commission are paid. The income may range from $80 to $250 per month or more.

While solicitors and salesmen are supposed to work about 8 hours a day their time is, in one sense, their own. Little attention is given to the number of hours the man puts in, provided he obtains a reasonable amount of business. Some of the visits to prospective customers must be made in the evening, or possibly on Sundays. On the other hand, it occurs not infrequently that a salesman may go to a ball game on a Tuesday afternoon, his salary continuing meanwhile.

PLAN No. 1208. ENGINEERING DEPARTMENT

This department of an electric company is responsible for the design and construction of the system as a whole. A chief engineer is the executive head. To assist him there are assistant engineers, inspectors, and draftsmen. The chief engineer and his principal assistants are, ordinarily, men of mature years and much experience. Hence, there is little possibility of a returned soldier qualifying for one of these positions unless he has previously done similar work. But there are opportunities to start in the engineering department as inspectors or draftsmen.

The inspectors are “outside” men. Much of their work is in the open. They compile information and reports on engineering projects, on work which is under way, or which has been completed. These notes are utilized in the office in the preparation of drawings and specifications which show the construction departments what to do and how to do it. The draftsmen make the drawings from which the blueprints for construction jobs are reproduced. Any man who has had previous electrical construction experience and who can get around outside and see, hear, and write, should be able to qualify for an engineering inspector’s position. The future offers him the possibility of becoming an assistant engineer.

Engineering drafting offers inviting opportunities for disabled men because much of the work can be done by a person who can sit at a drawing table and use his hands and eyes. Lack of speech and hearing are not insurmountable handicaps because directions can be given and questions asked in writing. There are some one-handed draftsmen. Frequently a draftsman has a job assigned to him and is then left to himself to work it out. He may not speak to or be spoken to by any one for half a day at a time.

Another feature of drafting work which in this connection is important, is that it is possible to utilize men of all grades of ability, provided they have some knowledge of mechanical drawing. If a man can make a fairly good tracing, even if he knows nothing whatever of design, he can be very useful. He can gradually acquire that knowledge of the principles which is necessary to develop him into a draftsman-designer or an engineer. It is, however, essential that, at the start, the candidate know a little about mechanical drawing. Concerns do not usually

care to break in a man who has no knowledge whatever of this subject.

Such elementary knowledge as is required may be obtained by taking a Federal Board short course. Men in the engineering department work about eight or nine hours a day. A tracer beginning at the work may earn from $30 to $60 per month. After a man can do some designing he may earn from $60 to $125 per month, depending upon his experience and ability. If a draftsman develops into a designer or assistant engineer he may expect from $125 to $200 per month or more.

PLAN No. 1209. ACCOUNTING DEPARTMENT

This department is responsible for the meter reading, billing, collections, and similar commercial features of the business. The work is clerical and statistical in character.

PLAN No. 1210. ELECTRIC-RAILWAY SYSTEMS

The departmental organization of electric-railway systems varies. Large companies have more departments than small ones and probably no two companies are organized on precisely the same plan. However, there are certain functions which must be performed by every company and a typical arrangement for a comparatively large system is the following:

Power department.
Mechanical department.
Transportation department.
Maintenance of way department.
Line department.
Engineering department.

Building department.

Each of these departments has its executive head, its subordinate officers, and its workmen and mechanics.

Power Department

The power department is responsible for production of electrical energy required for operation. It is directed by an engineer of power. The duties of the department and of the men employed in it are practically identical with those of the power department of an electric-light and power company, which have been already discussed.

Mechanical Department

A master mechanic directs the mechanical department of a street-railway company. This department repairs and may build cars used on the system of which there may be a number of types, including passenger cars of several designs, mail cars, baggage cars, and work cars used by the maintenance department. For the repair and construction of this equipment there are required, in addition to the electricians, woodworkers, sheet metal men, machinists, pipe fitters, welders, pattern makers, blacksmiths, and painters.

A street railway electrical shop has duties rather different from those of the usual repair shop. Most of the repairs are on motors of a very few sizes. Furthermore, nearly all are series wound and are for operation on direct current of 600 volts. Much of the work comprises the rewinding of armatures. Burned out copper coils are stripped from the core, and the slots are prepared for new coils. These are placed in a proper sequence and the free ends are soldered to the commutator bars. Next, band wires which

maintain the coils in position are wound on. Then the armature is mounted in a lathe where the commutator is turned down and finished ready for operation.

PLAN No. 1211. ARMATURE REPAIRING—MECHANICAL DEPARTMENT

Armature repairing is done with the armature held in a rack about the height of an ordinary workbench. Thus the armature winder is required to stand while working, sometimes for considerable periods. It is essential that he have good feet and legs. It is also necessary that he have the use of most of his fingers. Repairing an armature requires only a few new coils in skilled work. On the other hand, much of the work in armature repairing is of a routine character. Hence a man of little experience can do the work under direction of a journeyman. It will always pay a person who contemplates following armature winding as a vocation, to take a short electrical course before he engages in the actual work. A beginner at armature winding will receive from $50 to $80, an expert may expect $75 to $150, and a foreman or chief $125 to $200 per month. The work is all indoors with an 8 or 9 hour day.

The coils used in rewinding the armature may be purchased complete from an electrical manufacturing company, but the larger concerns make their own coils. The preparation and insulating of these coils is often benchwork. A man who does not have the use of his feet can do some of it. Deft fingers are required, but there are now many blind workers who are insulating armature coils successfully. This work may pay from $40 to $90 a month. Some preliminary manual training is required, which can usually be

obtained in the shop where the worker is to be employed.

PLAN No. 1212. SHOP WIRING—MECHANICAL DEPARTMENT

The shop wiremen of an electric-railway company do the wiring around the plant, as well as that on the cars. A journeyman wire man should be able to interpret correctly wiring diagrams for ordinary jobs. These may include the installation of motors, heaters, lights, rheostats, and similar equipment. Also, he should be competent to route economically his circuits through inaccessible places and should be familiar with the National Electrical Code. He may have to install headlights, signal lights, pump-governor relays, and other devices now forming a part of car equipments. The wireman must have had considerable experience, but each wireman usually has a helper to assist him. A man with little or no experience can start in as a helper, and develop into a good wireman. The length of time required to do this will be determined almost wholly by the man's knowledge of electricity and his efforts at self improvement. It may require six months or a year or two years. The work is done usually in a car shop which is inclosed and heated. An 8-hour day is common, but in some companies the men work 9 or 10 hours. The pay is about $75 to $125 for a wireman, and $50 to $90 for a helper.

PLAN No. 1213. CAR INSPECTING—MECHANICAL DEPARTMENT

The car inspector's duties involve a knowledge of numerous occupations, and he must be familiar with

various sorts of equipment. His position in the company's organization is an important one, because the expense of car repairs is often materially minimized by his foresight and alertness. He judges which repairs should be made in the general shop and which in the car barn. He must know the function and operation of every working part of the car. In detail, his duties consist of a systematic inspection of all components of the car equipment. These include the motors, controllers, brakes, lights, signs, heaters, and other devices on the cars which may require attention. Usually the work is done during daylight hours. Cars are held periodically in the barn for inspection. Work of this type is well adapted to a man who is unqualified physically for heavy tasks. A man of good judgment who was formerly employed in a car barn in some other capacity and who is, in general, familiar with cars and their repairs, might be trained readily for this occupation. An inspector works eight or ten hours a day and receives a salary varying from $75 to $150 per month.

PLAN No. 1214. TRANSPORTATION DEPARTMENT

This department handles the traffic, operates the cars, plans their schedules, and revises their routings to meet the requirements of the traveling public. A superintendent of transportation is the executive head. His assistants are the division superintendents, inspectors, instructors, station foremen, motormen, conductors, and the car shifters in the barns. Each division superintendent has charge of the traffic in a certain part of the system. The inspector has charge of the cars and crews while on the road. It is his duty

to enforce the rules of the company to insure that cars and equipment are handled efficiently and that the cars maintain their schedules. Men holding the positions of division superintendent and traffic inspector generally qualify for them from the rank and file of the train service. They should have a thorough knowledge of car operation. The inspector's position is one which an ambitious man, who has the requisite ability, may obtain. Salary ranges from $80 to $160 monthly.

PLAN No. 1215. INSTRUCTING—TRANSPORTATION DEPARTMENT

Instructors have charge of the training of prospective motormen and conductors. The instructor assigns students to an experienced motorman or conductor who teaches them the essentials of their jobs. Then the instructor informs the new men in detail as to rules and, if necessary, makes trial trips with them. The instructor in many companies also conducts classes wherein the new men are given some schooling as to the theory and practice of the electrical air brake and similar equipment which will come under their charge. A returned soldier who has had prior street-railway experience, who is physically disqualified for work involving physical strain or considerable manual effort, should, after some study, be able to qualify for the position of instructor. For one who is fitted temperamentally for work of this character the position would be a very good one. It will pay about $100 to $175 per month.

PLAN No. 1216. FOREMAN—TRANSPORTATION

DEPARTMENT

A station foreman has charge of the station, and supervises the dispatching of cars on their runs. He keeps the list of extra men and provides crews for extra and special cars. These foremen should be familiar with the operation of street cars. In nearly every case they are promoted from the ranks. They must be tactful in handling men. This position is one to which an individual, who accepts a minor job in the transportation department, may look forward.

Motormen and Conductors—Transportation Department

Motormen and conductors have duties with which all are familiar. These occupations have their advantages and also their disadvantages. Some men follow them for almost a lifetime while others soon become dissatisfied and seek other fields. The positions are permanent and frequently carry with them attractive features, such as free medical attention, insurance, and club-room privileges. Pay is ordinarily based on a sliding scale. So the wage which a man receives for his day's work depends upon the number of years that he has been in the service of the company. Motormen may now receive from $3 to $5 per day, and conductors about the same. Returned soldiers with no previous experience, who are in good shape physically but who must have out-of-door work, may find this work desirable. They will be trained by the company which employs them.

Maintenance-of-Way Departments

The maintenance of way, or "track department," constructs new tracks, bridges, and other structures, and maintains track structures and right of way after construction. Frequently it is under the jurisdiction

of a chief engineer who works through a superintendent and a division foreman. A foreman of the machine and tool division directs the shop repairs of the various tools, track grinders, steam shovels, and hoisting engines. He has to qualify as a first-class steam engineer. The paving foreman is responsible for the tearing up and replacing of pavement which the company is required to maintain at each side of and between rails. The supervisor of construction has charge of building new track and of making the repairs to existing lines. Most of the manual work in this department is done by unskilled labor directed by foremen. A disabled man who has had previous experience in construction work might, with some additional training, be able to qualify for a foremanship. Such a position requires executive ability and sufficient education to read blue prints and make out reports. It will pay from $80 to $150 per month. Practically all of the work is out of doors.

PLAN No. 1217. LINE DEPARTMENT

A wire or line department installs and maintains the trolley wires and feeders both underground and overhead. A man with no previous electrical experience may start in as a ground man or helper, and advance himself to the position of lineman and foreman. Electric railway line work is somewhat similar to that necessary for electric lighting companies. One requirement is a good physique, but minor disablements might not handicap. Practically all of the work is done out of doors. The ground men will receive from $2 to $4 and a lineman from $3 to $5 per day; a foreman from $100 to $175 per month.

PLAN No. 1218. TELEPHONE COMPANIES

Telephone systems have grown phenomenally. A few years ago the telephone was a luxury. To-day it is a necessity. It has been predicted that the time will come when there will be at least one telephone in every house, just as practically every city building is now piped for water, so that it appears probable that there will be in the future a steadily increasing demand for trained telephone men.

The type of equipment used in a telephone system is determined to some extent by the size of the town or city in which the system operates. Systems serving small towns are relatively simple. The small community telephone system usually has for its lines individual wires strung on poles. There is a pair of wires for each subscriber. To call central, a hand crank on the sides of the telephone is turned which causes a shutter or drop on the switchboard to fall and expose the line number. Each line has its own drop. Thus the operator's attention is attracted. She answers the call and by means of cords with plugs on their ends she connects the calling with the called subscriber. Such a system is called "magneto" system, because a magneto generator turned by hand crank is used for calling. Dry cells located at each subscriber's station supply the electrical energy for talking. While a magneto system like that just described is the most desirable and economical for a small town, its application in a city would be both impractical and prohibitively expensive to operate.

Modern city telephone exchanges operate on the central-energy system. With it there are no dry cells or magnetos at the subscriber's stations. Electrical energy for both signaling and talking is supplied by a storage battery located in the central office. For this reason an arrangement of this type is called a

"central energy" or "common-battery" system. Instead of the switchboard having a drop for each subscriber's line, it has a small incandescent lamp which is associated with the line. This lights when the subscriber removes his telephone receiver from its hook. For city telephone lines it would be infeasible to use open wires on insulators because there could not be placed on the poles a sufficient number of cross arms to support even a small proportion of the telephone lines which radiate from an exchange. Furthermore, open-line construction for city conditions would be very expensive and difficult to maintain. Hence, in the city exchanges, lead-covered cables, each containing from 20 to 1,200 pairs of conductors, are employed. Where a number of these cables are routed parallel to one another, they are carried in ducts in underground subways. In the residence sections they are supported on poles. It follows that the circuits and connections in a large city telephone exchange are exceedingly complicated. There are thousands of small wires, each of which serves a different purpose. Considered as a whole telephony involves careful work and attention to detail. Much of it is of the same order as fine instrument making.

Departments of telephone companies include: Engineering department, commercial department, auditing department, plant department, traffic department.

PLAN No. 1219. ENGINEERING DEPARTMENT

This department plans and supervises the development and construction of the property as a whole. In it plans and specifications are prepared for buildings, exchange layouts, subways, and other

components. To obtain a position of responsibility in the engineering department one must have had theoretical training and a number of years of telephone experience, but there are usually engineering-department positions in which men of little experience but with some theoretical training can start as draftsmen or clerks, advancing as they acquire experience. In this respect, the engineering department of a telephone company offers somewhat the same possibilities for disabled men as do similar departments in street railways or electric-power companies. Hours of work and compensation will be about the same. However, for a man who has had telephone experience, it is desirable usually to continue in that line. Telephony is probably more exacting and involves greater detail than does power work and may on that account be preferred by some.

PLAN No. 1220. COMMERCIAL DEPARTMENT

Contracts for telephone service are obtained by the commercial department. It is the sales organization of a telephone company selling telephone service to the public. In this work there should be opportunities for soldiers with minor disablements who have had prior telephone experience, and who possess the "selling instinct." The salary will probably range from $60 to $160 per month.

PLAN No. 1221. AUDITING DEPARTMENT

The qualifications for men in this department are about the same as those required of men in any accounting organization. These are treated in detail in one of the other Federal Board monographs.

PLAN No. 1222. PLANT DEPARTMENT

Much of the telephone plant is built and all of it is maintained by this department. It is often segregated into two general divisions, (1) construction division and (2) maintenance division. To administer these there are a construction superintendent and a maintenance superintendent. Then each division may be further subdivided in sections as follows: (*a*) Aerial-line section, (*b*) cable section, (*c*) repair section, (*d*) wire chief's section, (*e*) installation section, (*f*) cable-report section, and (*g*) clerical section.

Men employed regularly in the construction division may be assigned temporarily to the maintenance division when up-keep work is particularly heavy, and vice versa.

PLAN No. 1223. AERIAL LINE AND CABLE SECTIONS—PLANT DEPARTMENT

By the aerial line and aerial cable sections the overhead lines are built and maintained. The work is somewhat similar to that performed by the corresponding division of an electric light and power company. It is necessary to set and guy poles, place cross arms on them, and string wire. In modern city construction, however, few cross arms are required, because cable and twisted pair "block" wire has almost wholly superseded open wire. The handling of telephone cable is an occupation peculiar to telephone work. Where placed overhead, the lead-covered cable is suspended on steel messenger wire supported on poles. Great care must be exercised in installing cable. It is damaged easily and may then be a source of expensive and provoking trouble. Most of the work in the construction department involves

considerable physical exertion, but there are often foremanships and inspectorships which men incapable of great physical exertion and indoor work could fill. General working conditions, qualifications, hours, rates of pay, and the like are about the same as those detailed for the distribution department of an electric-power company.

PLAN No. 1224. UNDERGROUND CABLE SECTION —PLANT DEPARTMENT

This section has to do with installing, joining, and connecting telephone cables. Much of the work is splicing. Telephone cable consists of from 100 to 600 or more pairs of copper wire. Each wire is separated from its neighbors with a wrapping of paper or other insulating material. Then the bunch of conductors is covered by a protective sheath, usually of lead. In splicing, the lead sheath is first stripped from the end of the cable. Then the different corresponding pairs in the cables to be connected are joined together. Each joint is insulated with a paper sleeve slipped over it. When all of the pairs have been connected, a lead sleeve is slipped over the splice and “wiped” with hot solder to the lead sheath of the cables which have been joined. This work requires much skill and experience. Not only does the cableman splice the cables, but he must also connect them to the distributing frames in the central office and to the terminal boxes on the poles. A terminal box on the end of a cable is one whereby the aerial circuits are connected to the underground cable conductors. About the only way to become a proficient cable splicer is through experience as a cable splicer’s helper. This vocation should offer opportunities for men who have only minor disablements, and who

should work out of doors nearly all of the time. The use of the hands and fingers is necessary. Cable splicers must sometimes climb poles. In very bad weather the cablemen are given indoor tasks. A cable splicer will ordinarily receive from $60 to $110 per month, and a helper from $40 to $85.

PLAN No. 1225. REPAIR SECTION—PLANT DEPARTMENT

This section assembles the frames, racks, cables, and other minor central-office accessories, and clears the troubles in the subscribers' instruments, private branch exchanges, and the central offices. Workers in this division may be classified into four groups: (1) Equipment installers, (2) line and instrument repairmen, (3) switchboard repairmen, and (4) wire chief and testers.

PLAN No. 1226. EQUIPMENT INSTALLERS—REPAIR SECTION

Equipment installers include the apprentices of the industry. New men are frequently placed in these positions for training. They cut and form switchboard cable, and do other equipment-installation work around the exchange. Practically no experience is required of a beginner. But an equipment-installation foreman should be a well-informed, thoroughly trained man. He usually advances to this position from the ranks. The work on the whole is light and should afford opportunities for men with minor disablements of little technical training who have full use of their hands and fingers.

PLAN No. 1227. LINE AND INSTRUMENT REPAIRMEN—REPAIR SECTION

Line and instrument repairmen are the "trouble shooters." They locate troubles and faults which occur on lines or in subscribers' instruments. After some experience a repairman usually knows from the symptoms of a fault just what the difficulty is and where it may be located. Ability to climb poles is usually essential for this work. A knowledge of principal telephone circuits, cable and line layouts is also requisite. A repairman is usually promoted to this work from some other position with the company. For proficiency it requires experience on the job. Hours are eight or nine a day, and compensation may be from $60 to $110 per month.

PLAN No. 1228. SWITCHBOARD REPAIRMEN—REPAIR SECTION

Switchboard repairmen are men of ability and a number of years' experience. Their functions are to maintain and repair local and toll switchboards, private branch exchanges, and sometimes the auxiliary equipment in offices, such as ringing machines, charging generators, and storage batteries. As already noted, switchboard equipment is quite intricate and requires the attention of a competent repairman to maintain it in efficient operating condition. The switchboard repairman's job may be considered as a possibility for a man who enters the telephone industry in a minor position. The work is practically all inside, in the telephone-exchange buildings. While it requires manipulative skill, and full use of the hands, little physical effort is necessary. The salary will range from $75 to $125.

PLAN No. 1229. WIRE CHIEF'S SECTION—PLANT DEPARTMENT

This section tests lines, switchboards, cables, and instruments, and locates troubles which may occur in these. Some of the men who are employed are switchboard inspector, testers, wire chief, night wire chief. The work is done almost wholly indoors. It requires some knowledge of the elementary principle of electrical practice and the functions of the switchboard and its accessories. The testing is done from a central testing desk, or testing switchboard, which is located in the terminal room of a telephone exchange. At this desk the wire chief or his assistant operates the keys and switches whereby the tests are made. To be a good wire chief in a city telephone system usually requires from six to 10 years' experience. Duties of subordinate positions may be mastered in shorter periods. All of these jobs require experience, which can be obtained by a man who starts with the telephone company as an untrained beginner. A wire chief may receive from $75 to $175 per month.

PLAN No. 1230. INSTALLATION SECTION—PLANT DEPARTMENT

Installation and removal of telephones and private-branch exchanges is the work of this section. There is constant demand for new stations and for shifting about old ones, which provides work for a large number of men. For this work little experience is necessary. A helper may become proficient in a few days and may soon be competent to install instruments without supervision. The work may be graded in such a way that an ambitious man may advance to more responsible and remunerative

positions, such as switchboard installing and testing.

One possibility for those who like installation work is the position of private-branch exchange installer. His work consists in the installation of complete private-branch exchanges in factories, stores, public buildings, and elsewhere. He must supervise the running of all necessary wires and cables in buildings, setting of switchboards, connecting instruments, and making final tests to insure correctness of installation. Much time is spent out of doors traveling between jobs. The remainder is spent in buildings in which installations are made. A beginner may receive from $40 to $70, and a foreman from $75 to $110 per month. This work can be handled by a man who has only minor disablements and who has full use of his hands. Such training as is necessary will usually be given to him by the company which employs him. However, as with other electrical vocations, a short preliminary theoretical course will be of considerable value.

PLAN No. 1231. CABLE REPORT SECTION—PLANT DEPARTMENT

Making definite records of every circuit in the telephone system is the task of the cable report section. Such records are essential to enable the wire chief to locate definitely any telephone fault, even though the circuit involved an exceedingly devious rout. The work is clerical. A general familiarity with the complete telephone layout is desirable, but a beginner with little experience may be employed. The qualifications, possibilities, rates of pay, hours, and the like are about the same as those for accounting or auditing clerical work. However, a man who has had some previous telephone

experience will be able to utilize it in this department.

PLAN No. 1232. TRAFFIC DEPARTMENT

This department has charge of the telephone traffic. The operators, practically always young women, make connections on calls by subscribers. There are usually no men on the floor of a telephone exchange except the switchboard and maintenance men. A large telephone exchange may have a male traffic manager. Large companies may have a traffic-engineering department which plans and directs the arrangement of switchboard sections, and the division of lines between operators in order to insure efficient service. Men with some prior telephone experience who can not do heavy physical work, might qualify for minor positions under direction of the traffic engineer. These would be of the same general character as those with the engineering department, except that they deal only with traffic. Rates of pay, working hours, and future possibilities are practically the same as in an engineering department.

PLAN No. 1233. STEAM RAILROADS

Practically all steam railroads now have electrical departments. The men in such departments install and maintain the electric train lighting equipment and do such electrical construction—installation of generators, motors, wiring, and the like—as may be required on the system. Each steam road may have an electrical superintendent to whom electricians and their helpers report.

The railroad electrician's work includes

maintenance of electric train lighting generators, storage batteries, and electric wiring of cars and buildings; it includes armature winding and rewinding, and installation of generators and motors. Obviously, years of experience and training are necessary, but at the bottom of the ladder there are opportunities for inexperienced men to start in as helpers. The work is interesting and steady. Usually full use of hands and good sight and hearing are required. While there is some lifting and heavy work, on the whole the duties are not arduous. About half of the work is out of doors and half inside. The rates of pay for a beginner will vary from $40 to $75, for a journeyman from $75 to $150, and for a superintendent from $125 to $300. Men are furnished free with a certain amount of railroad transportation for themselves and families, the amount of transportation thus allowed increasing with the man's responsibilities and with the length of his service.

PLAN No. 1234. BEEKEEPING AS A VOCATION

ACKNOWLEDGMENTS.

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The increased use of honey during the war and the possession of some previous knowledge of bees may have directed the attention of a large number of you,

who are disabled, to the possibility of making beekeeping your life work. During the war the shortage of sugar made the larger use of other sweets imperative, and it was essential that the use of these substitutes be augmented to the greatest possible extent. The necessary introduction of honey has made its deliciousness, palatability, and healthfulness widely known and will lead to its continuous and increased general domestic use. The export demand for American honey has recently increased beyond any former record and the price has doubled. Beekeeping and honey production present an opportunity to you for profitable livelihood with small investment. It is to your personal advantage to consider it carefully.

Bee Culture Light Work, Interesting, and Profitable

Beekeeping differs from most other branches of agriculture, in that the beekeeper handles an animal which has never been domesticated. He must therefore study the habits of this animal and know them intimately before he may hope to succeed with this work. The feeding habits, breeding, and even the housing of bees has not been materially changed in all the centuries that man has handled them. If their habits are well understood, the beekeeper may cause them to accomplish results which will lead to the greatest profit to himself. The work is light, without routine duties at fixed times, with no drudgery. Beekeeping is interesting, in fact enthusing and strengthening to the mind and the body. It is a profitable business which may be made very lucrative with devotion and experience. A western man sold his crop of one season to a well-known company dealing in honey for $30,000.

What is Honey?

Honey is made from the nectar secreted by thousands of varieties of flowers. This nectar is gathered by bees and modified by them chemically. Water is evaporated out of it and it is ripened into a delicious and wholesome food.

Before cane sugar was manufactured in quantities for commercial use honey was the most common sweet in human food. In pioneering days it was hunted systematically in hollow trees and crevices in rocks. Wild honey so secured was considered well worth the time spent in seeking it.

There is another form of honey designated as abnormal, since it does not come from the nectar of flowers, but is, nevertheless, gathered by bees. It is developed from a sweet substance known as honey dew, deposited on the leaves of plants by certain insects such as plant lice. In some regions honey dew is not found at all. Where found, the amount that bees gather is negligible in comparison with the amount of nectar gathered from blossoms. Nectar is so changed chemically and modified by ripening and evaporating after being gathered by bees, that in the form of honey it is readily digested and assimilated.

Healthfulness of Honey

Before the manufacture of great quantities of sugar a larger amount of honey was used per capita than is used now. The necessary introduction of honey as a substitute for sugar has just recently again called general attention to its healthfulness and the lesson is not likely soon to be forgotten. Because it is predigested and readily assimilable, physicians recommend it as a food for persons with delicate stomachs, for those troubled with kidney complaint, and for those subject to constipation, since honey is

laxative in effect.

The average amount of sugar consumed annually for every man, woman, and child is about 80 pounds, and this sugar can not be assimilated without change in the stomach, an action not necessary with honey. It can readily be understood that the population might be benefited by substituting honey for some of the sugar consumed. When the stomach fails to do its work in modifying the sugar, the eliminating organs, the kidneys especially, are severely taxed. A noted physician, now 84 years old, eats honey instead of sugar, believing it will prolong his life and give him better health while living. He says that it is well authenticated that, as our natural craving indicates, sweets are a real need of the system, but that the excessive use of sugar brings in its train a long list of ills. He asserts also that the health of the present generation, if honey could be at least partially restored to its former place, would be greatly improved.

Prof. Cook, of California, says: “Physicians may be correct in asserting that the large consumption of sugar is a menace to health and long life, and that by eating honey our digestive machinery saves work that it would have to perform if we ate sugar and in case it is overtaxed and feeble, this may be just the respite that will save it from a breakdown.” Switzerland produces large quantities of honey, but the demand for it is so great that the price has advanced and the Government has been compelled to fix it. Although we may infer that the Swiss themselves are a great honey-eating people, Dr. Emfeld, of Geneva, seems to think that they might well eat more of this sweet. “If people would eat more honey,” he says, “we doctors would starve.”

Honey has many medicinal qualities, and is used in

nearly all cough sirups, cold preparations, and compounded in many other medicines where delicate flavor, absolute purity, and sweetness insure results not to be obtained by the use of any substitute.

While commonly used in its natural state as a spread on hot bread and cakes, honey may be employed in cooking wherever sugar may be used. The same beneficial effect upon health will follow as a result from its use in the natural state. Foods prepared with it are better and will remain in fresh condition longer than if prepared with sugar or sirup. Bread and cakes prepared with honey will not dry out as with sugar, because honey attracts moisture. It has long been employed in the household in general cooking, as well as in canning and in the baking of many desirable kinds of bread, and numerous varieties of cakes, gems, snaps, and cookies. When used in sweetening tea and coffee it does not cause any loss of aroma. Its recent substitution for sugar is causing it again to be employed in making pies, puddings, and sauces. Confectioners use honey freely, and might well use it more freely than they do in making honey nuts, candies, creams, butter scotch, and popcorn balls.

In Turkey, a great honey-producing country, where bee culture is scientifically followed with the noted oriental strains of bees, a popular sweet, known as rose honey marmalade, is manufactured. It is made from the leaves of roses and honey and combines the exquisite perfume of the former with the delightful flavor of the latter in an unusual product of the nature and texture of a marmalade due to incorporating the rose petals with the honey.

Beekeeping Permits Serious Handicaps

Beekeeping, like many other lines of agriculture,

presents an exceptionally attractive and profitable vocation to the disabled men of the war. The handling of bees is interesting and encourages the most valuable exercise, but the muscular effort is small. It probably requires less constant devotion, except during the main honey-flow, than any other country pursuit. Therefore it is especially attractive to the convalescing or others who have recovered from wounds, even if they have lost one or more limbs.

Though handicapped in various ways you may confidently hope to become as near 100 per cent efficient in bee culture as in any other work. A beekeeper should, however, have one good hand and arm.

Uncle Sam offers you every possible assistance in the way of artificial limbs, interchangeable devices, and vocational training for the greatest possible success in bee culture. Such opportunity was not offered the disabled veterans of the Civil War, Mr. John Donnegan, of Seguin, Tex., whose photograph shows him using a special strap which he devised to serve in place of his missing hand in moving honey supers, hives, and frames of comb. He has made a wonderful success and spent the greater part of his life as a beekeeper. The ingenious use of a strap around his shoulders with a snap that can easily be attached to a screweye placed in the various articles to be handled, but poorly takes the place of appliances and an artificial hand and arm, which are now furnished free of expense to our disabled soldiers.

The American Bee Journal and Gleanings in Bee Culture find many successful apiarists who are partially incapacitated and who would be poorly fitted for most other lines of work. One of these, Mr.

Harvey E. Nicholls, of Iowa, when 21 years old lost both legs—one below the thigh, the other below the knee. He did not give up to live on charity, but grew ambitious to make his life a success. He selected beekeeping, purchased a colony of bees and a good book on beekeeping that he might study them and neighboring apiaries together. He realized for the season from the one hive 80 pounds of surplus honey and enough for the bees, which, properly packed, wintered so well that they were strong in the spring for gathering nectar and starting an apiary.

He secured three old hives and two 2-pound packages of bees, also two colonies which he handled on the shares for half. He transferred the bees from the old boxes to standard 10-framed hives. The season's results were 12 colonies and 400 pounds of honey. He also represented the Honey Producers' Supply Co., making something on the side. The next spring, 1918, two more colonies were purchased, added to the dozen, and moved 5 miles into the country, where 45 colonies more were handled for half of the surplus honey. The supply factory work was almost entirely dropped that the bees might have undivided attention. A second-hand Ford was purchased on time, which an artificial leg enabled him to drive as well as anyone.

The results of the season from May 1 to September 9 were his own 14 colonies increased to 20, the 45 colonies on the shares increased to 85, and cash returns over $800. By adopting the slogan suggested by the Bureau of Entomology, "Keep more bees; keep bees better," he can doubtless greatly increase his income.

He may be appropriately called a self-made man. In addition to a successful start as a beekeeper he is studying to complete a course in high school. He has

helped support his grandmother and sister, and, believing in tithing, has given one-tenth of his earnings to charities.

The story of Mr. Nicholls but expresses in part what any disabled man may accomplish with vocational training and devotion to beekeeping or some other occupation that will insure useful and respected citizenship.

Your disability need not interfere with your engaging in this work, but it may take grit and determination to pull you through the early stages. You may be sure when in the ranks of the good beekeepers you will be associated with admirable people who will gladly aid you in any way possible in making good.

The Bee Family

This interesting family called in bee culture a colony, lives in a house known as a hive many of which aggregate form a bee city—an apiary. The family consists of three types of bees, the queen, Fig. 7-a, the mother of the family and naturally the only one of her nature in the colony. She is a fully developed female bee whose sole duty is that of laying eggs and increasing her family—the population of the colony—which reaches large numbers. The worker, Fig. 7-b, is an undeveloped female, and this type represents the largest number of the colony's population, which may run from several thousand to eighty-five or one hundred thousand in one hive or family. As the name indicates the workers gather all the honey and food, care for the young bees and perform other duties in the hive. The drone, Fig. 7-c, is the male bee. He, as his name indicates, contributes nothing to the upkeep of the family, a family in which truly

"everybody works but father." The queen is able to control the strength of the colony. The workers by construction of a queen cell about an egg and by giving different food may develop a queen from what would otherwise have been developed into a worker.

Extent of Beekeeping in the United States

There are in the United States about 800,000 persons who own bees, although not all of them can be classed as regular beekeepers. Perhaps the average bee owner has about 10 colonies. Since there are many owning bees by the hundreds of colonies, it is obvious that the majority have only two or three colonies. This side line of a few hives on the farm does not really pay, but is just a little luxury. The type of beekeeping presented to you here is for a vocation, and is the practical kind employed by the best beekeepers of the country—by men who make a good living by keeping bees.

The retail price of honey has gradually advanced to 40 cents or more per pound, and beeswax to 42 cents wholesale, notwithstanding the fact that there was produced in 1918 about 250,000,000 pounds of honey. This probably does not cover the entire honey crop of the United States, since a large amount is marketed locally. In fact this product is so greatly in demand that a large percentage is sold at the home of the apiarist. Apiarists can, if attentive to the attractiveness of their product and considerate of their customers, hold them and make of each an advertisement for additional business. The honey crop of the United States is estimated annually at $20,000,000, and yet there has never been a time when any country on the globe could produce enough to make this delicious food a common article of diet.

Not all parts of the United States are equally good for beekeeping, and it is advisable for one who contemplates making it his life work carefully to consider the selection of a location. As a rule, it is not advisable to go too far from the country with which you are familiar. Bees may be kept with profit almost anywhere where agriculture is practiced, the returns depending largely on the care given to the bees.

The most widely known region for beekeeping is that of the northeastern quarter of the country, where white and alsike clovers yield nectar. Although these plants reach their highest yield in the northern tier of States, they are also productive farther south. In the northern region bees get considerable quantities of nectar from basswood, tulip poplar, buckwheat, sweet clover, and locust, and in some localities from other plants of decided honey value. The buckwheat region of southern New York and northern Pennsylvania is included in the clover region.

The second region in importance is that in which the bees get their nectar from alfalfa. This plant, which is now grown in all parts of the country, does not yield much nectar except in the irrigated portions of the West and is therefore practically valueless for the beekeeper east of the Missouri River. The honey from this source is white in the higher altitudes of Colorado and Utah, and amber in Arizona, New Mexico, and California.

The southeastern part of the country offers many opportunities to the beekeeper, but the business has not been so well developed there. The nectar comes from numerous plants which are influenced by various soils, temperature, and other factors. The honey usually does not come in very rapidly and is

often darker than other honeys, but since the plants yield for a longer period, the beekeeper is able to get good returns for his labor.

The semiarid region of the southwest produces many plants which secrete nectar in abundance. This region is subject to drought and there are years when the beekeeper has to feed his bees to keep them alive. However, taking a series of years into account, this region pays as well as any other.

The sage region of southern California offers great opportunities to the beekeeper. The honeys are chiefly white and secretion is abundant when there is sufficient rainfall. In this region also honey is obtained from blossoms of citrus fruits, which being irrigated are not so liable to failure as the plants growing in the desert. The chief problem in this part of the country is to strengthen the colonies in time for the nectar flow from citrus fruit blossoms. This may be done by application of proper care at the right time. In choosing the location for an apiary in the sage region, great care should be exercised to select one where the average rainfall is about 20 inches. Information regarding rainfall may be obtained from the Weather Bureau offices or from forest supervisors. Many of the best locations are in the national forests, where a location may be obtained at a small rental and other beekeepers will not be permitted to encroach.

In addition to these chief regions, there are many localities where other plants are of sufficient value to make a good crop of honey. Such regions are the buckwheat region, already mentioned; the Spanish needle region of the Kankakee swamps of northern Indiana and Illinois and the Delaware River Valley; the willow herb regions of northern Michigan and Wisconsin, Maine, Washington, and Oregon; the

sweet clover regions of Alabama and Kentucky; the blue thistle region of the Shenandoah Valley; the raspberry region of northern Michigan; the smartweed region of the Middle West (corn belt); and the bean region of Southern California. There are many other restricted regions as valuable as those mentioned.

Variation in Seasons

All years are not equally good for nectar secretion, and some years the flow is so poor that feeding is necessary to keep the bees alive. Such years are of common occurrence to the poor beekeeper, while they are rather a rarity to the good, highly skilled beekeeper. By this is meant that the good beekeeper is able to keep his bees in such condition that they are able to take advantage of every hour of nectar secretion, while the poor beekeeper does not do this. In the best years every person owning bees will get some honey, but it is the person who studies the business who can make it pay almost every year.

Distribution of Bees in the United States

The accompanying map shows where the bees in the country are mainly located. It indicates also the extent of the business in different sections and gives some idea, by the number of dots on the map, of the most successful territory for beekeeping. Care must be taken in drawing conclusions of this kind, for a field or territory may be overpastured, as it were, by bees as well as by cattle. Bees, however, travel many miles. Large apiaries should not be too close together, at least 3 or 4 miles apart. Although the honey flows of the South do not equal those of the North in intensity, yet, as will be observed from the map, there are more bees in the Southern States than

in any other part of the country. Bees in the South can be purchased at small cost, for they are not appreciated and are poorly equipped, being hived largely in boxes and "gums" which are of course unprofitable. They may be transferred to modern hives, after which they may be managed for extracted honey, which is the most profitable manner of handling bees in that section and the most effective way of avoiding swarming. The convenience of the modern hive and frame enables the increase of colonies by division.

Beekeeping Should be a Specialty

Frequently one sees articles advocating the keeping of a few colonies of bees so that one may have all the honey desired. This sounds rather well, but such advice does not work out well in practice. Only those persons who study and devote themselves to the business are successful beekeepers. They make money, some big money. One Indiana man's 1918 honey crop exceeded $20,000. Success requires making beekeeping the chief vocation, for the person who does not rely upon it for his living is likely to be busy when the bees most need his care, and being constantly engrossed in other things he does not take the time to study the problems of the beekeeper. Beekeeping is preeminently a specialist's job, and it can not be recommended for the disabled soldier except as a specialty. To be convinced of the necessity for specializing you have only to visit farmers who have a few colonies of neglected and sometimes diseased bees, in some out of the way place, which never pay and are a menace to the success of all good beekeepers in the neighborhood.

Need of Specialists in Beekeeping

The war revealed an insufficient number of available scientific apiarists in the United States capable of giving instruction to those desirous of engaging in commercial beekeeping. There are many sufficiently trained, but they are reaping such financial returns from their bees that they can not be induced to take up the work of training others. The increasing educational work of the Federal Government and of the several States in bee culture will afford men desiring to undertake such work opportunities to secure positions. For this service thorough theoretical training is required as well as good apiary practice on a commercial scale. The teaching of beekeeping is a new field for agricultural colleges and one which they gladly enter when scientifically trained apiarists can be secured for giving instruction. Were qualified teachers available the list of colleges at the close of this monograph offering instruction in beekeeping would be much longer. However, intensive and thorough short courses are being conducted as indicated in the list, and these present exceptional opportunity. Many more short courses will be arranged. The training is, it is true, mainly theoretical, but it can and should promptly be made practical by forming a connection with some successful apiarist.

Other Branches of Agriculture as Side Lines to Beekeeping

It is quite possible to combine beekeeping with other branches of agriculture, provided they do not necessitate much attention at the time when the bees require every care and thought of the beekeeper. General farming and beekeeping do not combine well, for the reason that swarming usually comes at a season when the farmer is busily engaged with his

cropping. However, you might, as a bee specialist, form a business combination with the farmer and develop a paying apiary, and also give attention to some useful side lines. Gardening, fruits, poultry, Belgian hares, flowers, etc., combine profitably with beekeeping, but before engaging in any combinations, careful inquiry should be made of successful beekeepers of the region regarding the time of the principal honey flows. Information should be obtained also from persons following the suggested side lines as to when these occupations require most attention. This will enable one to determine the best combination to adopt. The beekeeper who neglects his bees during swarming time, or when nectar is coming in freely, may expect to lose fully nine-tenths of the crop. Honey, like hay, must be made while the sun shines. Side lines must not interfere with the apiarist being ready, with colonies strong, when the sun shines sufficiently to cause honey plants to bloom and nectar to flow freely.

Many garden crops may be grown and small truck farming may be followed on areas located in close proximity to the apiary. Crops should be selected that will require the least amount of time when the apiarist is busiest with the bees. The tomato, greatly in demand for canning supply, does not materially interfere in its planting, cultivation, or harvest with the principal honey season.

Bees Valuable to Horticulture

By careful management and by employing some help in certain seasons, horticulture—small fruits and orcharding—may likewise be profitably undertaken without interfering with apiary work. Bee culture and horticulture may in fact be combined

to mutual advantage. The nectar from the fruit bloom is always regarded as an advantage and comes when nectar from other sources is not available.

In flying from flower to flower bees carry pollen and thus produce cross-pollination. They are of value also in the pollination of buckwheat, the clovers, and of many other farm crops. Horticulturists have learned to appreciate this service so highly for orchards and small fruit gardens that few commercial fruit growers will be without a good-sized apiary in the orchard if there are no bees in flying reach. It is impossible to measure the good that is accomplished in this way, but since many varieties of fruits are not fertile to their own pollen, it is obvious that were it not for the bees and other insects which carry pollen there would be much less fruit. Of course not all the pollen is carried by honey-bees, but this is the only species of insect which may be taken to the orchard to insure pollination.

The Work of the Beekeeper

The average citizen has but a vague idea of the duties required of the beekeeper for success. The idea prevails commonly that bees require but little care. That is all wrong. Careful study, frequent attention, and real work are essential. The work of the year may be briefly summarized as follows: First, the beekeeper provides such conditions as will encourage the colonies to produce young “workers” to the fullest capacity of the hive before the secretion of nectar begins from the principal honey plants. Second, he prevents a division of the working force of the colony by swarming, through the well-understood means of discouraging it. In addition to these activities, he provides the additional space for storage of the surplus honey crop at the right time.

To have the bees reach their greatest strength in time for the first honey flows taxes the skill of the best apiarist, but by a careful study of the flowers from which the principal nectar crop is obtained in this locality the beekeeper is able to create sufficiently in advance conditions which will greatly multiply his working bees. Failure to do this and failure to appreciate the importance of being prepared has caused many beekeepers the loss of the best honey flows of the year. In such cases the beekeeper often does not know that he is missing the largest flows, because his colonies do not acquire their full strength until after these flows have terminated.

It may seem unnatural to fight the swarming instinct, as swarming is the natural way for new colonies to be formed. It is, however, the nature of bees to swarm at a time when swarming will result in a division of the working force, and just at the period when they should be concentrating on the principal flow of the season. Therefore the beekeeper arranges, if possible, that any increase in the number of colonies shall be made when it will not prevent the gathering of nectar. This requires vigilance just at the swarming season, since no satisfactory way has been devised for treating the whole apiary long in advance of this season to check the swarming instinct. There are, however, ways of control by weekly visits during the swarming season—ways which can not be explained in this short monograph, but which can be learned from literature or in an agricultural college course in beekeeping.

The busy season for the beekeeper begins about two months before the main honey flow, continues through the swarming season, and ends when the comb honey is taken from the supers or when the honey is extracted from larger frames which have

been added to enable the use of the extracting machine. Afterwards there is less rush, the only important work being early preparation of the bees for winter. Every latitude in the United States has its winter problem, and it is of the first importance that prospective beekeepers realize that success depends more on proper wintering than on any other one thing.

Winter Occupations

It will be evident that most of the work of the beekeeper comes in the spring, summer, and fall. When your bees have been properly prepared for winter with plenty of stores, there is nothing to be done for their welfare until the early spring and "flying-out" time. There are, however, many profitable winter jobs for the beekeeper. Equipment should be stored, repaired, and put in complete readiness for the next season. Many beekeepers turn their time into money by retailing the honey crop during these out-of-season months, and when all their own honey is sold they buy from other beekeepers to supply the trade. By developing a home market you will get the profit not only of the producer, but as well that of the wholesaler and retailer.

Everyone ought to have free a part of each year for study and recreation, and the winter is the free time for the beekeeper, while his little workers themselves are resting. Wintertime well employed in study will prepare you for better returns. A thorough study of some new phase of beekeeping can be taken up every winter. There is an abundance of literature, and you can greatly profit by the experience of other beekeepers and experiment-station records. Interest and determination to acquire knowledge of your

chosen vocation will be the best evidence of your suitability for bee culture. Your enthusiasm may cause you to cover the literature speedily. If there remains time unemployed, you may desire to take up some other line of work, either physical or mental. Some beekeepers have found it pleasant and profitable to teach in the winter. Teaching interferes but slightly with beekeeping. Mornings, evenings, Saturdays, and the long summer vacations can be devoted to the bees. The teacher should produce extracted honey to avoid the difficulties of swarm control.

Farm mechanics may prove advisable for a winter vocation and become an income-bearing side line for one who is handy with tools, tractors, trucks, and other machinery. The demand for able mechanics to repair and place in overhauled readiness for spring use all the up-to-date machinery now used on the farm is constantly growing. (See Farm Mechanics).

Number of Colonies Needed to Make a Living

In deciding on beekeeping as a life work, one should have some idea of the necessary amount to invest and the work entailed. There are many persons in the country who earn a livelihood almost or entirely from bees, and the number is increasing every year. In the Eastern States, where the weather during the summer may interfere with the work of the beekeeper, a skilled man may care for perhaps 600 colonies. In the West, however, where the weather does not so greatly enter into the beekeeper's calculations, this number may be increased to 1,000. In giving these figures, it is assumed that the beekeeper is able to put in a full day's work, is capable of considerable physical effort, and is a good manager. If he does not possess these

qualifications, he may be much behind in his work at critical times, which necessarily means loss of honey, perhaps a total loss of the year's work.

During and since the war, prices for honey have been high, making the returns larger than one may ordinarily expect. Perhaps the safest plan is to use figures which applied before the war, although in all probability honey prices will not for a long period, if ever, drop to their former level. With honey figured at prewar price of 25 cents a pound retail, the good beekeeper may confidently expect to average $10 a colony. This is on the basis of extracted honey, which will probably be produced by those about to engage in the business, certainly after the first year's experience. The expense in addition to labor per colony will not average more than $1 a year. Income may be greatly increased by selling honey locally at retail.

For one whose physical condition does not permit regular and hard work, the number of colonies must be correspondingly smaller, at least at first. When one has thoroughly mastered the business, the actual physical labor may be greatly reduced and by the proper hiring of unskilled labor the beekeeper may be saved much of the hardest part of the work. Women have made a success of commercial beekeeping, and while unable to do the hard physical work, they have had it performed under their personal supervision by hired labor. Comb-honey production is lighter work and not so many colonies are necessary to get the same financial returns if the beekeeper retails his comb honey at the apiary. However, with large apiaries composed of hundreds of colonies the conditions change and comparison of financial returns are favorable to the production of extracted honey. The large commercial beekeepers

follow extracting.

The Outfit Needed

In addition to the colonies of bees properly hived, the beekeeper needs some other equipment. This chiefly consists of a small house in which to prepare the equipment and extract the honey, keep miscellaneous tools for fitting out the apparatus, and usually an automobile truck for moving bees and honey. It is usually not profitable to keep more than 100 colonies in one apiary. It therefore becomes essential to rent or buy small tracts of land—about 4 miles apart—so that 100 colonies may be kept in each place. This necessitates moving supplies and from time to time colonies of bees. For this a small 1-ton truck is preferred by most commercial beekeepers. At first necessary hauling may be hired. The home apiary is usually best equipped, and frequently it is the practice to haul in the honey to the home apiary after extracting. Many use a small auto for this service. Another plan is to have an extracting house rigged up on a trailer to the auto or truck, so that it may be moved from place to place as needed. Usually the only labor employed at the time of extracting is unskilled, but if your disability is troublesome when preparing for winter or in doing other work, you can hire such help as you may need. Even during the swarming season you may hire somebody to take down the hives while you examine the combs for queen cells and perform the various operations necessary for swarm control.

Investment Necessary

The investment which the general beekeeper makes in his business is nine-tenths brains and study and one-tenth money invested in bees and

equipment. If he invests money only, his failure is a foregone conclusion.

The price of hives and other equipment has greatly increased during the war, and there is not much likelihood that it will decrease materially during the next few years. However, by making inquiry the beekeeper may frequently find opportunity to buy equipment from persons who have failed to make a success because of unwillingness to study the problems of the apiarist or of inability to devote to the work the time necessary. Such failures are sufficiently clear proof that the bee business requires devotion. The country is full of discarded hives which have been bought by persons who have conceived the idea that it was only necessary to buy a colony of bees and that the bees would "work for nothing and board themselves."

If new hives completely equipped for producing extracted honey are bought at present prices they will probably cost from $4 to $5 each. The bees to start a colony will cost perhaps $5 if purchased from dealers in bees, but may obtained for much less by arranging with some apiarist to fill the hives one supplies with swarms as they come off. Frequently such arrangements may be made with some beekeeper who, not caring for more colonies and to avoid buying hives, will gladly sell swarms as they issue, at a nominal cost.

In proportion to the return, there is no other branch of agriculture requiring so small a financial investment as beekeeping. Before the inflation of prices due to the war two colonies of bees on an average paid the good beekeeper as well as an acre of corn, and the investment was, of course, much less. It is estimated that an apiary of 300 colonies will yield a net income equal to that of a good 160-

acre farm and be quite as reliable from year to year. However, the statement made should be kept in mind—the investment which the beekeeper makes is chiefly brains. This is a commodity which can not be purchased from the hive dealer or secured with any number of swarms. In fact, the more bees and equipment you have without the use of brains and training, the worse off you are.

Is There a Future for Beekeeping?

There is a demand for all the honey that can be produced in the United States, and there was never a time in the history of the industry when the honey market was so well established. Of course, during the war, when there was a shortage of sugar, the demand for honey was abnormal, but it seems improbable that the market will ever revert to prewar conditions in price or demand. Many persons learned to use honey who will continue purchasing it, notwithstanding they may now buy all the sugar they wish. Honey is not a substitute for sugar in the diet, but properly takes the place of jellies and jams. With the development of the bottle trade in honey, which has been rapid during the past five years, there is an increasing demand in the wholesale markets. The introduction of prohibition has unquestionably caused the use of more honey and of all kinds of sweets. This has already become quite evident. The sugar stringency resulting in the war-basis distribution had its application in many States simultaneously with prohibition. It was not difficult to enforce the curtailment of sugar to confectioners in wet States, but most difficult, and in fact impossible, in the prohibition States, where it was actually necessary to increase the sugar allotment to candymakers. Investigation proves that former users

of alcoholic beverages were large buyers of candies and other sweets.

There is an abundant opportunity for the development of local trade in honey in almost all parts of the country. The future of beekeeping is inviting. There is every reason to expect that it will continue to develop rapidly for several years and that it will long continue to be an important minor branch of agriculture. From its very nature, owing to the limited supply of nectar, it can never be one of the leading branches of agriculture, but there is abundant nectar to build up beekeeping to ten times its present capacity.

Need of Training

From the requirements indicated for good beekeeping, it is evident that you will need all the information obtainable before engaging in the business on a commercial scale. Such training you may secure through the agency of the Federal Board for Vocational Education from courses in beekeeping in some of the agricultural colleges. After you are well equipped with all that one of these colleges can give you, then a good plan probably will be to arrange for a season, or part of a season, in the apiary of a thoroughly good commercial beekeeper. This selection must be made with great care. Not all beekeepers who are fairly successful in honey production are as careful in their work as they should be, and by working with the wrong man you might get into beekeeping habits that should be avoided. A man should be chosen who makes a study of the behavior of his bees, one who is familiar with the literature of his vocation, and if possible, one who is able to succeed in regions where most of the beekeepers fail to get the full crop. After a season

with such a man—and there will be many who will be glad to have your services in this way—you should be able to care for 100 colonies managed for extracted honey, provided your disability does not prevent you from doing the work necessary. By that time you will have a good idea of the amount of work which 100 colonies require.

You should avail yourself of every opportunity to visit apiaries and talk with expert bee men. Visits to and careful surveys of the apiaries of others who are successful may be worth almost as much to you as a season's close application.

Beekeeping means outdoor life under healthful conditions, well suited to facilitate recovery from incipient tuberculosis, neurasthenia from shell shock and other afflictions. At first in some of the manipulations of the apiary there will be more or less difficulty which will arise directly from your disability, but by the exercise of ingenuity you will be able to devise ways of doing the work. If you have lost an arm, you will need an artificial arm or some device for lifting the hives and hive parts. Racks to hold frames while working with them, trays and small tables are used and you will improvise other conveniences. If your disability prevents your getting about easily, you will be able to arrange your apiary so that there is the least possible amount of walking. Light stools are employed for sitting while working over hives. After training, the sooner you get to work the better. You will find that actual work with artificial limbs and devices has a greater theoretic value than mere exercises and work is incomparably more interesting.

AGRICULTURAL COLLEGE COURSES IN BEEKEEPING

One of the best ways to acquire a thorough

knowledge of beekeeping is to take a course in one of the agricultural colleges which offers such work. It must, of course, be understood that the knowledge so gained must of necessity be largely theoretical, for there is not time in a college course for much practical work. However, if the work is properly presented the student should be able at the close of the course to begin with 100 colonies and then he may work up in beekeeping practice as he increases the number of colonies. The following colleges offer good courses in this subject:

University of Minnesota, College of Agriculture, St. Paul, Minn.
College of Agriculture. Ames, Iowa.
Agricultural College, Storrs, Conn.
College of Agriculture, New Brunswick, N. J.
Agricultural College, East Lansing, Mich.
Agricultural College, College Station, Tex.
Agricultural College, Manhattan, Kans.

Your time will not be fully occupied with the beekeeping course and practical training at any of these institutions. You can at the same time take valuable courses in other subjects, such as fruits, gardening, flowers, and poultry, which combine well in practice with beekeeping. Farm mechanics (see Monograph on the subject) may be made a part of your training, and prove a valuable winter side line after you become a beekeeper, as the bees will not require your time during the winter season.

The Bureau of Entomology, United States Department of Agriculture, has held and has announced many valuable short schools for beekeepers in various parts of the United States and there is contemplated a course of intensive training for disabled soldiers who desire to take up beekeeping. These will probably be arranged in

several of the principal beekeeping regions, and in proximity to the district offices of the Federal Board for Vocational Education.

SHORT SCHOOLS IN BEEKEEPING

San Diego, Calif., November 25-30, 1918.
Davis, Calif., December 1-7, 1918.
Visalia, Calif., December 9-16, 1918.
Ithaca, N. Y., February 24-March 1, 1919.
Lafayette, Ind., April 7-12, 1919.
Ames, Iowa, April 14-19, 1919.
St. Paul, Minn., April 21-26, 1919.
California five weeks beginning November 17, 1919.

LITERATURE FOR THE BEEKEEPER

Bulletins for Free Distribution

Farmers' Bulletin 447. Bees.
Farmers' Bulletin 653. Honey and its Uses in the Home.
Farmers' Bulletin 695. Outdoor Wintering of Bees.
Farmers' Bulletin 820. Sweet Clover: Utilization.
Farmers' Bulletin 961. Transferring Bees to Modern Hives.
Farmers' Bulletin 1005. Sweet Clover on Corn Belt Farms.
Farmers' Bulletin 1012. Preparation of Bees for Outdoor Wintering.
Farmers' Bulletin 1014. Wintering Bees in Cellars.
Farmers' Bulletin 1039. Commercial Comb Honey Production.

Bee Journals Published in the United States

American Bee Journal, Hamilton, Ill.
Gleaning in Bee Culture, Medina, Ohio.
Domestic Beekeeper, Northstar, Mich.
The Western Honeybee, Covina, Calif.

Beekeepers' Item, New Braunfels, Tex.

Books of Interest to Beekeepers

These may be obtained from dealers in beekeeping supplies, from publishers of bee journals, and from general book dealers:

ABC and XYZ of Bee Culture, A. I. and E. R. Root.
Beekeeping, E. F. Phillips.
Langstroth on the Hive and Honey Bee, revised by C. P. Dadant.
Fifty Years Among the Bees, C. C. Miller.
Advanced Bee Culture, W. Z. Hutchinson.
Productive Beekeeping, F. C. Pellett.
Practical Queen Rearing, F. C. Pellett.
First Lessons in Beekeeping, C. P. Dadant.
Bee Primer, C. P. Dadant, Free to Soldiers from Bee Journal.

PLAN No. 1235. FARM MECHANICS AS A VOCATION

Acknowledgment is due E. B. McCormick, Chief Division of Rural Engineering, United States Department of Agriculture; American Society of Agricultural Engineers; Curtis Publishing Co.; Vacuum Oil Co.; International Harvester Co.; Domestic Engineering Co., and A. W. Shaw Co., for data, suggestions, and illustrations; also to Dr. John Cummings, of the Research Division, for editorial assistance.

The war, just over, has been a war of machinery. The observing soldier has seen the effectiveness of the tank, the airplane, the truck, the motor transport, and the ambulance. He will remember them almost as comrades in the great struggle. He has seen the systematic care required to keep all this equipment in shape to deliver maximum service.

Many of the returned soldiers have been truck, ambulance, or automobile drivers, or at least have seen the vast field of work that has been done by the gasoline engine in some form and have developed an admiration for machinery. If you have driven any of these machines and experienced the thrill of pleasure on getting your machine out of some tight place, or in overcoming some difficulty by your own ingenuity, you have the best evidence that you will enjoy the vocation that is spoken of in this monograph.

In selecting your future vocation you should aim to profit by your past experiences as much as possible and at the same time select such work as will best enable you to enjoy life and health. You have had an experience in the "great outdoors," possibly a prewar experience in agriculture, and can readily decide whether you will be contented under such conditions as are found in country life. The majority of soldiers have, barring injuries, been greatly benefited by their Army life.

Uncle Sam having called several million men into his service, many of whom have been injured, is employing the best experts available to restore these to a condition of maximum usefulness. Just as the expert surgeon is restoring to useful condition the injured, so there is need of a mechanical expert to keep in good order the machinery of the farm and to restore to usefulness that which may have been injured.

The farmer is realizing that one of the chief problems of the modern farm is that of getting sufficient help when needed. He has been in the habit of depending on floating labor for extra help. During the past few years this help has been getting more and more uncertain, inefficient, and expensive,

and during the war it has in fact often been impossible to get help at any price. To meet this condition a more general use is being made of modern machinery, which enables more and better work to be done with fewer workers.

Modern farming depends to a large extent on machinery. The average farmer is not a mechanic and must employ expert help to get the maximum service from his equipment. You may have had training and experience in mechanical work, and with a little special training this may become a valuable asset to you as a farm mechanic. A person properly trained for this work can save many machines for future usefulness and increase the life of all the mechanical equipment of the farm.

The chart shows the relative amount of power on American farms as compared with power used for manufacturing. All of this power on the farm is utilized through machinery, and the large investment in farm machinery makes it important that the best of care shall be given to insure long life and efficient service.

When the call came for greatly increased production many farmers who doubted their ability to handle the modern farm machinery hesitated to undertake the larger acreage. In some cases crops already started were not harvested for want of help and lack of ability to use the machinery that might have taken the place of man power.

The more complicated machinery becomes, the more important becomes its proper care and management. Neglect or improper usage shortens the life of the machines and often causes breakage, necessitating repair or new parts. The services of a man who has ability and training in the repair and operation of such implements are needed to secure

the best results. If maximum life and service is not secured from farm equipment the farmer can not afford to have it. With maximum service the farmer can not afford to do without it.

The Farm Tractor

The tractor is the most important recent addition to farm equipment. Its use is increasing because it enables one man to do the work of several and do it better.

Many farmers hesitate to invest in the tractor and other modern machinery now available, because realizing that they are not mechanics, they doubt their ability to operate such equipment satisfactorily. Manufacturers employ mechanics to care for and operate their machines. Farmers must adopt similar methods. They are recognizing that in heavy farm work the tractor will accomplish more and do it better than horses, and that the tractor does not require feed or care when not being used.

The use of the tractor involves so many changes in methods of work that farmers are often staggered by the new problems to be solved. Every farmer has grown into the use of horses and horse-drawn equipment. He knows he can handle them, but he has not the same conscience in his ability to handle the tractor and the machinery that goes with it.

The farm mechanic will be expected to operate the tractor in plowing, seeding, cultivating, harvesting, and various other operations. He will be able to get more and better work out of the tractor and other machines than one who does not fully understand them.

If the services of a trained farm mechanic were obtainable, many farmers would adopt the methods of the manufacturer, and they would find it

profitable to use such modern machinery as is adaptable to their needs. This machinery, to give the best service, must be kept in first-class condition, which requires the attention of a mechanic familiar with farm machinery, not a machinist trained to do one, two, or several things in a fully equipped up-to-date machine shop, but an ingenious all-round mechanic who can keep the equipment in condition for operation at all times.

A New Vocation

This opens a new field of employment, that of farm mechanic.

The farm mechanic will have employment the year round, and the farm owner who has a competent mechanic in his employ will find his machinery in good order when needed.

The farm mechanic should not think that he is above doing regular farm work, when that is more important. He may be called upon to repair buildings, build fences, or even plant potatoes, but his duties should be primarily the operation and upkeep of mechanical equipment.

With the machinery cared for by a competent farm mechanic there will be less loss of time due to breakdowns and the equipment lasts longer. If anything goes wrong with any of the mechanical equipment while in operation it will receive the immediate attention of an expert. When there is a need for repairs to any of the buildings a competent man is available to do the work.

Some large scientific farmers who have made their farming truly commercial propositions have introduced as one of the economic features of their business a department of farm mechanics with an expert mechanic in charge. The time is ripe and the

need urgent for the general introduction of the farm mechanic on every farm of sufficient size. Adjoining farms might in some cases advantageously combine in employing a farm mechanic.

A person with a desire to farm and an inclination toward mechanics may make one help the other by getting a farm so located that he can do general repair work for near neighbors, this work to be undertaken with the understanding that repairing and sharpening of tools will be done when farming is at a standstill because of weather or for other reasons, and that his own farming operations must not be sacrificed. Those desiring his services will gladly bring their machines to him to be overhauled before the season for use and while other work is not pressing.

The farm mechanic must be ingenious in utilizing the equipment at hand. He can often adapt available equipment to do work that, without his ingenious help, would be accomplished with much difficulty.

The cut shows a small gasoline engine mounted on a binder to drive the cutting and binding machinery. With this arrangement the team has only to draw the binder. This is particularly advantageous on soft ground. Where the bull wheel does not have to drive the machinery it is not so liable to mire in wet places. This plan, taking much of the load from the team, enables more and better work to be done. If a tractor is available that can draw a grain drill and a harrow at the same time, it is poor economy not to do both operations at once.

Efficient hitches are very important and the mechanic must arrange these so that he can do the maximum work with a minimum power in the shortest time. It has been found that the power required by some methods of hitching may be 15 to

25 per cent greater than by others. As a rule, proper hitches not only take less power but the tools do better work. This illustrates one of the benefits to be derived from having an expert in charge of the machinery.

The farm mechanic will be able to supervise the use of machines and tools on the farm and thus greatly increase the efficiency of the equipment in the hands of others, as well as of that operated by himself. By supervising machines when in use and by keeping equipment in the best working condition, the farm mechanic can make himself the most valued man on the place.

In some sections of the country drainage and irrigation are very important. The intelligent farm mechanic with a little training can be of great service in the simple farm surveying necessary.

The erection of and additions to farm buildings is another line of work that naturally falls to the farm mechanic, as does also the installation of farm equipment. Many convenient devices are possible if some one is available who can use tools and has ability to plan and construct such improvements. How many farmers, for example, have a dumb-waiter connecting with the cellar, or water in the kitchen to save steps for the farmer's wife?

Most farms have a gas engine for pumping water. It would be an easy matter to arrange this engine so that it could be fitted to a short shaft provided with pulleys to drive various machines, such as feed grinder, feed cutter, grindstone, fanning mill, etc. A $1^1/_2$ or 2 horse-power engine on a small truck would be very convenient for moving from place to place for odd jobs. Many farms are supplied with small electric-light plants, which by a little ingenuity could be made more convenient and also save work in the

home. Electric lights, running water, bathroom, vacuum cleaner, cream separator, electric washer, electric iron, furnace, and many other conveniences are all possibilities, although many farmers do not realize that these are available for the country home. However, with the assistance of the farm mechanic, the farmer will feel that he, too, may enjoy city conveniences. Farmers are not unwilling to have things made convenient for themselves, but hesitate because of the difficulty of getting a competent person to operate and maintain the plant. Lights, feed cutters, milkers, and other conveniences are needed at the barn. Probably no farm would have all these improvements, but any farm may have some, and, if a farm mechanic of originality is available, many of these will be possible.

The farm mechanic should be provided with a shop equipped with well selected tools. This shop, for convenience, should be located as closely as possible to the machine sheds. It should have good light, a tight floor, and some means of heating in cold weather, for most of the work in the shop will be done during weather which is unsuited for outside operations. The equipment should consist of a forge and anvil, a bench and vise for metal work, a bench and vise for woodwork, good, suitable tools, and a small stock of supplies—such as nails, screws, nuts, and bolts.

Farm machinery is built on the interchangeable plan, and a few of the extras most liable to be needed should be kept on hand to avoid delay. For example, a careful inspection of the binder before harvest will show what parts are likely to give trouble and which, if immediately replaced by extras on hand, will eliminate unnecessary delay at a time when every hour counts in saving a crop. It is well to know

months before harvest that when you hitch to the binder it will be in shape for work; also, that when the silo is to be filled the knives will be sharp and the blower in good working order.

With a reasonable outfit of tools a trained mechanic can repair almost any ordinary break that may occur in the busy season which, otherwise, would cause the work to stop and the crew to be idle while a part, or perhaps the whole machine, is taken to the local shop for repair, only to find the shop crowded with similar rush jobs which must take their turn.

The farm mechanic should know how to do simple forge work; sharpen plows; dress and temper ordinary chisels, punches, and other steel tools; make good welds in iron and steel; do a fair job of woodwork, such as will be required in repairing around the house and barns, and erect such small buildings as may be needed. He should know how to babbitt a bearing; fit new piston rings in a gas-engine cylinder; grind in the valves; clean out the carbon from the cylinders of the gas engine, auto, or tractor; overhaul the binder, mower, hay loader, or other machinery; and replace such parts as are broken or worn.

Practically, all repair work should be done on the farm and most of it may be done when the machines are not in use, or when the weather prevents other work.

While a machine is in use, or immediately after it is brought in from the field, any repairs or replacements that are needed should be noted by the operator on a tag to be attached to the machine before it is put away for the season. This will serve as a reminder when the machine is overhauled to prepare it for the next season.

During the late fall and winter the entire equipment of machinery should be overhauled and put in shape for use. This will give ample time to secure extra parts. The “one-hoss shay” had no weakest part, but most machinery has. If the weak parts can be repaired, or replaced, before they give way the life and efficient service of the machine will be prolonged. A point often overlooked is that poor results are secured by using tools that are not sharp, or not in good repair, and, also, the additional fact that much time is lost. Men will do more work, and do it better, if the tools they use are in first class condition. A man who is swearing mad at a dull, rusty plow that will not scour, will be liable to mistreat his team and he will be unprofitable in many ways all on account of a neglected plow. In consequence of poor tools, or tools in poor condition, inefficient plowing, cultivating and other operations follow with their resultant losses in crop returns. To illustrate, the average yield of wheat in the United States is about 15 bushels per acre, but the efficient farmer produces 25 to 40 bushels, and thereby greatly reduces his cost per bushel. Likewise with corn or other crops, the larger the yield the less the cost to produce, and hence the greater the net profit.

Even if the local repair shop happens to be convenient, and the farmer inclined to use it to the best advantage and as often as would be profitable, it would frequently be impossible to get efficient service, since the local shop is often congested with work, poorly equipped, and the shop mechanic may not be familiar with the machinery to be repaired.

To make the farm investment as a whole most profitable a considerable and judicious investment in modern farm machinery is absolutely necessary. The farm equipment will usually include a tractor,

sometimes a truck, depending on the size of the farm and farm implements suited to the lines of work being carried.

It must be realized, however, that the best results from the farm depend on the efficient equipment of the farm home. The farmer's home is more than a shelter, it is the most important tool in his business. The farm equipment chart, shows the result of a study of all the farm homes in a township in Iowa. Half of all the farm homes in this township had furnaces, while the proportion having water, bath, and electric or gas lights was somewhat less. Nearly half had vacuum cleaners, power washers, and electric irons. Nearly all these homes had telephones. Over half had pianos, and about half had automobiles. This is not a picture of average conditions obtaining at present in farm homes throughout the United States, but it is a picture of conditions, somewhat exceptional at present, to which we are, however, rapidly approaching.

In many instances an automobile is included in the farm equipment. Farmers have in fact more need for a car than have any other class, since it serves the double purpose of business and pleasure and makes possible the greater enjoyment of church, town, and neighbors. Statistics show that nearly 2,000,000 autos are owned by farmers.

Cost of Farm Equipment

The machinery on a 200-acre farm will vary from $3,000 to $4,000 or more. No business man would put such expensive equipment in the hands of a crew of untrained men without some one in charge to see that it is properly used, kept in repair, and cared for when not in use. With a farm mechanic assured, farmers will realize that it is good business to

supplement their farm investment by the purchase of such machinery as will result in improved farming and increased production.

The necessity for proper mechanical equipment of the farm was appreciated by the Federal Farm Loan Board when it provided that part of the Federal loan funds might be used for mechanical equipment. The board realized that a farm can not be profitably operated without suitable machinery and that without modern farm tools the farmer is severely handicapped, even though he has a good farm and sufficient buildings. Thorough preparation of the soil and cultivation and harvesting of the crop all depend upon proper equipment of the farm.

The economic importance of modern labor saving tools, implements, and machinery for the farm, orchard and garden was not fully appreciated until four years of a world-disturbing war had created havoc with the farmer's labor supply, already short from losses to other industries. This supply was further curtailed by the demand for workers in the manufacture of war supplies and by enlistments. Even in the face of this tremendous depletion in his labor supply, labor-saving machinery, available from abundant prewar manufacture, enabled the farmer, nevertheless, to expand the area under cultivation by hundreds of thousands of acres, and thus to meet war emergency needs.

The satisfaction and profit of having an outfit of tools and a competent man to keep the equipment in good working condition, will be realized more fully as the mechanic demonstrates his ability and ingenuity. The average farmer has not had the experience of having his machines and tools in condition without considerable trouble and outlay of time and expense. The change will be such a relief,

and the increased efficiency so noticeable that the farm mechanic will have little difficulty in making such services appreciated, securing acknowledgment of his ability and therefore establishing his rank among the men on the farm. He should, of course, be considered a permanent man and be provided with all the perquisites that other permanent men enjoy, including a house and a garden in addition to adequate compensation.

Future Prospects

The demand for farm mechanics may be expected to grow somewhat in proportion to the increase in the use of tractors. The introduction of a tractor on a farm necessitates many changes in methods of work which call for the exercise of mechanical ingenuity to get maximum results. The advantage of having a trained man to help plan and start the work under the new conditions is evident.

The Curtis Publishing Co. has made a study of tractor production and has plotted a curve (Fig. 18) which shows the probable future of the industry. If the demand for farm mechanics increases in proportion as does the utilization of tractors, the future looks bright for well-trained men.

You may have had mechanical experience and possibly experience with farm machinery, but you will, nevertheless, need a short intensive course in the care and repair of farm machinery. Such a course will fill you with new ideas for greater efficiency in the employment and adaptation of numerous tools not generally used on the farm. If you have had little mechanical training, but have had some experience with farm machinery, you will need a course in shopwork to enable you to do a good workmanlike job instead of the usual makeshift work to which

many farmers have been accustomed.

Handicaps

Some of you may be saying, “But I can’t hope to make good on the farm because of my handicap. I have lost a foot or an arm or am otherwise crippled.” It is true that these may seem hard to overcome, but the mechanic’s work on a farm is such that few of these losses will be prohibitive or constitute serious handicaps.

Ordinarily the loss of a leg would prevent a man from doing the necessary walking in soft ground, but even this will not be found such a serious loss after you have been supplied with the “extras” to which you are entitled. Uncle Sam has had his “physical mechanics” at work for some time getting these “extras” ready, and after you have gotten them adjusted and properly “broken in” you will find considerable pleasure in your ability to use them. Your work as a mechanic will be with machinery and you will almost invariably ride while operating it. In the shopwork and repairs, if you can stand at a bench and move around your machine, you will find little difficulty on account of loss of a leg.

As for arms, the candidate should have one good hand, but the mechanical substitutes that have been developed will enable you to get along very comfortably with one good hand and a workable substitute for the other. After you are accustomed to your store hand its use will become second nature to you and you will not often be conscious of the change. Even store teeth require a certain amount of education before they work well.

Increase in the use of artificial limbs at this time has led to material improvements being made in appliances to overcome various handicaps. The

illustrations you have undoubtedly seen in print or on the screen are not “make up” pictures but actual cases of what training in the use of these appliances will enable a person to do. What others can do, you can do.

Physical disabilities, such as shell shock, nervous troubles, and lung troubles will be greatly benefited by the free outdoor life of the farm. There are side lines that would be very profitable and interesting which would sandwich in with the work of the farm mechanic in a very satisfactory way, such as beekeeping, poultry, and sheep.

There is a fascination about farm life to many persons that more than compensates for any loss of the enjoyments peculiar to city life. The farmer has been looked on as not quite the equal of the manufacturer or merchant, but opinion is rapidly changing. The farmer is the original producer on which others depend. This war has caused the world to realize his importance, and now he is beginning to receive his dues and be recognized for his real worth.

When you have had the special training as a farm mechanic you will find that the demand for your services is from well-equipped and experienced farmers. While you are rendering valuable service to your employer in your line of work you will be getting a good salary and securing useful experience which will prepare you for a better position as a farm mechanic or for successful management, eventually, of a farm of your own.

The Surgeon General is instructed to fit you out with the best appliances possible for your future work, and the Federal Board for Vocational Education is ordered to provide the training that will fit you for the work which you decide is best and most nearly meets your needs.

The Federal board's training courses have been arranged for in every State, and information in regard to them can be secured from your nearest district vocational officer. See list on the last page of this monograph.

PLAN No. 1236. SHOW-CARD WRITING

This monograph was prepared by May H. Pope, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board of Vocational Education. Acknowledgment is due to Dr. John Cummings, of the Research Division, for editorial assistance.

The Purpose of the Show Card

A man's attention is attracted through his sense of sight more readily than in any other way. A word, a phrase, a pithy sentence will catch his eye and focus his interest, where something requiring more concentration would fail. For this reason window dressing has grown into an important feature of every merchant's business, and cards pointing out the quality and prices of the goods displayed are universally used. These show cards were formerly made by sign painters, until some, more farseeing than others, realized the opportunity to specialize in this line of work, which has now developed into a distinctive trade.

Different Types of Cards

There is a great variety of types in show cards. Some are large, others are small; some are ornamented with designs suitable for the occasion, or season, or goods to be featured in the advertisement; others are plain numerals or letters giving the bare

detail of cost. As these cards are shown in the street cars, on moving picture announcements, on billboards at theatre entrances, as well as in the stores, they must be so varied as to be appropriate to their surroundings.

A practical feature in writing show cards is the selection of some special design or slogan with which the article or firm may always be associated in the mind of the public. In this field a show-card writer with originality is able to realize materially upon his ideas.

Future of the Trade

Because the merchant believes that seeing is very likely to mean buying he finds the show-card writer indispensable to his business. Whether large or small, every store needs these display cards with their catchy announcements to aid in promoting business. Present-day competition makes it necessary that every known means at attracting attention shall be utilized by the merchant who would keep up in his line. Progressiveness in store management has occasioned rapid growth in the trade of card writing within the last few years, and the constantly increasing demand for advertising indicates that the trade of show-card writing has an assured future.

Equipment

For the man possessing limited capital the small cost of the necessary equipment is an alluring inducement to enter the trade. A few dollars will cover the entire cost. Brushes, pens, penholder, with ink retainer, ruler, art gum or sponge rubber, thumb tacks, combination compass, a pair of large shears, a T-square, a box of charcoal, soft lead pencils, and cardboard make up the list of necessary material for

the show-card writer. A good-sized drawing board completes the list. “The better the workman the fewer the tools” has been said. An expert card writer works efficiently with a board, a T-square, and a half dozen thumb tacks.

What Men in the Trade Should Know

A good general education is essential for a show-card writer who expects to be more than merely a mechanical maker of words and letters. Those who become expert in the art need a knowledge of designing and an originality in composing effective phrases, such as can not be resisted even by those who read the cards casually.

A practical knowledge of the geometric construction of letters is fundamental, for though simple lettering may be largely mechanical work, skill must not be confined to the utilization of mechanical means alone.

A knowledge of color is an advantage to those who make sign cards. Color combinations and contrasts play an important part in producing attractive cards. As card writers are confronted by all sorts of combinations of words in inscriptions, it is necessary for them to know letter forms; to understand novelty in designing, arrangement, and artistic embellishment; and to exercise taste in harmonizing colors, so as to produce cards that will be not only neat and attractive but at the same time legible.

What Men in the Trade Do

Show-card writers make price tickets and all types of trade cards used in windows, on special sale sections, on the announcement boards of theatres, on automobiles, in cafeterias, in street cars, and wherever else the card may serve as a proper

medium of advertising. The trade is carried on in different ways. Cards are sometimes made by salesmen who give only part of their time to this work. Other writers give all of their time to one firm requiring a large number of cards for its own use. Some card writers work for show-card firms and others have their own offices and fill special orders.

Opportunities

The demand for show-card writers is far greater than the supply. Every small town offers an opening for one or more, who would make a good living at the trade in that locality.

How Men Are Trained

Many card writers are trained in the shop. Correspondence courses afford fair advantages to the man who must save time and money, but personal supervision is of great advantage, and personal criticism is essential if a correspondence course is taken. Courses in card writing are now offered in technical schools and Y. M. C. A. classes and vocational schools all over the country. Among the schools now offering courses in show-card writing are the following:

Federal School of Commercial Art, Minneapolis, Minn.
Idaho Technical Institute.
Los Angeles Y. M. C. A. schools.
St. Louis Y. M. C. A. schools.
Lowry Sign and Advertising Service, Chicago.
Link's Business College, Boise, Idaho.
State Trade School. Danbury, Conn.
Appleton, Wis., Industrial School.
Kenosha, Wis., Vocational School.
Neenah, Wis., Industrial School.

New York High School.
New York Vocational Schools.
Detroit, Mich., School of Letters.
Augustana College, Rock Island, Ill.
College of Commerce, De Paul University, Chicago.
School of Industrial Arts, Trenton, N. J.
Koester School, Chicago.
Semby School, Minneapolis, Minn.

The length of time required for the completion of courses depends upon the student; one very good course covers eight weeks. Some students after the fifth or sixth lesson have done work sufficiently creditable to bring a money return. Proper and methodical training is very necessary. Care and exactness must first be acquired and speed will naturally follow.

Courses given in show-card writing cover such subjects as how to mix and when to use water colors, inks, and oils; the care of brushes and pens; the proper kind and color of cardboards to use; and how to apply bronze and diamond dust. The formation of pen and brush letters is, of course, fundamental, and the principles of lettering must be taught in a simple, thorough, and correct way. Proper instruction, with application, is bound to bring success.

Lesson plates Nos. 1 to 6.—Improved method for teaching, correct formation and relative proportions of letters and numerals.—Brush method.

General instructions.—Proper material, student's worktable, light, how to care for brushes, show-card paint, how to practice, kind of practice that counts, lesson plates explained, how to fill the brush, how to bring the brush to working point, how to hold the brush, position at table, position of paper.

Lesson plates Nos. 7 to 10—Single stroke rapid Roman lettering.—How to begin the practice, time-saving methods, how to hold the brush, various positions of the brush explained, how to manipulate the brush to produce clean-cut strokes, purpose of single-stroke vertical and italic roman lettering.

Lesson plates Nos. 11 and 12—How to shade letters.—Various styles of shading, proper colors for shading, shading as an embellishment, shading to give emphasis.

Lesson plates Nos. 13 to 16—Single stroke Egyptian lettering.—Brushes to use, how to hold the brush, how to manipulate the brush to produce the proper stroke, how to practice the elementary lines and curves.

Lesson plates Nos. 17 and 18—Single and double stroke alphabet and numerals.—Purpose of this style of letter, brushes to use, method explained, different methods of finishing the letters.

Lesson plate No. 19—Single-stroke old English alphabet.—Purpose of old English lettering, how to hold the brush, retouching the principal strokes.

Lesson plate No. 20—Single-stroke modified Roman pen lettering.—Advantages of pen lettering for text or descriptive matter, inks to use, how to practice pen lettering, how to hold the pen, how to manipulate the pen to procure clean-cut strokes, how to use an ink reservoir to facilitate rapid work.

Fifteen practical show-card layouts.—In the foregoing lessons the student acquires sufficient ability to enable him to make practical use of his knowledge. The alphabets covered are sufficient for general show-card use. Therefore,

at this point, the course presents 15 practical layouts showing how the text should be separated into display lines and descriptive groups, also various styles of letters that may be used in harmony for display and descriptive matter. An appropriate show-card phrase is used for each layout. Display lines and descriptive groups are indicated in the exact size and styles of letters to be used in lettering each layout. Specific directions as to color, combinations, and embellishments are given for each layout.

A study in design and layout.—The principles of spacing, importance of show-card designing, best rules for spacing, lessons in spacing, how to center a word or line.

Condensing and extending letters.—How to plan lettering to fit a given space, rules for condensing, rules for extending, appropriate uses of condensed and extended letters, practice exercises.

Principles of the balanced layout.—Balanced layout defined, how to plan the balanced layout, important points to observe, examples of balanced layout, practice exercises in balanced layouts.

Border lines, underscore, space fillers, and panels.—Brush ruling, how to draw an ellipse, initial panel, initial letters, a few card kinks.

The group layout.—How to plan the group layout, examples of group layout, practice exercises in group layout.

Combination layout.—Purpose of the combination layout, how to divide the phrase into display lines and groups for the combination layout, examples of combination layouts, exercises in combination layouts.

Price tickets.—Normal style price tickets, bold style price tickets, small price tickets, fancy price tickets, illustrative price tickets, practice exercises.

Illustrated show cards.—Sources of ideas, tracing from clipped illustrations, how to use the pantograph for enlarging illustrations, the mirrorscope, examples of appropriate designs for various purposes, exercises in illustrated show cards.

Principles of colors—Color contrasts.—How to mix water-color paint, color effects; color combination; mixing

standard colors to produce shades, tints, and unusual colors; lessons in color combinations.

Show card embellishment.—Dry-color blending; spatter work; relief lettering; applying metallics, diamond dust, flock, etc.; phrase and picture tiling; seasonable embellishments; floral decorations; poster cut-outs; silhouettes; how to paint muslin signs.

Instruction in the use of the air brush.—Principles of the air brush; sectional view of an air brush; illustrating and describing all important parts; air pressure; how to put a gas outfit together; colors for air-brush use; how to use the air brush; care of the air brush; how to cut stencils; practice exercises to gain control of brush; color blending; exercises in the use of stencil designs.

Lesson plate No. 21.—Single-stroke alphabet and numerals for modern speed ball pen lettering.

Lesson plate No. 22.—Uniform single-stroke alphabet and numerals for Payzant pen lettering.

Lesson plate No. 23.—Single-stroke Payzant or speed ball pen alphabet with retouched spurs.

Lesson plate No. 24.—Speed ball pen initial capitals, retouched and embellished.

Lesson plate No. 25.—Outline Roman initial, embellished capitals, plain lower-case letters.

Lesson plate No. 26.—Modern Roman and fancy alphabets for music pen lettering.

Lesson plate No. 27.—Old English text pen, and small speed ball pen alphabets.

Lesson plate No. 28.—Speed ball pen alphabets.

Lesson plate No. 29.—Rapid single-stroke antique Roman brush alphabet.

Lesson plate No. 30.—Rapid single-stroke modified Roman brush alphabet.

Lesson plate No. 31.-Single-stroke antique alphabet and numerals.

Qualifications

Anyone who can learn to write can learn to draw or paint letters for show cards. It is not essential to

have artistic ability, although this would be an asset in the trade; a steady hand and a correct eye are the only requirements, and it is well to remember that "the sight that insures correct drawing is not that of the eye only, but of the mind."

Handicaps

Good eyesight is essential, but almost no handicap other than blindness, or the loss of both arms, is prohibitive. It is an advantage to have both hands, but the fact that one-armed men have so clearly demonstrated their ability to write as legibly as others with both hands indicates that the difficulty for a man with one hand becoming a show-card writer be overcome.

Desirability for the Disabled Man

The work is not heavy, the hours may be adjusted to the strength of the worker, the prospects for work in the trade are favorable, and the pay is good—all of which characterizes the trade as one suitable for disabled men. A chief attraction which show-card writing holds out for the handicapped man is the freedom allowed in the choice of a working place. He may be independent, not only in the place of his work, but in selecting his own hours for work. This liberty means much for a man who is physically below normal. The conditions under which a writer of show cards works are favorable, both as to time and place.

Remuneration

Show-card writing is a fascinating art and brings good profits. For this reason its appeal will be strong to the wounded soldier.

An exact standard of prices has never been possible for card writing, as so much depends upon the quality of the work and the time required to make the cards. The cost of the material is negligible; but show cards have an intrinsic value to the merchant, who is usually willing to pay for them.

Card writers make from $25 to $75 a week. Advertising cards, being of a temporary nature, must be inexpensive. Rapidity is necessary, in order to make it profitable, as the writers are usually paid by piece-work. The example may be cited of a hunchback who began show-card writing at $3 a week and by his energy and application rose to a salary of $40 in a short while.

A lack of application or giving way to discouragement over first attempts may cause failure, but for no other reason should a disabled man who desires to become a writer of trade cards feel the slightest fear of the undertaking. Begin the course with a determination to succeed, and remember that lack of confidence is not conducive to success in any trade. Learn the principle strokes with great care, practice diligently until dexterity is acquired, work without hesitation, boldly and with enthusiasm, and in a short time there will be acquired expertness in a trade which is interesting, agreeable, and lucrative.

PLAN No. 1237. THE PRINTING TRADES

This monograph was prepared by T. G. McGrew, Superintendent of the United Typothetæ of America, School of Printing, Indianapolis, Ind., under the direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for

Vocational Education. Acknowledgment is due to Marden Scott, President of the International Typographical Union, Dr. Frederick W. Hamilton, and Henry P. Porter, for valuable suggestions and advice in the preparation of this monograph and to Dr. John Cummings of the Research Division for editorial assistance.

Printing as an Occupation

The printing industry is both a profession and a trade. It is essentially an occupation of intelligence, the mechanical processes of which require a high degree of specialized skill and training. Printing in the United States employs nearly half a million people. The trade is not confined to any particular locality, but is practiced in all parts of the country. The number of printing establishments in any city is a comparatively accurate index to its size and commercial importance; therefore, the competent man in the printing business is not restricted to certain localities or conditions.

The printing trade develops intellectually, as a printer must be well read in the very nature of his occupation. His work is skillful, but not extremely arduous, and the eight-hour day is practically standard. Wages in the various branches average from $15 to $40 per week, with special and executive positions commanding higher salaries.

Future of the Business

This is an age of rapid industrial changes, and new inventions may render certain occupations almost obsolete in a night. It is unwise to enter some lines of industry because the demand is lessening, the business decreasing, and the future uncertain. This is not the case, however, in regard to printing, which is

a growing business. The use of printing is increasing in every field of industry. In so far as human judgment can determine, it will continue as an essential industry, and twenty years from now there will be unmeasurably more product than there is today.

Products of Printing

Printing has been aptly designated "the art preservative of all arts." The product of the printer's trade is so well known as to require little comment. Books, periodicals, newspapers, commercial forms, advertising literature, and other products of the press form a competent part of the business and social structure of all civilized nations, and are integral parts of the daily life of practically every individual. Hardly any other field of human activity has a product so universally used.

Organization of the Industry

Of all the trades, printing is one of the best organized, both on the part of employers and of employees. There are few strikes, as arbitration agreements are in effect, and work is seldom interrupted. The various organizations use their dues to much better advantage than in financing internecine struggles.

The employers' associations maintain many activities for improving conditions in the business, including installation of cost systems, maintenance of trade schools, advertising service, and provision of educational courses.

The unions pay old-age pensions, death benefits, and sick benefits. They provide homes for the aged and indigent, sanatoriums for the sick, and instruction for apprentices.

All these organizations aid morally and financially in promoting education for the craft.

Environment of Workers

The printing business is entirely shop and office work. There is no exposure, nor is the trade affected materially by weather conditions. The work is more uniform in volume than in many other trades. Only a few of the processes have special hazards, and the health of printers compares favorably with that of other indoor trades.

Entering the Trade

The printing trade embraces several distinct branches, chief among which are composition, including hand and machine, presswork, and bindery. Each of these is subdivided into a number of processes. The regular apprenticeship is 5 years for each branch of the trade. Very few men are proficient in more than one branch, the nature of the business being such that specialization is necessary for both the trade and the individual.

Within the last few years, technical schools have been established which aid in training for the industry. It must be clearly understood that the schools are interconnected with the trade, and are for the purpose of adding to shop training and not superseding it. An indispensable requisite of the printing industry is thorough intensive training and experience. In common with other worth while things, it can not be hurriedly or superficially mastered. Time and work both are necessary.

Printing Courses for the Disabled

Men disabled in the war who may be interested in

printing will naturally fall into two classes: those formerly employed in the trade, and those without trade experience.

If you belong to the first class and have worked at the trade, we would unhesitatingly urge you to continue in it in some capacity. Special efforts will be made by all trade organizations to enable you to do so. Your previous training and experience should not be thrown away, but should on the contrary be used as the foundation for specialization, either in your own particular branch of work or in some allied branch.

The Government is offering you the opportunity to greatly improve your ability by technical training. You can return to the trade more expert by adding to your previous experience the training of one or more of the courses offered. This will give you a better position than you held before entering upon military service. It will enable you to earn more money, and to be more valuable to the trade and to the Nation.

If you are interested in the trade but have never worked at it, there is only one right way to begin—through thorough preparation. We should consider ourselves delinquent in our duty if we did not impress on you that competency is the result of sufficient time, proper prerequisites, and practical trade experience. Printing requires a high degree of skill, speed, and accuracy. These essentials can not be acquired superficially. The Government, the schools, and the trade are prepared to furnish you this preparation, asking from you only the time and effort necessary to do it right.

The accompanying chart affords detailed information regarding the various positions for which training is provided.

Chart showing character of occupation, qualifications,

requirements, and training for various positions in the printing industry.

Occupation.	Character of occupation.	Work requires.	Qualifi
1. Hand compositor (ad. and job).	Setting ads, jobs, and general printing, make-up of machine composition, paging, distribution, and other composing room work.	Walking, bending over, standing at cases, and handling various tools, type, and other small articles.	Good ge educa techni knowl typese styles compo princi desigr harmo
2. Linotype operator.	Operating keyboard of slug casting machines for production of all classes of composition; knowledge of mechanism to operate.	Work is mostly in sitting posture, rising occasionally. Operation of keyboard, somewhat similar to typewriter.	Good ge educa capita divisi words punct and sp Exper settin Know styles compo

3. Linotype machinist.	To make all adjustments and repairs on slug casting machines and erect machines.	Work necessitates walking, bending, and reaching in the repair and adjustment of machines.	Experien printi suffici adjust machi gener knowl mecha and u tools. Specia traini repair adjust machi
4. Linotype machinist-operator.	Operating keyboard and sufficient knowledge of mechanism to keep machine in running order.	Work requires all physical movements necessary for manipulation of keyboard and adjustment of machines.	Combin all ess requir of key opera machi

5. Monotype keyboard operator.	Operation of keyboard of monotype machine for all styles of composition.	Physical exertion is about the same as operating a typewriter; operator is seated and little walking required.	Good ge educa punct spelli experi hand compo on all of wo
6. Monotype machinist.	Operation of monotype caster on composition and casting type, borders, rules, etc. Making adjustments and repairs on caster and keyboard.	Work is standing. Considerable walking, bending, and stooping in adjustment and running of machine.	Experier printi knowl type s measu gener knowl mecha use of Thoro traini repair adjust machi

7. Monotype combination.	Operating keyboard and running caster. A combination of the functions of keyboard operator and caster runner.	Requires all physical movements designated as essential in operation of keyboard and caster.	Combina all ess requir of key operat machi
8. Stoneman.	Imposition and lock up of forms, figuring margins, etc.	Work is standing or walking about imposing stone. Constant use of hands and arms.	Expert knowl impos hand machi foldin margi of pap locku and cy forms and ba
9. Composing room foreman.	Supervision of all work produced in composing room by hand and machine.	Physical movement a variable factor, much of work can be handled from desk if necessary.	Good te knowl printi practi compo room experi dispos direct respor with c to pla produ

10. Copyholder.	Assistant to proof reader, reading the copy with proof reader for corrections.	Reading and assisting proof reader.	Good ed ability clearly accura Such knowl the tra will e him t compe assist reade
11. Proof reader.	Marking errors in proof sheets in composition, revising, etc.	Work seated at table or desk.	Good ed and th traini punct and E proof marks metho correc Techn knowl printi

12. Copy writer.	Writing or editing copy for ads, booklets, and other details connected with advertising and other work.	Desk work entirely.	Good ed partic Englis expre abilit analy servic write descri matte be fan with c kinds printi its possib
13. Assistant pressman, platen or cylinder.	Feeding press, assisting pressman in make-ready, oiling and washing up presses, handling stock, etc.	Constant movement of hands and arms; considerable standing and lifting of paper and rollers.	Must be feed t regist up col speed accur know put in keep presse washu assist pressr make- etc., c schoo educa

14. Pressman, platen or cylinder.	Making ready type and plates for printing, registering forms, mechanism and adjustments of presses, proper use of inks, mixing colors, printing qualities of papers.	This line of work requires movements of nearly all parts of body; involving walking, bending, stooping, constant use of fingers, arms, and hands.	Practica experi trade, educa artisti mecha ability traini proce make-
15. Press foreman.	Supervision of all work in press department, knowledge of time tickets and production records. Familiarity with the mechanical processes of the pressroom.	Requires walking and supervision in directing work, also work at desk in sitting posture.	Shop ex knowl mecha proce capac organ produ and d work. Educa suffici handl forms up rep etc.

16. Bindery worker.	Setting and feeding folding machines, hand folding, adjustment and operation of stitchers and other bindery machinery.	Operation of various machines requires use of hands, arms, and legs. Work requires both standing and sitting position.	Practica knowl binde machi binde opera techni knowl impos and m knowl specia opera such a corne punch indexi

17. Stockman and paper cutter.	Operation of cutting machine, figuring cuts, sizes of stock, etc. Supervision of stock, receiving, issuing, and storing.	Must be in sufficiently good physical condition to lift and handle paper, keep record on same and operate cutting machine.	Knowlec standa qualit kinds, weigh finish paper how t receiv and d stock, out ar handl requis and st room Be abl perfor mecha opera machi figure stock, books
18. Printing instructor.	The teaching of printing to apprentices or students of vocational classes. Proper functioning with trade in thorough training along practical lines.	Care and thoroughness more essential than speed, much work can be done seated. Requires use of hands and arms while standing at case or platen press.	Must be practi printe good in trac ability teach, thorou patien coope dispos

19. Cost clerk.	Keeping cost records, posting time tickets, compiling statements of cost and other clerical details.	This is clerical and mostly desk work which may be done standing, or sitting on stool or chair. Some walking.	Good ed quick accura figure prefer knowl printi opera
20. Layout man.	Making sketches and layouts, designating type and decorations, selecting paper and inks for jobs and ads.	Desk work entirely.	Knowlec type f compe paper color. traini drawi letteri princi desigr well i on reproc proce

21. Printing salesman.	Marketing the printers product, developing new business, acting as representative of the printer to the customer.	Must be able to exercise all the physical functions necessary to locate business and obtain it.	General knowl printi busine partic paper engra type f Shoul specia busine develo and ca afford printi servic custor
22. Estimator.	Figuring the amounts of material; processes, time required and other factors of cost necessary to furnish prices on printing, cooperating with sales and manufacturing departments.	Desk work. No physical exertion necessary, except involved in handling samples, cost records and figuring.	Practica experi printi busine inform about ink, e and o mater proce Know costs.

23. Superintendent and manager.	Management of operations of plant as a whole, determination of methods of manufacture, cooperative connection with all activities of the business.	Work at desk and in different portions of the plant, more mental than physical, but must be able to get around departments in control of operations.	Practica inforn regarc manu proce knowl cost accou and estima ability organ depar plan produ direct opera and d men.
24. Proprietor.	Directing the policy and operation of the business from the standpoint of ownership and profits.	Work may of course be adjusted to conditions. Desk work is essential in control of business if active part is taken in management.	This pre a kno of bus with specia in pri plant mana sales, produ organ

[43] Based on intensive technical training of 35 to 40 hours per week.

Practically all specialized positions in printing are properly based on a journeyman's experience. In the case

of men who have served only partial apprenticeships, or who have no training whatever an individual determination is necessary in each case as to the amount of special education, technical school training, and shop work required to equal the regular apprenticeship foundation.

The very elaborate artificial limbs now available may in many cases enable the individual to meet the physical requirements where the above statement would indicate a difficulty. Each such case must be decided on its merits.

COURSES OF STUDY

For requirements as to previous education and physical condition for each of these courses, see chart. The technical courses are organized to afford the following training. Provision is made for individual instruction where needed, and for classes in English, history of printing, trade arithmetic, and printing design directly connected with the trade work.

1. Hand Compositor (Straight Matter, Ad. and Job)

Explanation and use of materials and equipment used in the composing room, lay of cases, correct position at frame, straight composition, correcting, proof reader's marks, distribution, casting-off copy, styles of composition, setting bookwork, tabular matter, ad. and job work, design and layouts, and imposition.

2. Linotype Operator

The construction and operation of the several models of machines, cleaning and care of mats and machine, correct method of fingering and acquiring speed, practice on styles of composition. Proper condition of metal, machine changes, and

adjustments.

3. Linotype Machinist

Construction and operation of machine, care of mats and machine, cleaning, oiling, overhauling, tearing down machine and assembling, condition of metal, detecting trouble, adjustments. Repair work, care and system of handling sorts and supplies.

4. Linotype Machinist Operator

Construction and operation of machine, cleaning mats and machine. Correct method of fingering and acquiring speed. Correct condition of metal, oiling, overhauling and assembling, changing parts.

5. Monotype Keyboard Operator

(Monotype is in two units, keyboard and caster.)

Keyboard.—Theory and operation of keyboard, cleaning and care of keyboard, work of keyboard and its relation to the caster, reading perforations, changing keyboard to various layouts, adjustments, practice on styles of composition. Practice for speed.

6. Monotype Machinist

Keyboard.—Theory and construction of keyboard, care, adjustment, repairs.

Caster.—Parts of machine, use of micrometer, sizes and handling of type, machine changes, casting of display type, borders, slugs and rules, keeping metal in proper condition, care of machine, adjustments, and repairs.

7. Monotype Combination

Keyboard.—Theory and construction of keyboard cleaning and care, work of keyboard and its relation

to caster, reading perforations, changing to various layouts, adjustments.

Caster.—Parts of machine, use of micrometer, type sizes, machine changes, casting display type borders, slug and rule attachments, conditions of metal, care of machine, oiling and adjustments.

8. Stoneman

Handling of type and forms, locking up forms, imposition for hand and machine folding, study of various folds, kinds of folding machines, margins, sizes of paper, patent blocks and bases, lockups for register and color.

9. Composing Room Foreman

Composition of straight matter and display, classes of composition, methods of handling, book, tabular, and commercial work by hand and machine, make-up, illustrations and plates, layouts, design and color, paper sizes, kinds and uses, department forms of record, department systems, selection and arrangement of equipment.

10. Copy Holder

Technical terms used in printing, sizes and kinds of type, office style, reading reprint and manuscript copy, proof reader's marks, punctuation, abbreviations, spelling, division of words, reference marks, technical copy, tabular copy. (Special instruction in English of an informational character.)

11. Proof Reader

Details of the course include book, magazine, and newspaper styles, proof reader's marks, technical terms, orthography, book and magazine make-up,

editing copy, proof room rules and procedure, reading, correcting, and revising proofs.

12. Copy Writer

Proof reader's marks, punctuation, capitalization, division of words, abbreviations, construction of sentences, paragraphing, writing advertising copy and sales literature, planning and layout of composition, making up dummies, styles of typography, editing copy, analyzing problems of publicity and devising advertising service.

13. Assistant Pressman

Feeding stock, uniformity of color, proper handling of sheets after printing, keeping press in good condition, setting rollers and fountain, principles of make-ready on type and plates.

14. Pressman

Cleanliness and careful use of materials, theory and construction of various types of machines, setting impression screws, bearers, rollers, and other adjustments, registering forms, care of rollers, paper, ink, make-ready and running different grades of work, including half-tones in black and color, process plates, etc. Department details.

15. Pressroom Foreman

Makes of presses, presses best suited for work on hand, adjustments necessary to keep in good running order, economical ways of running, various folds (hand and machine), inks, paper, color, planning work, production forms, and department management. Arrangement of equipment. Pressroom accessories.

16. Bindery Worker

Receiving and handling printed sheets, knowledge of paper, counting, straightening, cutting, folding (hand and machine), gathering, collating, stitching, trimming, punching, numbering, padding, wrapping. (This course deals only with the simpler phases of bindery work.)

17. Stockman and Paper Cutter

Study of various kinds of paper, tests, sizes and weights, economical methods of cutting stock, equivalent weights, methods of figuring stock; care, oiling, cleanliness, and operation of cutters. Stock handling system, perpetual inventory and stock record forms.

18. Printing Instructor

Work in typesetting, locking forms, make-ready, and feeding on job presses (both theory and practical work), instruction methods and outlines of instruction for classes, trade English, design and arithmetic, visits to printing and allied plants, training as a teacher.

19. Cost Clerk

(Based on United Typothetæ of America Standard Cost Finding System.)

Analysis and explanation of cost principles and their application, stockroom systems, time tickets, job records, and operating forms for all departments, recapitulation of plant details of expense and output, compiling statement of cost of production.

20. Layout Man

Principles of design, type faces, color, paper, making layouts of work for composition, and producing harmonious combinations of stock, illustrations color, and typography; specifications and methods of increasing production, acquiring speed on layouts.

21. Printing Salesman

(Based upon United Typothetæ of America Standard Salesmanship Course.)

Qualifications of salesman, the printer's product and market, specialized manufacturing processes, the sales department, customer and business development. Creating business, technical knowledge required, successful salesmanship, practical sales demonstrations in specialized, manufacturing, general, and merchandise printing.

22. Estimator

(Based upon United Typothetæ of America Standard Estimating Course.)

Details of estimating, including specifications, estimate blanks, figuring stock, artwork, plates, kinds of composition, imposition, presswork (platen and cylinder), and bindery details, copy, ink, engraving, plates, trade customs. Practice in making out specifications, estimating work, and submitting proposals.

23. Superintendent and Manager

Estimating, cost finding, forms for composing room, pressroom, stockroom, bindery, trade conditions, processes of composition, presswork,

bindery, paper, ink, color, production methods, planning work, organization, and management

24. Proprietor

Estimating, cost finding, study of composition, paper, ink, plates and engravings, composing room, pressroom, bindery, condition of printing trades, business development, visits to allied plants, plant organization and management, sales values.

PLAN No. 1238. THE GARMENT TRADES

This monograph was prepared by May H. Pope, under direction of Charles H. Winslow, Chief of the Research Division of the Federal Board for Vocational Education. Acknowledgment is due to Dr. John Cummings of the Research Division for editorial assistance.

A place to sleep, something to eat, and something to wear constitute the primary needs for us all. To satisfy the need for clothing a group of great American industries has developed—great in the value of their product as well as in the number of their workers.

From Hand Work to Machine Operation

It would be interesting to trace the development of the clothing industries out of the common household trade, using crude methods in introducing homemade garments, the materials for which were grown and spun and woven by the family, through the hand-sewing days and the various stages of foot-power machines to the present-day methods of electrically driven machines, adjusted to do most accurate work with special devices for all sorts of processes.

Providing a Prime Necessity

On the whole it may be conceded that these industries compare only fairly with others as regards prevailing conditions of labor, but as regards benefits conferred upon people generally, in placing within easy reach of all a prime necessity of life, the clothing industries rank very high.

Seasonal Character of the Industries

Employment in the garment trades is highly seasonal and is influenced by certain causes beyond control of the manufacturer. This irregularity of work is often a real hardship for employees. The busy seasons run from January through the spring months, and from August through the fall months. Some manufacturers, however, manage to keep workers busy 11 months during the year. Efforts have been made to equalize the work, seasonally, but nothing has been definitely accomplished so far. There is much greater irregularity of employment in the women's garment trades than in the men's. It often occurs that only one-half of those employed in the busy season in making women's clothes are kept at work during the dull seasons.

Factors which influence this irregularity in employment are seasonal changes, changes in style, degree of specialization required, quality of product, and method of production. In the men's garment industries, manufacturers often utilize the dull season for making up standard goods, such as blue serge suits, but makers of women's clothes find style such a variable factor that they dare not make up stock much in advance of the season. Employment is more regularly distributed in the industries producing waists, skirts, and under muslins than it is in the cloak and suit industry.

An Immigrant's Trade

Garment making has long been known as an immigrant's trade. Before the war it absorbed annually approximately 10,000 immigrants. Irish, Germans, and Italians have all worked in considerable numbers in the clothing industries, but at present the Jews predominate, not only among the workers, but as well among those exercising controlling power.

Where the Work is Done

The work may be carried on, it has been said, in any place "where there are a half dozen machines and an ironing board." But in some places large clothing factories have been built, though much of the work is done in medium-sized shops.

The clothing industries differ from other manufacturing industries in several particulars. They are highly localized. More than half of all the clothing manufactured in the United States is made in New York City. Choice of a home is, therefore, limited for the young man who enters any one of these industries. Other cities in which the industries flourish are Philadelphia, Cleveland, Baltimore, Boston, Rochester, Chicago, and Cincinnati. Because of the congestion in New York some concerns have made attempts to move away from such crowded quarters, but the character of the industries requires just those things which are not found in rural districts. It is for one thing important to be near the labor supply and near the markets, both for buying materials and for selling goods. The prestige accredited to New York manufacturers as to style is another factor holding concerns in that city.

Two Types of Employers

There are two types of employers in the clothing industries, namely, the manufacturer and the contractor or submanufacturer. Many factories, especially those where the high-grade garments are made, have their own “inside shops” where all work is done under supervision of the manufacturer or his foremen.

But there is a tendency to increase the contracting system, particularly in the making of cheaper garments. When the contracting method is employed the manufacturer or jobber purchases the material and turns it over to the submanufacturer, who has the garments made in his small shop. The manufacturer who gives his work out to contractors avoids the necessity for maintaining a large factory, and for keeping a great number of men on his pay roll. He is also relieved of the responsibility of dealing with labor, the contractor being in direct contact with the workers. On the other hand, the contractor obtains materials from the jobber, which otherwise he would not be financially able to purchase. In the contract system there is complete separation of the commercial processes from the technical. The manufacturer is responsible for the purchase of materials and for securing and filling orders for the trade, but all technical processes in the making of garments are left to the contractor, who is entirely responsible for the work. The contractor not only supervises the workers, but often works with them. He is no shirker.

What the Workers Produce

All sorts of wearing apparel, from children’s rompers to opera cloaks, make up the product of these industries, which are naturally divided into two classes—those making men’s garments and those

making women's. The two groups of industries are sharply differentiated, and in each group processes are highly specialized.

Men's clothes are made in three separate types of shops—the coat shop, the pants shop, and the vest shop.

Women's garment trades fall generally into the following groups:

(1) Custom tailoring.
(2) Manufacture of cloaks, suits, and skirts.
(3) Manufacture of dresses and waists.
(4) Manufacture of misses' and children's dresses.
(5) Manufacture of muslin underwear.
(6) Manufacture of house dresses, kimonos, etc.

About 77 per cent of the workers in the cloak, suit, and skirt industry are men; a smaller percentage being found in the other groups.

Garments made by custom tailors are usually of the highest grade in women's clothing, and include cloaks, suits, opera cloaks, evening gowns, waists, and dresses. These tailors make up garments on individual orders, allowing customers to select materials and designs.

Manufacturers in the cloak, suit, and skirt industry make a number of models, but their product is usually limited to cloaks, suits, skirts, one-piece woolen or worsted dresses, and linen suits and skirts. Dresses and waists cover a wide range of many styles for evening wear, street wear, and sporting uses. Under muslins, misses' and children's dresses, house dresses and kimonos, dressing sacques and aprons are made in separate establishments largely by women workers.

What Men do in the Clothing Industries

Though many more women are employed in the garment trades than formerly, still the large body of workers are men. Men are employed for processes in which greater endurance or speed is required. In high-class dressmaking men work on dresses made of heavy materials, while women make those of lighter weight. Cloaks and suits are made by men, while waists, under muslins, and children's clothes are made by women. An equal number of men and women are skirt operators, while in buttonhole making the number of men operators exceeds the number of women.

Strange as it may seem, men form the larger percentage of those who work on women's clothes, and women make up a majority of those who work on men's clothes. There is less routine in making women's garments, and it has been suggested that this may account for the preference given such work by men.

It has been said that "mechanical power and division of labor have impersonalized industry," and this is clearly true of the garment industries as regards their products, for except in the case of the custom tailors a worker can not think of any finished product as distinctly his. Any given garment is the joint product of many persons.

Formerly a whole garment was made by one man, who necessarily must be a skilled tailor. Now many persons may have a part in the making of a suit of clothes. This division of labor grew out of the need for different degrees of skill in the different processes. By specialization a large product may be produced by relatively unskilled labor.

The work may be divided into three general systems: Teamwork, in which the tailor, like the

contractor, hires his workers and superintends the work; piece operating, in which all of one kind of work is done by one worker on the same garment; and section work, in which each operator does only that one process allotted to him.

In the cheap grade of women's clothing this division of labor is very marked. One man works only on belts, another makes cuffs, another collars, and so on. In the better grade of clothes the garment after it has been cut is given to the tailor, who with his helper completes all the work and turns it over to the presser. In the expensive shops the tailor makes the entire garment, doing even his own cutting and pressing.

While no single operation can be said to be given over entirely to one sex, the cutting and pressing is done almost exclusively by men. Men who work in the garment trades may be generally divided into designers, sample makers, cutters, machine operators, hand sewers, pressers, and examiners. In the following paragraphs the brief descriptions given of these principal occupations have been summarized from Bulletin No. 183 of the Bureau of Labor Statistics, and from the bureau's publication "Descriptions of Occupations."

PLAN No. 1239. DESIGNING

In large plants there is often a man separately charged with the designing of garments. He must create the designs, make the models, and choose the materials for the designs. His chief responsibility is choosing the materials for the style of garment he wishes to produce and co-operating with the sales department in producing designs which will sell and also be economical to cut. This is a high-grade

position for a man with artistic ability. Only men are employed.

Qualifications include high-grade intelligence and a knowledge of drafting. Although designing is a question largely of artistic sense, the designer should have had some experience in connection with the making of garments, and especially with the laying out of patterns and the cutting of cloth.

PLAN No. 1240. CUTTING

In all of these industries cutting is done almost exclusively by men, and consists of marking, laying up, and cutting textiles in accordance with specific patterns. It is the most skillful and responsible of all the occupations for the reason that upon the quality of the cutting depends not only the appearance of the garment, but also, to a considerable extent, its cost, inasmuch as the ability of the cutter to lay out economically his pattern determines the amount of cloth that is consumed. Cutting is the only occupation of the garment trades in which an apprenticeship is required.

Considerable intelligence, accuracy, and a steady hand, with ordinary strength is required for the work.

PLAN No. 1241. SAMPLE MAKING

Sample making is done by *men* and *women*, and consists of making samples of new garments from models furnished by the designer. This work calls for tailors (males, usually, in the cloak and suit industry) and operators (usually females, in the other industries) of rather exceptional ability and skill. Sample making occupies a small number of workers

for a short time at the beginning of each season, the makers of samples being recruited temporarily from among the more expert tailors and operators.

The sample maker must have ordinary strength and ability, and must be an all-round tailor.

PLAN No. 1242. OPERATING

Operating is done by *men* and *women*, and consists of sewing the parts of a garment together, by machine, as they come from the cutting department. In most instances it is one of the least-skilled occupations, manned to a considerable extent by inexperienced, recently-arrived immigrants. Except in the cloak and suit industry, where the greater part of the operating is done by men, the operators in these industries are predominantly female.

Speed and manual dexterity are essential. The operator must be able to stand the nervous strain of the noisy machine and of intense application to rapid work.

PLAN No. 1243. BASTING

In the cloak, suit, and skirt industry, and in the dress and waist industry, basting is done mostly by *females*, and consists of roughly sewing together by hand ("basting") the partly finished garment, for the purpose of placing it, at times, on a dummy figure or living model, so that careful examination may be made by the tailor or sample maker of the character of the work at various stages of manufacture. In the cloak and suit industry approximately two-thirds and in the other industries almost all of these workers are women.

PLAN No. 1244. PRESSING

Pressing is done by *males* and *females* and consists of pressing out with a hot press or iron the seams and various parts of a garment after they have been put together by the operators—except in the case of the part presser, who is required to press out pieces, such as sleeves, pockets, collars, cuffs, and belts. The under presser presses the garment before it is lined, and the upper presser, the most skilled of the three, presses the finished garment, shaping and molding it, to some extent, into the finished product. In the cloak and suit industry, where the irons used, as well as the textiles, are rather heavy, pressing is done almost exclusively by men.

More than average strength is required for pressing and ability to stand while at work; also ability to handle a pressing machine.

EXAMINING

The examiner looks over the garment in the process of manufacturing or when it is completed, to discover defects and ascertain whether the shape is correct. This is an important position, as it entails considerable responsibility for the quality of the garments manufactured. *Men* and *women* both are employed.

The examiner must be an experienced operator on the garments, and should have had enough experience at examining to know the various styles and designs.

HOW MEN ARE PAID

In the clothing industries men are paid either by time or by piece. The difference in these two systems of payment amounts to very little. Under the time system wages remain unchanged from day to day

even though the product varies, and under the piece system as the product increases wages increase proportionally. But the minimum and maximum amount of work insisted upon in one instance by the employees and in the other by the employers make the actual difference in wages received under the two systems almost negligible. The tendency is to base all wages upon time, as this does away in some degree with the dangers of speeding up and with the difficulties of adjustment.

The quantity and quality of the work is so important in the garment trades that it is characterized by a range of wages rather than by a fixed rate. The highest paid men are the designers, who make from $50 a week in the smaller shops to $12,000 a year in the shops of custom tailors. Foremen are paid $25 to $75 a week. Cutters receive wages ranging from $20 to $50 a week. The average cutter receives $35 a week. Pressers make about $33 a week, and machine operators $25, though some shops report wages up to $60 a week for some of their operators, which means much speeding up and overtime work.

Workers on women's clothes are better paid than those who work on men's.

How Men Are Trained

Not much attention has been given to the training of garment workers, though many employers are realizing the necessity for the workers to have a knowledge of English, an understanding of the fundamental principles of arithmetic, and some industrial information.

Factory schools have been organized in some instances and workers are allowed to take some of their working time to attend the classes.

Adaptability, general intelligence, skill, precision, and speed are important in the making of a good workman.

The designers, who have been called the “autocrats of the trade,” need, in addition to a native gift of creative art, some knowledge of the technical processes of cutting and sewing, and a course in drafting. Schools of design give courses, but the majority of designers are foreigners, and but few Americans enter this trade.

Cutters are sometimes trained in schools organized for the purpose, though often they learn as apprentices, paying from $50 to $150 for the instruction. From 6 to 20 weeks is the time usually required to learn the trade.

Pressers work a few weeks on seams, and after about a year become responsible pressers on high-grade garments.

The only training necessary for a machine operator in factory work is instruction in power sewing-machine operating. Training for the majority of the processes is given in the shop, and the length of time required depends in a great measure upon the ability of the worker to learn.

The requirements for acceptable workers in the clothing industries may be summed up as follows: Ability to run a power sewing machine, general intelligence sufficient to understand simple directions, and health and strength to work full time for six days a week.

Conditions of Work

Overcrowding, overwork, and underfeeding are often evidenced by the pallor of the operatives; and the undue prevalence of tuberculosis, neurasthenia, and anemia among them clearly show that the

constrained position, exposure to dust and fumes from leaky gas tubing, insufficient lighting facilities and ventilation found in many of the smaller shops are conditions yet to be remedied before the garment industries can receive an unqualified recommendation as suitable for a disabled man.

However, men in the clothing industry work under more favorable conditions than formerly. The “sweat shop” is a thing of the past. The efforts of joint boards of sanitary control in New York City have, by educating both employers and employees, done much toward mitigating the intolerable conditions which existed in the early days. Tenement-house regulations and State laws of inspection have proved beneficial and have abolished many evils of the old shop. Laws prohibiting isolated home work have forced the contractors to secure better outside shops. Home shops now must not be connected with living quarters, and consequently they are often found in the upper floors of warehouses or factories, roomy and well ventilated. Factories where the better grade of work is done have their own “inside shops” built for the purpose and therefore more satisfactory. The workers themselves are often to blame for the bad air in their workroom, because of their careless waste of gas from the pressing iron or their fear of open windows.

The shortening of the working day also signifies progress in the clothing industries, and the welfare of the worker is now given fair consideration in many instances. Some factories plan the routing of work with a view to relaxation of the worker, and some require operators to get materials from a near-by table, or to go to the supply room for such things as thread, buttons, and trimmings. Even these small practices give relief from the fatigue of sitting

constantly at a machine.

Opportunities for the Disabled

Occupations in garment making are largely nonhazardous. Handling heavy rolls of material, climbing ladders to hang shrunken goods to dry, testing heating apparatus for pressing irons, managing the knives of cutting machines, are all accompanied by some danger, but accidents as serious may occur in the daily occupations of any home.

Yet it may fairly be said that the clothing industries offer only small inducements to the handicapped. The man who has lost a leg would hardly choose to be a cutter, a presser, or an examiner, since much standing is required of these workers. Nevertheless, a well-fitting artificial leg might enable him to do any of this work successfully. Machine operating, a sitting-down job, might appeal to him. A man with both legs amputated could run a power machine. A man with an arm gone or with eyesight impaired would not find employment in the clothing industries suitable, for the use of both hands and good eyesight are essentials in the trades generally.

The lint which constantly flies in the air of the shop is bad for the lungs, and catarrhal conditions of the nose and throat, as well as tuberculosis, are prevalent among the workers. Nevertheless, one who understands the difficulties and the drawbacks of the garment trades, as well as its advantages, makes the following statement:

“I do not think that the clothing trade per se is injurious except for the possible slight dust and the stooping posture. I have also no doubt that the trade could be made so hygienic as to enable a post-

tuberculous person to work a limited number of hours. There are, of course, some processes, like pressing, which it may not be advisable for post-tuberculous persons to engage in. Most of the work in clothing shops consists in the operator guiding various clothing material under the needle of the machine. This by itself should not be injurious. There are also other processes, like sewing on buttons, either by machine or by hand, which have very few harmful features in them.

"I should say that soldiers whose legs are not functioning could well be taught to work on electrically-driven machines with benefit to themselves and to the industry."

Neurasthenics should avoid employment in these trades, as nervous disorders are intensified by the noise, close confinement, and intense application which the work involves. Pressers suffer from flat foot because of their constant standing, but otherwise they are quite robust, which is an indication that this work is not too severe for men who are physically below par.

Good Farmers Should not Try to Become Tailors

In most cases the returned soldier whose disability necessitates a change of employment will, in choosing a new occupation, turn from the clothing industries as unsuitable for him. The needle is not an attractive tool to men unless they have been raised in the atmosphere of the tailor shop. It is with no desire to make tailors of farmers, sewing-machine operators of truck drivers, that opportunities in the clothing industries are here described. If a man has other talents, by all means let him cultivate them and leave the garment trades to those qualified for those trades

by experience and aptitude.

There has been improvement in working conditions in recent years. This has resulted in part from superior organization within the industries themselves, better adjustment, increase in product, and improved machinery and skill, all of which have led to increased wages and better living conditions for the workers.

The small amount of capital required to organize the business attracts many, but success can come only if good judgment is exercised.

As has been noted, these industries attract the immigrant worker largely, and the Jew looks upon entrance into some one of the garment trades as a first step on the way to managing a small shop of his own.

Class of work.	Character of work.	Hours (weekly).	Wages (weekly).	Requi a qualifi
Custom tailors.	Making garments to order.	...	...	High-g intel knov of cu desig oper knov of m comi scho educ

Designers.	Create designs; select materials; make models; figures yardage and trimmings; estimates amount of material needed.	...	$50 up to $12,000 a year.	Good judg artis taste grad intel know of di expe in cu and garn mak com scho educ
Cutters.	Cutting of materials for garments; directing the spreading, marking, and cutting; using material economically; knowledge of fabrics.	44	$20 to $50, averaging $35.	Above intel accu stea hanc ordi stren abili stan expe as sp mark thre as appr com scho educ

Sample makers.	Making samples of new models.	44	$30 to $60.	All-rou tailo knov of cu oper fittir ordi strer abili
Foremen.	Superintendent, supplying work, quality of work; quantity of work, training workers, keeping machines in repair.	44	$25 to $75.	Initiati exec abili mecl abili knov of pr expe as cu fitte ordi strer abili com scho educ

Machine operators.	Sewing parts together by machines; hemstitching; lace running; tucking; making buttonholes; button sewing.	44	$25.	Ordina intel adap spee man dext abili stan nerv strai nois mac abili run mac know of E
Handworkers (very few men are employed).	Rough sewing; basting, fine sewing; finishing.	44	$25 to $27.	Ability plain sewi thre need to ti rapi take stitc faste deft finge good eyes stea nerv

Pressers.	Using hot irons (or machines) for pressing seams and parts of garments, as well as the whole garment.	44	$33.	Averag intel abili hanc pres: mac mor aver strer
Examiners.	Inspecting the finished garment as to workmanship and shape.	44	$25.	Skillfu sciss expe as o intel relia knov of st abili dete worl com scho educ

For the unskilled worker the garment trades offer fair wages, though wages are not quite as high as in other similar trades. Chance of promotion is small, and the working week is 44 hours. Serious disabilities are great handicaps in the garment trades.

Previous experience, a working knowledge of the trade, and skill in some of the better processes would be the only legitimate reasons for offering the opportunities of the garment-making industries to a returned disabled soldier.

PLAN No. 1245. PODIATRY AS A VOCATION

The wise man will not come to a hurried conclusion in deciding his life work. A false start in life is frequently the undoing of an individual because misapplied ambition often eventuates in indifference. Therefore, it is well to weigh the pros and cons of so momentous a consideration, and the following is presented in the hope that it may prove of service in studying one phase of activities in that connection:

What is Podiatry?

Podiatry means the care of the human foot in health and in disease. The intelligent practice of podiatry constitutes the practitioner a specialist in this branch of medicine.

Specialists in Medicine

In recent years those educated and equipped as doctors of medicine, in many instances, particularly in the larger cities, have devoted themselves to some special branch, and so it is that we have laryngologists (throat), otologists (ear), urologists (male organs of generation), gynaecologists (female organs of generation), oculists (eye), orthopaedists (deformities), odontologists (teeth), and many others who specialize in some one particular field of medicine. Strange as it may seem, physicians, other than orthopædists, have never specialized in foot lesions, and the work of the latter in that field has been merely incidental.

The Genesis of Chiropody

In consequence, a group of non-medical

practitioners, styling themselves chiropodists, assumed to care for the foot woes of the public. They claimed no scientific knowledge of the feet, but announced their ability, acquired in the school of experience, to care for the minor foot-ills of the public which were largely induced by the wearing of badly constructed foot-gear. These practitioners were primarily usually itinerants. They went about from town to town carrying their kits, which contained knives and medications which they and their predecessors had found useful in plying their craft. They flourished in England in the eighteenth and in the nineteenth centuries, and soon after our government was founded they began to appear in the larger centers of the United States.

The knowledge which they acquired was imparted to their apprentices, who were usually their offspring, and so this practice was largely handed down from father to son.

Chiropody Development

In 1895 they had grown so numerous in New York City that they organized a State Society and the State legislature chartered their organization and gave them power to license others who wished to practice similarly. Many other states gradually enacted like laws.

In 1912 the Pedic Society of the State of New York again went to the legislature and secured the passage of a law which required academic qualifications of students of chiropody and established a standard for chiropody teaching institutions.

The law also provided that no person should practice chiropody after that date, unless previously licensed, who failed to pass a state chiropody licensing examination conducted by the State Board

of Medical Examiners. Since then twenty-three other commonwealths in the United States have passed similar laws.

Recently the term podiatry was made synonymous with chiropody in several states. Thus, from a trade, chiropody has been transformed into a scientific branch of medicine.

Schools and Their Curricula

The teaching schools have faculties made up of doctors of medicine, chemists and podiatrists. The outlined courses of study include instruction in the following topics: Anatomy, Histology, Chemistry, Physiology, Hygiene, Materia Medica, Therapeutics, Pharmacy, Surgery, Bacteriology, Pathology, Dermatology, The Principles of Medicine, Ethics, The History of Podiatry, Foot-Gear, Orthopedics, Massage, Electro-Therapeutics, Posture Studies and X-Ray work.

No man should take up a career in podiatry unless he is prepared to devote all of his energy to his studies because the work accomplished in the course, as it is at present carried on, crowds the equivalent of two years at a medical school into the one year of podiatry. This means unusual application because the work must be accomplished or the student fails to graduate.

Students

There are three classes of students: Regular, Special and Post-graduate.

Regular Students must have academic qualifications in keeping with the standards adopted by the various state education authorities. In most of the states two years of high school work, or its equivalent in academic counts, are pre-requisites. This standard is

being advanced each year until all regular students in all schools will have to have a minimum education of graduation from a high school or its equivalent in academic counts.

Special Students are admitted to these teaching schools without academic qualifications. They may take the full course, but cannot graduate from the schools which they attend, nor can they practice in any state where laws regulating the practise of chiropody are on the Statute books. Provision has been made to educate these special students so that those contemplating practice in the states and countries where there are at present no laws governing chiropody may secure the knowledge imparted in the schools. It is fair to assume that within the next five years every state in the United States will have a law governing chiropody practice whereupon those from foreign countries only will be admitted to the course as special students.

Post-graduate Students. Practitioners of medicine or of chiropody, who have been reputably engaged as such for at least six months, and who wish to acquire the knowledge imparted to the regular students so that they may become better fitted for their vocations, are eligible as post-graduate students.

Duration of Course

In most of the established schools of chiropody the day course is of from eight to nine months' duration. The hours are as follows: from 9 A. M. to 12, from 1 to 5 P. M., and during the last three months of the course, additionally, from 7:30 to 10 P. M.

The night course is of two years' duration, three hours each night for eight months in each year.

Degrees

Graduates of the various schools receive titles and degrees. Some of the schools give the degree of D.S.C. (Doctor of Surgical Chiropody); others the title of M.Cp. (Master of Chiropody).

License to Practice

Before admission to practice, graduates must pass an examination conducted by the State Board of Medical Examiners in the state in which they desire to engage in practice. The conditions as to admission for licensing examination vary in the different states, as there is at present no reciprocity in chiropody licensure.

Requisites for Success

The requisites for success in podiatry study and practice are not trifling. Primarily the student should have the feeling that he is engaging in a calling in which he can be of service to his fellowman. The draft and the war itself have proved that the foot has been a very much neglected factor in the physical care of humankind. Draft statistics show a large percentage of rejections because of foot defects, and the casual lists in actual warfare are filled with the names of those who have fallen out of the ranks because of impaired locomotion.

A large part of podiatry instruction is devoted to the prevention of foot lesions, so that the child from its first step will be safeguarded against the conditions which have led to the creation of such a large percentage of foot cripples. This in itself is a humanitarian task and those contemplating entering upon a career in podiatry should be sympathetic with that particular and all-important phase of the work. Again, the podiatrist in his daily practice is called upon to relieve suffering and that aspect of his

activities should be a heartening influence to the developing practitioner as it will prove a consolation to him when once he is licensed to pursue his calling.

Desirability of Mechanical Knowledge

As much of the actual practice, both preventive and curative, has to do with surgical endeavors, the prospective student should have an aptitude for mechanics.

Physical Qualifications

The practice of medicine presumes a vigorous body as well as a virile mind, and it is best for every man in every life engagement to be so equipped; but those whose physical condition is impaired so that locomotion and other normal functions are impeded can readily engage in podiatry because most of the work is carried on in the office and can be done while seated and during limited hours.

Possible Assets

Those who have studied chemistry or pharmacy or have been associated with hospital work will find themselves possessing valuable assets in the study and in the practice of podiatry.

Choice of Location

There are failures and successes in every field, professional and otherwise. It is, however, axiomatic that a podiatrist who knows his work and applies himself in the proper field will succeed as a breadwinner. The selection of a location is of the greatest importance. Graduates of the various schools, in the main, have located in the larger cities. This is frequently an error because competition with

those already engaged in practice who have a standing and a following is thus inevitable and the advance of the younger practitioner is consequently curtailed.

Those graduates who have located in cities of from 25,000 to 100,000 inhabitants have invariably succeeded from the start. The most successful of these have been those who have sought out the practicing physicians and have convinced them that they are not mere "corn cutters," but scientific practitioners of a legitimate branch of medicine.

The Income From Podiatry Practice

It is current belief that the average podiatrist enjoys a greater income than the average physician. There are no statistics available to confirm or to disprove this conclusion. In order that some idea on this point may be gained, the incomes of some of the members of the first graduating class of one of the podiatry schools of prominence are here given:

No.	1st year	2nd year	3rd year	4th year	5 y
1	$ 2,000	$ 3,000	$ 4,000	$ 4,000	$ 5,0
2	1,000	1,500	2,000	2,500	3,0
3	1,300	1,800	2,500	4,000	4,8
4	800	2,000	3,000	4,000	4,7
5	1,200	1,800	2,000	3,000	3,4
[44] 6	800	1,200	1,700	2,300	2,8
[44] 7	800	1,000	1,400	1,800	2,8

[44] A woman graduate.

Physicians' Co-operation

Once the co-operation of the physician is secured, success is assured. Some practitioners in towns of

from 15,000 to 35,000 have in three years gained sufficient practise through the aid of medical practitioners to make their incomes from $2,000 to $5,000.

The Personal Equation

The personal equation is a great factor in this as in all other life spheres. The likeable man or woman with a modicum of other attributes will invariably succeed. When such a person possesses qualities which, when applied, prove helpful to his fellows, the limit of his earning capacity can only be measured by the hours he can serve and the population of the center in which he carries on his practice.

Podiatry is Ethical

Podiatry, as taught to-day, frowns down upon all unethical methods and disavows the charlatan. Its exponents and its loyal followers are keen as to the need for scrupulous care in the education of its students and the conduct of its practitioners. It strives to be classified as a dignified branch of medicine and fosters a literature that is strictly scientific.

Podiatry Organizations

Podiatry has a national organization whose purposes are for the benefit of the profession, based upon the good which they can accomplish in serving the public. It has a state society in almost every commonwealth in the United States, and local societies flourish in every populous city.

Professional Advancement

The scope of the podiatrists' professional labors is continuously being enlarged by legal enactments and, where deserved, medical practitioners recommend them to their patients as foot specialists. In a number of well-known hospitals, podiatrists are attached to the medical staff, thus proving that physicians in groups are beginning to recognize the need for the services which these practitioners supply. In another year the course of study in most of the schools will be prolonged to two years and ultimately the specialist in foot lesions will be a licensed practitioner of medicine, equipped as is every other specialist in medicine.

Is There a Demand for Podiatrists?

In all of the large cities of the United States and of Europe chiropodists have been in demand for the past century. The need for foot-care is daily becoming more pronounced. Now that physicians can and do recommend their patients to chiropodists who have been scientifically trained in their calling, the need for such practitioners is rapidly growing.

The public is growing to recognize the need of both preventive care and curative treatment of the minor ills of this part of the anatomy and the properly educated, well equipped, efficient podiatrist is in great demand.

There is no scientific school for educating such practitioners in the world outside the United States.[45] In consequence, hundreds of such practitioners would also find need for their services along the lane of European travel, once it is restored. South American capitals, with large populations of foreigners, would likewise prove splendid fields for podiatrists.

[45] English practitioners laid the foundation

for a School of Podiatry in 1914, but owing to the war with the Central powers, their efforts have been temporarily checked.

How Long Does it Take to Establish a Practice?

The answer to this natural inquiry depends largely upon the place of location, the experience and the personality of the practitioner. If one locates in a city where he is the only scientifically equipped podiatrist, assuming that he is properly equipped, recognition by both medical men and by the laity should promptly be accorded and that in turn would mean success.

If a graduate locates in a metropolitan city unheralded and unsung, his advance may be exceedingly slow and like the general practitioner of medicine, similarly situated, it may take considerable time for him to make a name and a career for himself.

If the experience of the new podiatrist has been augmented by application in a clinic or in the service of an older practitioner as an assistant (and such assistants earn from $25 to $50 per week in wages), such experience is largely helpful, not only in inspiring confidence, but in securing results. If the personality of a practitioner is such as to prove repellent to his patients, his path will be a difficult one. If, on the other hand, he is of pleasing personality, he will make friends and will increase his list of patients.

Where Podiatry (Chiropody) is Regulated by Law?

The following commonwealths have passed laws regulating the practice of chiropody (podiatry) and

those desiring specific information as to the details of the same in any given state should address the person whose name follows the state, as here recorded:

California—Chas. B. Pinkham, M.D., 125 Stockton St., San Francisco.

Colorado—David A. Strickley, M.D., 612 Empire Bldg., Denver.

Connecticut—Chas. A. Tuttle, M.D., New Haven.

District of Columbia—Commissioner of Education.

Illinois—C. St. Clair Drake, M.D., Springfield.

Louisiana—E. L. Leckert, M.D., 716 Macheca Bldg., New Orleans.

Maryland—J. P. McScott, M.D., Hagerstown.

Massachusetts—Walter P. Bowers, State House, Boston.

Michigan—B. D. Harrison, M.D., Detroit.

Minnesota—Thomas McDavitt, M.D., St. Paul.

Nebraska—H. B. Cummings, M.D., State Board of Health, Seward.

New Hampshire—Henry C. Morrison, M.D., Concord.

New Jersey—Alex. McAllister, Trenton.

New York—State Education Dept., Albany.

North Carolina—B. K. Hayes, M.D., Oxford.

Ohio—George H. Matson, M.D., Columbus.

Pennsylvania—N. C. Shaeffer, M.D., Harrisburg.

Rhode Island—Gardner T. Swarts, M.D., State House, Providence.

Vermont—W. Scott Nay, M.D., Underhill.

Virginia—J. N. Barney, M.D., Fredericksburg.

Washington—C. N. Suttner, M.D., Walla Walla.

West Virginia—S. L. Jeptson, M.D., Wheeling.

Wisconsin—J. M. Beffel, M.D., Milwaukee.

Podiatry Teaching Institutions

The following are the Schools of Chiropody (Podiatry), in the order of their creation:

The First Institute of Podiatry—213-17 W. 125th St., New York City.

Chiropody Dept., Temple University—18 Buttonwood St., Philadelphia, Pa.

California College of Chiropody—908 McAllister St., San Francisco.

Illinois College of Chiropody—1321 N. Clark St., Chicago, Ill.

Ohio College of Chiropody—Cleveland, O.

Chiropody Dept., University of Massachusetts—Fourth and Otis Sts., Cambridge, Mass.

Catalogs of each of the above can be had on writing to the addresses given.

The Minnesota College of Chiropody is making ready to open up its doors October next. Information as to its plans and purposes can be secured by addressing Ralph St. John Perry, M.D., Pilsbury Bldg., Minneapolis, Minn.

PLAN No. 1246. FLOUR MILLING

ACKNOWLEDGMENT

This monograph was prepared by J. A. LeClerc, chemist in charge of the laboratory of plant chemistry, Bureau of Chemistry, Department of Agriculture. Acknowledgment is due M. A. Gray, chemist of the Pillsbury Flour Co., Minneapolis, and Prof. C. H. Bailey, of the University of Minnesota, for assistance in the preparation of this article.

Modern flour milling dates back to the early eighties of the last century. Before that time, a good white flour was indeed made, but the machinery

used consisted generally of two grooved stones, between which the wheat was crushed and the flour extracted. To-day in all mills of this country, except in some of the backwoods, and in some of the small mills, flour is made by the so-called gradual reduction process which consists in the use of an elaborate system or steel rolls and of an equally complicated system of purifiers and bolting machines. The flour made to-day is whiter and much freer from the bran and fibrous material than was the flour made with burr stones. While milling relates to the production of flour from all kinds of grains, flour milling, unless so stated, means wheat milling and it is wheat flour milling that is meant throughout this monograph, when milling is mentioned. If you are interested in milling you may want to know the answers to the following questions:

1. What is milling, and what kind of work is carried on in a flour mill?

2. What physical disabilities will bar one from successfully pursuing any one of the various occupations connected with milling; what handicaps are serious?

3. What education and apprentice training are required, and where to get training?

4. What salaries or wages are generally paid, and what are the chances for promotion?

5. How many hours per day do millers work?

6. What personal characteristics and qualifications should be possessed?

7. Where do millers work, and in what section of the country is milling mostly done?

8. What need is there for millers, i. e., is there a large open field in this occupation?

In the United States there are about 7,000 merchant mills grinding wheat flour. Their total

output is about 120,000,000 barrels per year. They require about 550,000,000 bushels of wheat. Thus it is seen that to produce 1 barrel of flour about 4.7 bushels of wheat must be milled. Milling may be quite simple or most complicated, depending upon the kind and size of mill operated and the quality of the flour to be made. A good sized mill will require men to perform the following kinds of work here described.

It should be stated, right here, that several of these occupations may be carried on by one and the same man, especially in the smaller mills.

Unloader[46]

Description: The unloader unloads the wheat or other flour products from the cars by use of the power scoop, shovel, or other means.

Qualifications: He must be physically strong and have good lungs.

[46] These descriptions are taken from the pamphlet entitled "Descriptions of Occupations in Flour Milling," published by the Department of Labor.

Unloader Foreman

Description: The foreman unloader directs the work of the gang which unloads the wheat from the cars. He must plan their work according to the number of cars and keep records of the car numbers.

Qualifications: Ordinary strength and ability. He should have worked as unloader.

Schooling: He must have education enough to keep simple records.

Loader

Kindred occupation: Unloader.

Description: The loader, under the direction of the loader foreman, loads bags, boxes, and barrels of the finished products into cars.

Qualifications: He should be able to load cars so that goods will not be damaged in transit. He must be physically strong and have good lungs.

Loader Foreman

Description: The loader foreman directs the work of the loading gang. He plans his work according to the size and capacity of the cars, sees that the cars are properly loaded, and keeps such records as are necessary.

Qualifications: He should have worked as a loader and should have executive ability sufficient to direct a gang of laborers.

Schooling: Common school.

Elevator Man

Description: The elevator man carries out the instructions of the foreman, seeing that wheat flows through the proper spouts into proper bins for storage. He keeps a record of the wheat stored and delivered, and is responsible for delivering and reporting all the trouble with elevator machinery or spouts. This latter is his chief responsibility.

Qualifications: Should have had previous milling experience. Ordinary ability. Strong lungs to withstand the dust.

Schooling: Common school.

Elevator Foreman

Description: The elevator foreman is responsible for and is in charge of taking the wheat into the

elevator. He inspects the wheat for correct dockage and directs the storage of the wheat according to the grade or quality. He keeps a record of receipts of wheat, of the tests, the weights, and of the disposition of the various lots. Where dockage is necessary he holds the cars for adjustment. This position is one of the most responsible in the flour mill.

Qualifications: Executive ability; knowledge of weights and measures. He must be a skilled grader of wheat by sight and feel. Must be able to keep records and figures and percentages. Should have a thorough knowledge of the Federal and State grades.

Schooling: Common school; preferably high school.

Blender

Description: The blender mixes different grades of wheat flour, or wheat flour and coarse-grain flour in designated proportions.

Qualifications: He must understand the character of the different grades of wheat flour and coarse-grain flours, and must know how to combine the various grades of flour in proper proportions.

Schooling: Common school; preferably high school.

Roll Tender—Cleaning Machine Tenders

Kindred Occupation: Oiler.

Description: The roll tender must see that all oil and grease cups about the milling rolls are filled and that all the bearings and boltings are properly lubricated. He keeps his machinery wiped clean of dust and grease and reports any mechanical trouble to the miller or the millwright. Men are always employed.

Qualifications: He must be intelligent and active and have some mechanical ability.

Schooling: Common school.

Oiler

Kindred occupation: Roll tender.

Description: The oiler must see that all oil and grease cups about the shafting and milling machinery are filled and that all bearings are being properly lubricated. He keeps his machinery wiped clean of dust and grease, and reports any mechanical trouble to the miller or millwright. Calls for considerable climbing overhead.

Qualifications: He must be active and have some mechanical ability.

Schooling: Common school.

Sweeper

Description: The sweeper keeps the floors clean of flour, wheat, and dust and keeps the machines clean. This necessitates climbing on ladders and running boards.

Qualifications: Ordinary ability and strong lungs to withstand the large amount of dust.

Smutter

Description: The smutter prepares the wheat for grinding into flour by running it over separators to screen out foreign matter. He must examine the stock for dirt, determine whether the screening is resulting in waste of wheat, and make adjustments in his machine to secure the proper screening. He also supervises the work of the sweepers, oilers, and helpers on his floor.

Qualifications: He should have strong lungs to withstand dust. Should have mechanical ability and must understand the screening of wheat and adjusting of the machines.

Schooling: Common school.

Grinder

Description: The grinder has charge of the milling rolls. He sets his machine or adjusts the rolls for grinding, watches the process to see that proper operation goes on, and tests the stock occasionally to make sure that it is being ground properly. This work is done practically on one floor, with very little climbing.

Qualifications: Must have strong lungs to withstand the dust. He must be an experienced grinder of wheat. Must know how to set his machine and know by testing when the grinding is being properly done.

Schooling: Common school.

Bolter and Purifier

Description: The bolter sifts the wheat stock in the sifting machines, tests the broken wheat stock as it comes from the grinder, and adjusts the feed slides and keeps the machines in proper operation so that they will take in only as much stock as it can properly sift. He must sometimes inform the grinder as to the proper fineness of the stock. He does not fix or oil his machine, but must understand its mechanism. The work is dusty. Mostly floor work, but some climbing on ladders and running boards.

Qualifications: Ordinary ability. Strong lungs. He must be experienced in operating the bolting machine; must understand the testing of the broken wheat stock and the adjustment of slides controlling the feed.

Miller, Second or Trick Miller

Description: The second miller acts for the miller in overseeing all of the processes in cleaning, grinding, and bolting. He plans the work and teaches new men. He is required to figure and keep a record of

the yield of flour and feed. He has full charge during the absence of the head miller.

Qualifications: Should have strong lungs to withstand the dust. Since he is in line for promotion to head miller, he should have the same qualifications. The loss of one or more limbs or an eye, or being afflicted with rheumatism would prove a serious handicap to an operative miller, particularly while in training, as an apprentice is required to do considerable climbing. No tubercular person should try to become a miller.

Schooling: Common school; preferably high school.

Miller, Head

Kindred occupations: Second miller.

Description: The head miller is responsible for all the processes of milling, for the output, and for the grade of flour produced. He must have a thorough knowledge of all processes of milling and of wheat grading.

Qualifications: He must have a thorough knowledge of all milling machinery and of the "flow" of the mill. He should have worked as second miller for several years. This is a very highly skilled occupation, and requires a great deal of trade knowledge, mechanical ability, and executive ability. Good strong lungs. See disqualifications for second miller.

Schooling: Common school; preferably high school.

Spouter

Description: The spouter is responsible for the uninterrupted flow of flour and feed stock through the spouts, and it is his duty to see that all valves, slides, etc., are in their proper position.

Qualifications: He should have a thorough

knowledge of the flow of the mill and be able to remedy choke-ups or spouting troubles with the quickest possible dispatch. The work requires skill and mechanical ability, and requires a man who has worked in other milling positions. He should be intelligent, active, a good observer, and should have good lungs.

Schooling: Common school.

Packer

Description: The packer tends the machine which fills the bag, packages, and barrels with the finished product. Men are employed when the product is packed into large bags and barrels. Women are employed when the small packages and cartons are filled.

Qualifications: He must be able to weigh skillfully and rapidly and when filling bags he must be able to use the bag needle with skill and be able to operate a bag-closing machine. He should also be able to insert barrel heads quickly when filling barrels. He should be able to make minor repairs and adjustments. He should be able to keep records and make simple computations of the stock packed. He must be intelligent and strong physically.

Schooling: Common school.

Packer Foreman

Kindred occupation: Packer.

Description: The packer foreman has charge of the work of the packers. He is responsible for the proper packing of the product and the proper weight of the bags, packages, and barrels.

Qualifications: Ordinary strength. He should have had experience as a packer. He must be able to figure and render accurate account of the output of the

machine under his supervision. He must have the ability to make adjustments and repairs on the machines.

Schooling: Common school.

Trucker

Description: The trucker pushes or pulls trucks of flour or feed from the packers to the warehouse or to the cars, or from the warehouse to the cars; also performs other general labor about the warehouse or cars as directed by the warehouse foreman.

Qualifications: Good physical strength.

Millwright

Kindred occupations: Spouter.

Description: The millwright is responsible for the upkeep of the mill in general and for all trouble with the spouting, milling machinery, and equipment. He repairs, installs, or takes out machinery, equipment, or spouting under direction of the head miller.

Qualifications: He must be a highly skilled wood and sheet metal worker, and must have a general knowledge of all the milling processes. He should have had experience as carpenter, metal worker, and spouter, also knowledge of belting, and machine repairing. He should have good lungs.

Schooling: Common school.

Sack Man

Description: The sack man has complete charge of the stock of unfilled flour and feed sacks, bags, cartons, and barrels. It is his duty to keep the packers supplied with the proper kind and number of sacks, bags, cartons, and barrels.

Qualifications: He must be able to render reports of

the supplies received and used, and to render accurate inventory of the supplies on hand. He must be intelligent, accurate, and attentive to duty.

Schooling: Common school.

Sack Sewer

Description: The sack sewer repairs sacks by hand or on a sewing machine, and does other required sewing.

Qualifications: He must be able to do plain hand sewing or use a sewing machine.

Warehouse Foreman

Kindred occupation: Packer foreman.

Description: The warehouse foreman has charge of the warehouse and has general supervision of all truckers and packers. He superintends the loading of all cars, and issues packing instructions to the packer foreman. He must keep strict account of all cars placed at the warehouse for loading and unloading, and must be able to make out various reports, such as those relating to the loading of cars, the delivery of goods, and the inventory of stock.

Qualifications: This position is one of responsibility and requires a responsible man who has executive ability and who has had previous high-grade warehouse experience. He must have a high degree of intelligence and be physically strong.

Schooling: Common school; preferably high school.

Trick Miller, or Second Miller

Description: Supervises the mill on a particular watch; responsible to the head miller; takes the lead in adjusting trouble at any particular point; presence required in all parts of the mill.

Qualifications: Like those for miller.

Schooling: Common school.

The following occupations—unloader, loader, elevator man, sweeper, smutter, sack man, trucker—may be classified as unskilled, and the men who work in these occupations work under immediate direction of their foreman.

The following occupations—unloader foreman, loader foreman, elevator foreman, warehouse foreman—may also be considered unskilled, but they are filled by men who are able to direct operations of the first group.

The oiler, roll tender, blender, grinder, bolter, spouter, packer, packer foreman, sack sewer, and millwright work under the immediate direction of the second miller in mills of 500 to 1,000 barrel capacity. In smaller mills, however, much of the work listed under these various occupations is done by the miller himself. Mills of less than 500 barrels per day have no second miller, and in that case much of the actual work described in the above occupations is done by the head miller. Wherever there is a second miller, as in the case of the very large mills, he generally takes direction of the mill during the night shift.

Men interested in milling should start preferably in small mills of about 300 barrels' capacity, or less, and work in such mills for one to two years in order to become fully acquainted with each of the processes listed in the various occupations. If employment is secured in a large mill there will be very little opportunity to do any of the diversified work as in all such mills the work is more highly specialized.

Physical Disabilities

The description of the various occupations given above answers several questions regarding the schooling and necessary qualifications. Milling is entirely an indoors occupation and one which should not be undertaken by any person affected with tuberculosis. A miller should be agile and capable of endurance. Many of the occupations in the mill require considerable climbing and walking, making it a serious handicap for a person who has lost a limb (unless he has become expert in the use of an artificial leg) or for one who is afflicted with rheumatism.

Generally speaking, the loss of an eye would not interfere, nor would dullness of hearing. The loss of an arm would only interfere in certain occupations and not in all. This is true especially if the person has an artificial hand provided with a hook or other holding device and for the more simple occupations and manipulations. Stiffness of the arm and incomplete movements of the joints of the arm or fingers would, if considerable, disqualify a man for general employment in the milling industry. Men affected with shell shock might be able to do good work in a mill. Minor injuries, such us the loss of a finger or toe, or facial injuries, need not interfere with a man's ability to do any kind of work in a flour mill. When a person has mastered the milling business he may be a successful miller, even though he has lost an arm. One of the best millers in this country has only one arm.

What training and education are required and what may reasonably be expected in the form of wages or salary?—A portion of this question has already been answered. A high-school training is the most that is essential, although many of our best millers have far less education than that. As for the other occupations

in the mill a common-school education will, for the most part, suffice for all necessary purposes. The training, however, depends necessarily upon the nature of the position and the responsibility which a man must assume. To become a good head miller a man should have some theoretical training for a year or two and then an opportunity for practice. To take charge of the flour packer no great amount of training is essential. Practically no education is necessary for many of the occupations found in a mill. To be a second miller, from three to nine months' training in a trade school followed by experience as an apprentice are required. The man with a good training would certainly have an advantage especially when qualifying for the position of head miller in a large mill.

Where to Get Training in Milling

There are very few schools in this country where educational courses relating to milling are given. The three best known are connected with the Kansas Agricultural College at Manhattan, Kans., and with State College at State College, Pa., also the Oregon Agricultural College, Corvallis, Oreg. Each of these schools has a small mill of about 75 barrels daily capacity, fitted however, with all the machinery generally found in a large mill. The training in milling, as given in these schools requires four years and leads to the degree of bachelor of science in milling engineering. A collegiate preparatory schooling is generally required for entrance and the studies pursued are equivalent to those found in the ordinary college course. As a rule the course includes mathematics, milling technique, free-hand and mechanical drawing, chemistry and physics, languages, etc. The course is indeed a regular four-

year university engineering course, greater emphasis being laid upon the engineering problems relating to milling technology and mill design. A man may obtain a fair knowledge of milling, however, in a trade school in three months, and if this is followed by experience as an apprentice for two or three years, he may reasonably expect to qualify as a miller. He should have at least an eighth-grade schooling. A good miller should have an understanding of flour-mill machinery, chemical and physical properties of wheat and flour. This requires considerable school training or a long apprenticeship. The best kind of training, however, for most men striving to become millers is an apprentice in a mill, working in each of the various occupations until a knowledge of all the milling processes is fundamentally and thoroughly learned. Such training might best be obtained in a small mill where an apprentice would be required to do the work of a number of different occupations. In this way money is being earned at the same time as a profession is being learned. Very little preparatory schooling is required, when milling is learned as an apprentice.

The salaries paid to millers run anywhere from $125 per month to several thousand dollars per year. The wages of the various occupations of the milling industry are commensurate with those in similar industries. The less skilled occupations pay laborers' wages, while occupations requiring skill pay more. It should always be remembered that a worker in any occupation in a mill has a legitimate ambition if he strives to become a head miller. The head miller in any one of our large mills making anywhere over 1,000 barrels of flour per day is in a position of great trust and responsibility and he should be a man of

absolute honesty and integrity and a leader of men. Such men command very high salaries.

There are 150 mills in the United States with a daily capacity of over 500 barrels. These are the mills whose millers command the large salaries. There are about 1,200 mills, however, with a capacity of over 100 barrels and all of these employ millers and millers' assistants. With such a large number of mills employing head millers and second millers, the chances for promotion must be considered good. Promotions, however, depend much upon the efficiency of the miller. To acquire and to maintain a certain degree of efficiency, it is helpful if one will become connected with organizations of millers, and if one will read books and journals on milling, and thus keep abreast of the times. One should not expect promotion too rapidly. If you apply yourself diligently to any of the occupations in the milling industry, and if you show a disposition to learn you will find that "it's a long trench that has no turning" toward your goal. Do not be like the "lazy loon that wants no learning" and is satisfied to remain untrained and unearning. Your Government is willing to finance you while you are learning, so there is every inducement for you to get into the milling game, if you feel any aptitude for this work.

The hours of labor in the various occupations in a mill are gradually being standardized to those of union labor in general; the head miller, however, who has considerable responsibility, does not as a rule limit his working hours to eight.

There are some 21 mills in this country with a daily capacity between 5,000 and 10,000 barrels. The millers of these mills must necessarily have splendid personal qualifications, as well as training.

That he must be a leader of men goes without saying. He must be able to win the confidence and best co-operation of his assistants. He must be imbued with a love for his work; must have an aptitude for milling; capable of planning, resourceful and observant; a good mechanic and have sound judgment. Each one who aspires to become a head miller must develop these qualifications. To be successful in any occupation in the mill one should be industrious and willing to learn.

The earnings of a mill are largely determined by the miller. Ordinarily about 4.5 bushels of wheat, or 270 pounds, will suffice to make a barrel of flour. If a miller can succeed in making a barrel of an equally good flour by the use of less wheat, say 267.5 pounds, he is just that much more valuable than his competitor who can not obtain the same result. A saving of even 2.5 pounds of wheat per barrel of flour, in a 1,000-barrel mill, would mean the saving of 2,500 pounds or 42 bushels of wheat per day.

Flour milling may justly be recognized as one of the most essential professions. Most of the milling is carried on in the great wheat belt, situated for the most part in the great central, north central, and Pacific coast regions of this country. The following States are the great wheat producers: Minnesota, North Dakota, South Dakota, Kansas, Ohio, Oklahoma, Indiana, Illinois, Missouri, Washington, Montana, Texas, Michigan, Nebraska, Idaho, Colorado, and Oregon. These States produce about 80 per cent of the whole wheat crop of the United States.

In the following States most of the flour is milled: Minnesota, New York, Kansas, Illinois, Ohio, Pennsylvania, Missouri, Indiana, Michigan, Texas, Wisconsin, Tennessee, California, Kentucky,

Oklahoma, and Washington.

There are an appreciable number of mills along our Atlantic coast and on the Great Lakes, due to special facilities of transportation.

The foregoing would indicate that the need for millers is very urgent. Formerly a high-school boy was perfectly willing to begin his milling career as an apprentice, but the low salary or wages paid to an apprentice is no longer attracting this class of young men. Now, however, that the Government is showing a disposition to finance the returning soldier through college or through the period of apprenticeship, the milling trade should prove very attractive. The need for millers is becoming more urgent every day, and a trained miller will have no difficulty in finding a good position.

PLAN No. 1247. BAKING

This monograph was prepared by J. A. LeClerc, chemist in charge of the laboratory of plant chemistry, Bureau of Chemistry, Department of Agriculture. Acknowledgment is due B. R. Jacobs and E. E. Smith, of the Bureau of Chemistry, and Prof. C. H. Bailey, of the University of Minnesota for assistance in the preparation of this monograph.

What is Baking?

Baking is one of the most ancient, widespread, useful, and highly honored occupations. All classes and grades of bakeries are to be found even to-day from the most primitive, such as those among the Indians of this country and of South America, and those among the native tribes of Africa and other undeveloped countries, up to the most highly developed modern bakery, examples of which are to be found in most of our large cities, in which almost every step in the operation is by machinery, the hands of man scarcely touching the product at any stage. In every large city of the country are to be found bakers who employ a large number of men to carry on the various occupations connected with the industry. Every small town has at least one baker, but a small baker generally carries on, himself, each and every occupation connected with the shop.

What Does the Baker Do?

A baker's business is to make bread by first making a dough with flour, water, salt, and yeast (with or without sugar, malt extract, milk, lard, etc.), allowing this dough to ferment, and then placing this fermented dough in an oven to bake it into bread. In general the following amounts of ingredients are used per barrel of flour: Flour 196 pounds, water 118 pounds, salt 8 pounds, sugar 6 pounds, yeast 2

pounds. Besides these essential ingredients some bakers add 2 to 3 pounds malt extract, 2 to 4 pounds milk or milk products and 3 to 4 pounds of lard or other shortening. A barrel of flour made into dough containing most of these ingredients will make about 282 to 290 one-pound loaves of bread when baked. Baking is quite a diversified business. There are many kinds of bakers or, rather it might be said, that bakers make many different kinds of products, e. g., bread, pies, cakes, crackers, etc. The term "baker," as generally used, however, refers to bread bakers.

How Many Bakers are There?

In the United States there are some 30,000 commercial bakers of whom about 3,000 to 4,000 have an output of 70 to 75 per cent of the baking business of the country. Besides these commercial bakers, found in every city of any size in the country, bakeries are also to be found in many large hotels and restaurants, and these number many thousands more. These bakeries are of such size, indeed, that a head baker and an assistant baker, besides many workmen, are engaged in the different occupations.

There are many bakeries in this country who make daily from 50,000 to 100,000 loaves of bread. This requires the use of approximately 170 to 340 barrels of flour every day. Some bakers use five times that amount of flour. One of the largest bakeries in France, in connection with the American Expeditionary Forces, was said to be capable of turning out 1,000,000 loaves per day. The number of bakeries in the United States making over five thousand one-pound loaves per day is very large, and these are the ones which especially require the services of a master baker as well as of several other trained employees.

Value of Bakery Products

At the time of the last census there were over 120,000 men employed in the baking industry and the total output of the product from all kinds of bakeries was estimated to be valued at $400,000,000. Since that time, however, the output of the commercial labor has increased by leaps and bounds. To-day the commercial baker makes fully one-half of the bread consumed in the country, which is a relatively much larger amount than was made even 10 years ago. During the war, bread was advertised as was no other commodity. Besides this, the housewife found very great difficulty in making a satisfactory bread with the use of such a large amount of flour substitutes as the Food Administration required. This compelled many housewives to buy baker's bread—housewives who had never before used baker's bread. The habit thus formed has in many cases proved permanent, and thus has resulted in a largely increased demand for baker's bread.

These facts show the importance of the baking industry, and show furthermore that the need for bakers is constantly growing and indeed is most urgent. It should not be difficult for any returning soldier who desires to make a specialty of baking to find employment near his own home, particularly if he lives in a large city.

Where do Bakers Work?

Bakers formerly almost universally worked in basements, many of them dark and unsanitary. The basement bakery is, in fact, not entirely done away with yet, but such as remain are small and unimportant. To-day the bakers of each city are

vieing with each other to see who can put up the most attractive, the most "sunlit," and sanitary bakery. The consequence is that practically all large important bakeries are built high up, with abundance of air and sunlight. This makes the work much more attractive, agreeable, and healthful than was formerly the case. The conditions of work for bakers are thus improving rapidly and are fully on a par with, if indeed they are not better than, those of other important industries.

Description of Occupations in a Bakery

There are a number of occupations connected with the baking industry, among which may be mentioned truckers, blending-machine tenders, mixers, machine hands, bench hands, oven men, packers, and shipping clerks, salesmen, clerks, and the engineers. The classification in the following table shows the character of occupations, the work required, the qualifications, wages, hours of labor, physical requirements, and training of the men:

Occupation.	Character of occupation.	Work requires.	Qualific

1. Heavy labor.	Handling flour, trucking, miscellaneous handling heavy material, blending-machine tenders, machine hands.	Walking, bending, lifting heavy weights, climbing, pushing or pulling heavy trucks. All work done on feet.	Unusual strengt agility
2. Light labor.	Moving bread racks and pan racks; loading wagons, cleaning and greasing pans and machinery; sweeping.	Walking, bending, lifting ordinary weights, manipulation of cleaning and greasing machines; pushing and pulling loaded racks. Usually all work done on feet.	Some far with b practic

3. Dough mixers and assistants.	Mixing dough; running mixing machines; weighing and measuring ingredients.	Walking, bending, lifting, operating machinery, manipulation of scales and measures. Sitting part of time.	Common educat good knowl dough dough ingred Famili with b practic
4. Operators of fermentation.	Turning and timing doughs; pushing troughs; keeping room at constant temperature.	Walking, bending, lifting, pushing heavy troughs.	Common educat somew familia baking practic
5. Bench hands, dividers, rounders, molders.	Running baking machines which divide, round, and mold the dough; sometimes performing these operations by hand.	Standing at bench, some walking; loading, light lifting, rapid hand movements.	Common educat thorou familia baking practic

6. Peelers, oven men.	Putting pans into and taking bread from the oven; transferring pans from peels to racks, etc.	Standing at oven, bending, light lifting, rapid motions of hands and body.	Common educat thorou familia baking practic agility dexter
7. Sorters, checkers, workers in bread room, shipping clerks, packing clerks, clerical office force.	Sorting bread; checking bread into wagons, making out bread slips, etc.	Largely desk work. No physical exertion except that involved in handling records. Very little walking; can use crutches.	Business educat some knowl office practic
8. Salesmen.	Making deliveries of bakery products; driving horses or automobile; working out routes; keeping up trade, making collections and adjustments of money.	Walking, bending, lifting, climbing in and out of wagon or automobile constantly.	Business educat knowl bakery produc knowl salesm pleasi person

9. Shop foreman.	Immediate supervision of shop operations.	Walking; physical exertion only in helping in shop operation; much climbing.	Common educat thorou familia with a of bak work; to han men.
10. Superintendent or manager of bakery.	General supervision of entire plant; determination of methods of manipulation; supervision of all business activities.	Largely desk work; but must be able to get around plant, to control operations.	Thoroug busine educat intima knowl manuf proces accour great execut directi ability to deal men.
11. Buyer, purchasing agent.	Purchasing of raw material and equipment.	Largely desk work.	Intimate knowl trade a marke condit and co of raw materi equipn used b bakers
12. Engineers.	Running power plant.	Mostly sitting.	Common educat trainin experi engine

13. Machinists.	Repairing and installing machinery.	Walking, bending, lifting, climbing.	Common educat trainin experi with machi

[47] Per day.
[48] No fixed hours.

1. Based on intensive technical training of 35 to 40 hours per week.

2. Practically all specialised positions in baking are properly based on a journeyman's experience. In the case of men who have served only partial apprenticeships, or who have no training whatever, an individual determination is necessary in each case as to the amount of special education, technical school training, and shopwork required to equal the regular apprenticeship foundation.

3. The artificial limbs now available may in many cases enable the individual to meet the physical requirements where the above statement would indicate a difficulty. Each such case must be decided on its merits.

Disabilities—They Need not Disqualify

A study of the table of occupations will show that few soldiers, who feel they have an aptitude for this industry, will find themselves disqualified. Of course, the bakeshop is no place for a consumptive, nor for an invalid, but the loss of an arm, a leg, an eye, or facial or head wounds need not necessarily disqualify men for every occupation in a bakery. There are many occupations in a bakery which a man with these physical defects may fill with perfect satisfaction and success. Indeed, success can be

obtained even under the most apparently serious handicap. Much depends upon the man with a physical defect. He must not let his mind dwell upon that fact. If he has not lost his head or his courage he most assuredly can qualify. What he thinks is a disqualifying defect may not be one at all. Certainly, if his mind is made up to overcome his defect, the battle is over half won already.

The Government Will Help You

Every soldier must know that this Government of ours stands ready to assist him to find a congenial occupation. You need not feel discouraged, therefore, because of your supposed disqualification. Instead, it may be the making of you, especially if your mind is positively made up to succeed and if you will accept your Government's offer to help you to success. While you are learning to become a baker you will be paid a regular allowance to cover your living expenses and your family will be paid an allowance for their support, so that in fact while you are learning you are also earning.

The Chances for Success

The chances for success are as great in the baking industry as in any other. Look about you a bit. It is very seldom you hear or read about the failure of a well-established bakeshop. The people must have bread. Good bread making is not at all difficult. Your chances to make and to sell good bread are just as good as those of your competitor-baker. Baking is a stable industry. There are large profits in the industry when well conducted. Your chances for success, therefore, are good, because the proprietor's chances for success have always been good. Many examples might be pointed out to you of owners of

bakeries who 10 to 20 years ago began in a small way and who to-day are baking from 25,000 to 100,000 loaves per day.

Qualifications

For the owner of a bakery the personal characteristics required for success in a large way are about the same as for other occupations and professions. He must keep abreast of the times by constant study and application. Of course a man must be honest. He must be determined to give full weight. It seems so easy in a bakeshop to cut the weight of a loaf by one-half to 1 ounce and thus reap a temporary advantage, and so it is; but as in other businesses, "honesty is the best policy," and the baker who has the reputation for giving full weight generally gains in the end, and the one who is known to skimp on his weight will eventually find that policy a losing game. A proprietor must be a hard worker; he is liable to be required to work at any time of day or night. He must be a man who can get along with men, one to win their confidences, cooperation, and best endeavors.

A master baker should be able to manage men so as to get the most out of them consistent with decency and fair play. He should have an intimate knowledge of flours and of the other ingredients used in baking. He should be well posted in the art of baking in all its phases, and have enough ambition to keep posted and abreast of the times.

The other employees of a bakery do not need so many of the qualifications possessed by the master baker so long as they are content to remain where they are, but if they are planning to become master bakers themselves they must make up their minds to obtain this very training. Many soldiers have already

had considerable experience in field bakeries. They will find this experience of great value in commercial bakeries. However, previous training and experience in the Army is not an essential, inasmuch as sufficient experience can be had in several months' study at a trade school to satisfy the requirements of beginners. Men who aspire to forge ahead in a bakery must have "pep," be alert to learn, and must apply themselves studiously. They should have a natural aptitude for the work, for the best work can never be done in any line where there is no love and enthusiasm.

Training and Experience

Formerly, bakers learned their profession through the apprenticeship. While that system is also in vogue to-day, yet many men are being given a tremendous boost by first attending a trade school for bakers or a technical school, college, or university. In going through the apprenticeship stage, a man would be very greatly assisted if he had at least an eighth-grade education or better still a high school or college education. The trade school will in the course of six to nine months' intensive training not only train a man to bake a good loaf of bread, but will teach him to know the characteristics of the ingredients which are used in baking and how to detect or determine their quality. He will acquire a chemical knowledge of these raw materials. He will also learn to have a thorough knowledge of baking machinery and how to handle ovens. After such a schooling, he should make fast progress as an apprentice.

Schools of Baking

Among the schools offering training for bakers

may be mentioned the Dunwoody Institute at Minneapolis, the University of Minneapolis at University Farm, Minn., the Kansas Agricultural College at Manhattan, and a number of trade schools proper at Chicago—the Columbus Laboratory, Operative Miller, and Siebel Institute.

It should always be recognized that a general education is a great aid on the road to success, and that an ambition to keep pace with the improvements in methods, changes in materials and appliances will be rewarded by more rapid promotion. One of the best ways of maintaining the pace is to read the various journals devoted to milling and baking and to associate one's self with societies specializing in milling and baking.

The bakers' journals which will be found helpful are as follows:

Bakers' Helper, 431 South Dearborn Street, Chicago, Ill.
Bakers' Review, 408 Whitall Building, New York City.
Bakers' Weekly, 41 Park Row, New York City.
Confectioners and Bakers' Gazette, 127 Worth Street, New York City.
National Baker, 411 Walnut Street, Philadelphia.
Retail Confectioner and Baker, 36 Catherine Street, New York City.
The Bakers' News, 332 South La Salle Street, Chicago, Ill.
The Mediator, 121 Canal Street, New York City.
The Pacific Coast Gazette, San Francisco, Calif.

Among the milling journals may be mentioned:

American Miller, 315 Dearborn Street, Chicago, Ill.
Canadian Miller and Cerealist, Montreal, Canada.
Dixie Miller, 154 North Cherry Street, Nashville,

Tenn.
Miller's Review, 424 Walnut Street, Philadelphia, Pa.
Modern Miller, 1032 Pierce Building, St. Louis, Mo.
Northwestern Miller, the Miller Building, Minneapolis, Minn.
Operative Miller, 537 South Dearborn Street, Chicago, Ill.
Roller Mill, Marine Bank Building, Buffalo, N. Y.

There are two societies in this country which are making special endeavors to study milling and baking problems, viz, the American Society of Milling and Baking Technology and the American Association of Cereal Chemists. Besides these journals and societies, from which considerable help and enthusiasm may be obtained, the Government, particularly the Department of Agriculture, stands ready to assist anyone along these lines. This department has accumulated considerable information on flour, bread, and the various cereals, and it is always glad to answer any questions that it can and ready to give out any information which it has.

Besides all these sources of help, much information may be gained by reading bulletins published by a number of experiment stations, and these bulletins may be obtained for the asking. Among the experiment stations publishing such bulletins may be mentioned the following:

Kansas Agricultural Experiment Station, Manhattan, Kans.
North Dakota Agricultural Experiment Station, Fargo, N. Dak.
Kentucky Agricultural Experiment Station, Lexington, Ky.
Ontario Agricultural Experiment Station, Guelph,

Ontario, Canada.
Pennsylvania Agricultural Experiment Station, State College, Pa.
South Dakota Agricultural Experiment Station, Brookings, S. Dak.
Washington Agricultural Experiment Station, Pullman, Wash.
Connecticut Agricultural Experiment Station, New Haven, Conn.
Minnesota Agricultural Experiment Station, University Farm, Minn.
Ohio Agricultural Experiment Station, Wooster, Ohio.
Michigan Agricultural Experiment Station, Lansing, Mich.
Maine Agricultural Experiment Station, Orono, Me.
California Agricultural Experiment Station, Berkeley, Calif.
Utah Agricultural Experiment Station, Logan, Utah.
Idaho Agricultural Experiment Station, Moscow, Idaho.

Furthermore, a number of books on baking have been published in the English language, among which may be mentioned the following:

Otto Werlin. The American Cake Baker, published by the Richmond Borough Publishing Printing Co., New York.
Amy L. Handy. War-Time Bread and Cake, published by Houghton & Mifflin Co., Boston, Mass.
William H. Brooks. Modern Practical Cake Baking, published by the Times Publishing Co., Palo Alto, Calif.
Fritz L. Gienandt. The Twentieth Century Book for the Progressive Baker-Confectioner, published by the author, in Boston.
Emil Braun. Secrets of Bread Making.
Siebel's Manual.
Recipe Book for the Practical Baker. Malzbender.

Paul Richards. Bakers' Bread, with appendix.
Biscuits and Cakes, 1911. Reliable Flour Co., Boston, Mass.
Robert Wells. Bread, Biscuits, Buns, and Cakes.
Frank A. Kennedy. The Biscuit Industry, 1895.
Wihlfahrt, J. E., A Treatise on Flour, Yeast, Ferment, and Baking.
Laws and Gilbert. The Wheat Grain, Its Milling Products and Bread.
Charles and James Scott. Vienna Bread.
Owen Simmons. The Book of Bread.
Dr. Harry Snyder. Studies on Bread and Bread Making.
J. A. Wanklyn. Bread Analysis.
H. W. Wiley. Cereal and Cereal Products.
Mrs. H. W. Atwater. Bread and the Principles of Bread Making.
Blandy. Studies in Bread Making.
Gill. Short History of the Baker's Art.
Gill. Chemistry of Bread Making.
T. B. Wood. The Story of a Loaf of Bread.
Grant. Chemistry of Bread Making.
Dr. John Goodfellow. The Dietetic Value of Bread.
William Jago. The Principles of Bread Making.
Archer Kirkland. Studies for the Bakehouse.
John Kirkland. All About Bread Making.
John Kirkland. The Modern Baker, Confectioner, and Caterer.

It is thus seen that for the man who is ambitious to learn about baking there are many sources of knowledge. The baker, or baking employee who aspires to become a baker, can find much assistance and inspiration from bulletins, books, journals, and societies, and by correspondence with experts of the Department of Agriculture. The disabled soldiers who believe they can qualify to become bakers have every reason to feel encouraged.

PLAN No. 1248. DENTAL MECHANICS AS A VOCATION

This monograph was prepared by Dr. Harold DeWitt Cross, director, the Forsyth Dental Infirmary, Boston, Mass., and Dr. Guy S. Millberry, dean, college of dentistry, University of California, Berkeley, Calif.

Mechanical dentistry has been practiced by individuals for over a thousand years, though its development in a scientific way can be said to date from the beginning of the last century.

It is a part of the practice of dentistry which is limited to working upon inert matter and does not include work of any kind upon patients. For this reason anyone can become a dental mechanic, for the laws governing the practice of dentistry in all States specifically point out that such are exempt from the licensing requirements and penalties of law.

In presenting this work as a possible vocation, care has been taken to give fair and accurate accounts of what may be expected, the qualifications, and the type of work done. It is not right to say that mechanical dentistry is extremely simple, or that the pay is magnificent. It is right to say, however, that with the proper qualifications, mechanical dentistry offers big returns upon the investment of time and effort required to complete this course of training.

Mechanical dentistry plays a vital part in maintaining and increasing human efficiency. Hence, the skilled dental mechanic may be proud of his work, and may derive a threefold satisfaction from it —the pleasure in the work itself, the gratification of being well paid, and the satisfaction that comes from the knowledge that it is of benefit to mankind.

Class of Work Done.—The work of a dental mechanic consists of making, in the laboratory or work room, artificial dentures and restorations such

as plates, bridges, crowns, inlays, etc., for which the impressions have been taken from the patients' mouths by the dentist, and the work done under his direction.

The work may be divided into two major classes, plate work, and crown and bridge work. Plate work may again be divided into vulcanite or rubber plate work and metal plate work. In addition to this there are a number of types of dental work such as pouring and trimming plaster models of the teeth, making metal dies and counter dies, gold and porcelain inlays and other kinds of incidental work, so that a variety is always to be found in any dental laboratory.

Plate Work.—Plate work by the mechanical dentist consists of assembling plaster or modeling compound, taking impressions of the mouth and teeth, pouring plaster casts from them, making bite plates and the mounting of the models on the articulator, and in the instance of metal plates, making dies and counter dies of zinc and lead or similar metals or alloys for subsequent work. Then the porcelain teeth are set up in wax for trial purposes and the wax is subsequently removed and replaced by vulcanite. In the case of metal plates, aluminum, gold, or platinum is used as a base plate which must be swaged or cast to fit each individual case. This requires a knowledge and skill in the working of metals and frequently includes soldering operations.

Crown and Bridge Work.—Crown and bridge work include the working and soldering of precious metals as gold, platinum, or similar materials, and porcelain or it may be a combination of both precious metals and porcelain. These two classes of work constitute the largest part of mechanical dentistry though each

class may offer many different types of cases.

Conditions of Labor.—Mechanical dentistry attracts a very desirable class of men, and therefore the people with whom one is thrown in the profession are such as may be a source of inspiration and encouragement.

The work is all light, usually performed at a bench, either sitting or standing as the mechanic prefers. There is enough of a variety of work to break the monotony. The metals used are zinc, lead, tin, copper, bismuth, antimony, or alloys of them, and the precious metals, gold, silver, mercury and platinum.

Practically no machinery except a small polishing lathe is used and all the tools and equipment are furnished by the employer. While much of the work is done with steel tools, very little of it is done on steel.

Light and ventilation are usually of the best, though the laboratories are generally small, and the sanitary conditions are generally very good.

Hours and Wages

Hours.—The hours are in a sense variable, running from 40 to 50 per week, and may vary from week to week where the dental mechanic is employed by the individual dentist. The hours depend largely upon the amount of work on hand in the office each day and the urgency for its completion. Usually the dentist works about seven hours a day, and he seldom demands more time of his assistants. Under these conditions, overtime is not usually considered. In large laboratories where a number of mechanics are employed the hours are likely to be more uniform and exacting.

Wages.—The wages will range from $15 to $40 or

$50 a week, depending entirely on the ability of the mechanic, his speed and careful workmanship being the determining factor. More than $20 a week can not usually be expected at the start, but progress will be rapid according to the ability developed.

There are no unions organized to include this branch of labor as nearly all dentists do their own mechanical work during odd times.

Dental mechanics who possess skill and good business acumen may establish laboratories of their own, and cater to the needs of a number of dentists who do not have enough work to employ a dental mechanic, and yet more than they can accomplish themselves along with their other work. In this way, on a basis of piece work, a dental mechanic may build a lucrative and independent business, employing a number of assistants, and produce a net income of from $3,000 to $7,000 or $8,000 a year. Of course the essentials for success in such a business are the same as may be expected of any man who expects to be successful in other lines of business.

Permanency and Opportunities of the Profession.—There is an ever increasing demand for honest dental service on the part of the general public. Fully 100 per cent of the children and adults in any country need some form of dental service at least once a year. There are not enough dentists now to supply this service except to a limited portion of the population, but many of these have a practice sufficiently large to justify the employment of several assistants, one of whom should be a dental mechanic.

On account of the lack in the past of facilities for training there has arisen widespread and urgent demand for qualified dental mechanics. Well-informed dentists, who have the interest of the profession at heart, appreciate the present necessity

for men trained in this particular phase of dentistry.

There are in the United States alone nearly 1,000 cities of more than 5,000 population. The smallest of these would afford employment to one mechanical dentist or more, working on salary or independently. Of the total number of cities, 60 have populations ranging from 40,000 to 100,000; each of these cities will afford employment to a large number of mechanical dentists. Forty of the 60 have populations of 100,000 and over. New York is the largest and it is estimated that it alone affords employment for thousands of mechanical dentists. Each of the other 39 cities gives large opportunities for capable members of this profession.

Qualifications

Previous Training.—No previous knowledge of dentistry or experience in mechanical work is necessary to qualify the student for mechanical dentistry, though those who have had experience such as mechanics in the jewelry trade, metal working industries where small work is a feature, or photography will find that the former work is a good foundation.

Education.—An average education is all that is absolutely required for the student of mechanical dentistry, though a high-school training and a knowledge of physics, chemistry, and manual training is desirable.

Personal Qualifications.—A natural intelligence, a moderate amount of ability to work with the fingers, perseverance and neatness are the essentials for success.

Age.—There is no age limit for the man who wishes to take up this vocation.

Training

Time required.—The length of time required to train men for mechanical dentistry may vary, according to previous education, experience and his type of disability. In many places the training is not done by classes, but through personal instruction, and the completion of the course lies with the aptitude of the student. The average time required is believed to be about one college year unless, as in some special cases, an intensive course of four months or so is instituted. These have been opened in some places. This refers to the time required when a course is taken rather than an apprenticeship in some laboratory of a private dentist.

Type of Training.—A course in mechanical dentistry is a practical one in which the student learns by doing. The work is demonstrated by a capable instructor, and then the students themselves do the actual work. There are a limited number of lectures, and an effort is made to give a sufficient fundamental knowledge for all the ordinary manipulations required in the trade.

After his course is complete, he will continue to improve his general knowledge and skill by further study. He must learn, if he is employed by a private dentist, the particular methods of his employer, and keep up with the new improvements described in dental text books and journals.

Course of Instruction.—The course of instruction in dental mechanics include the following subjects:

Model making.
Rubber plate making.
Anatomy of teeth.
Saddles.
Crown and bridge work.
Gold plates.

Lingual bar plates.
Aluminum plates.
Metal casting.
Orthodontia or regulating appliances.

Special Fields.—There are special fields in dentistry where the dental mechanic may adapt himself to a new class of work now very much in demand, that of dental radiography, or the taking and developing of X-ray pictures. Persons having had previous experience in any branch of photography will fit into this work easily.

Other special lines are the making of orthodontia appliances, gold and porcelain inlays, castings, clasps, bridges, and plates, crown and bridge work, and gold plate work.

Disabilities.—The physical qualifications and disability restrictions of a dental mechanic are not very exacting.

Persons with one good eye and the control and manipulative ability of both hands or at least two fingers and a thumb on each hand; defective hearing, with one or no legs (provided locomotion is not impaired), such diseases as hernia, kidney trouble, affections of the liver or heart will not be too seriously disabled to enter this profession.

Tuberculosis, on the other hand, is a serious handicap, both on account of the sedentary life, and because it might be difficult to secure or hold permanent employment because of the fear of contagion. Other infectious diseases would be more suitable to some other type of employment.

Very few vocations are open to such a wide number of disabled men. The opportunity for them seems to be one which will continue to increase with the increase in scientific dentistry, and the growing comprehension of the people of the important

relation of the mouth and teeth to their general health.

Each of the following plans has a specially arranged list of occupations and business opportunities which have not been placed in the main index and should be consulted in connection with the index.

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Transcriber's Notes

Depending on the hard- and software used to read this text, and their settings, not all elements may display as intended. Some tables are best viewed in a wide browser window; in narrow windows or small screens, it may be necessary to reduce the character size in order to see the entire tables.

Inconsistent spelling and hyphenation have been retained, as have unusual and archaic spelling, except as mentioned below. The book's use of quote marks at the beginning and end of paragraphs is inconsistent as well.

The following plans are not present in the source document: No. 220, No. 809 and No. 1027.

In most cases the Plans have been considered as chapters. Some Plans, however, clearly are part of a chapter; these have been treated as sections. The formatting of chapter and section headings have not been

standardised, except as listed below.

In lists and tables, the (lack of) numerical or alphabetical order of entries has not been corrected unless listed below.

Page 32, were ordered taken: as printed in the source document; the sentence appears to be incomplete or over-complete.

Page 138, Produce the infertile egg: as printed in the source document; possibly intended to be a section header.

Page 415, Plan No. 713: the individual costs do not add up to the total given.

Page 465, Fig. 6: the illustration may have been printed mirrored in the source document.

Page 487, asterisks and footnote [10]: In the source document, the asterisks on this and the following pages serve both as footnote marker and as indicator for appointments by the commissioners. It has been assumed that the footnote only refers to the Steward and Assistant in the Rivercrest Isolation Hospital.

Page 487, Isolation Hospital—Rivercrest: There may be a line with the name of a service missing between Nurses and Utility Man.

Page 558, Linderman machine: other spellings include Lindemann, Lindeman, etc.

Page 662, PART 1 and page 668 PART II: as printed in the source document.

Page 675, Since no training has been available for this vocation in the past secretarial workers have been recruited: there should probably be a comma after vocation or after past.
Page 806, 815-822, references to illustrations: there are no illustrations in this Plan.
Page 822, See list on the last page of this monograph: there is no such list.
Page 825, becoming a show-card writer be overcome: there is a word (can, may, might or similar) missing.
Index: Entry College, Girl Works her Way Through: the page numbers are missing from the source document.
Index: The non-alphabetical order of entries and the non-numerical order of page and Plan numbers have not been corrected.

Changes made

Footnotes, tables and illustrations have been moved out of text paragraphs. Some tables have been split or re-arranged.
The book occasionally uses multiple footnote markers for a single footnote. Where necessary or more convenient, such footnotes have been duplicated. In some footnotes, Idem has been replaced with the full text for the sake of clarity.
Obvious minor typographical and punctuation errors have been corrected silently.
Page xi: ‘ inserted before if you will not

hear reason; ” added after as Poor Richard says.
Page 68: Second PLAN No. 127 renumbered to 127B
Page 93: MAKING SACHET POWDERS PAY changed to MAKING SACHET POWDERS PAYS
Page 98: Heinze’s fifty-seven varieties changed to Heinz’s fifty-seven varieties
Page 172-173: alignment of items in Bill of Materials standardised
Page 181: Footnote anchor [10] inserted (invisible in source document) where it appears to fit best
Page 215: Footnote anchor [15] inserted (invisible in source document) where it appears to fit best
Page 234: simpling telling changed to simply telling
Page 237: come to the door changed to came to the door
Page 265: each the hills changed to each of the hills
Page 278: Shake the clothes well changed to Shake the cloths well
Page 344: aleic acid changed to oleic acid; merbane changed to mirbane
Page 375: LAWYERS PLAN changed to LAWYER’S PLAN
Page 440: PLAN No. 171 changed to PLAN No. 771
Page 448: he sewed rye changed to he sowed rye

Page 503: Second PLAN No. 907 renumbered to 907B
Page 515, row *r*: fireman changed to foreman
Page 517, row (2) *d*: detriment. no changed to no detriment.
Page 528, table header: cent changed to Per cent
Page 586, THE TRAIN DISPATCHER changed to PLAN NO. 965. THE TRAIN DISPATCHER
Page 647, entry Accountant: D12 changed to E12
Page 683: Footnote anchor [34] inserted (invisible in source document) where it appears to fit best
Page 846: footnote marker deleted after ... chiropody licensure (no footnote present in source document)
Page 850: Underloader Foreman changed to Unloader Foreman
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Page 862: If has not lost his head changed to If he has not lost his head
Page 875: 135 changed to 133 (Disabled Men)
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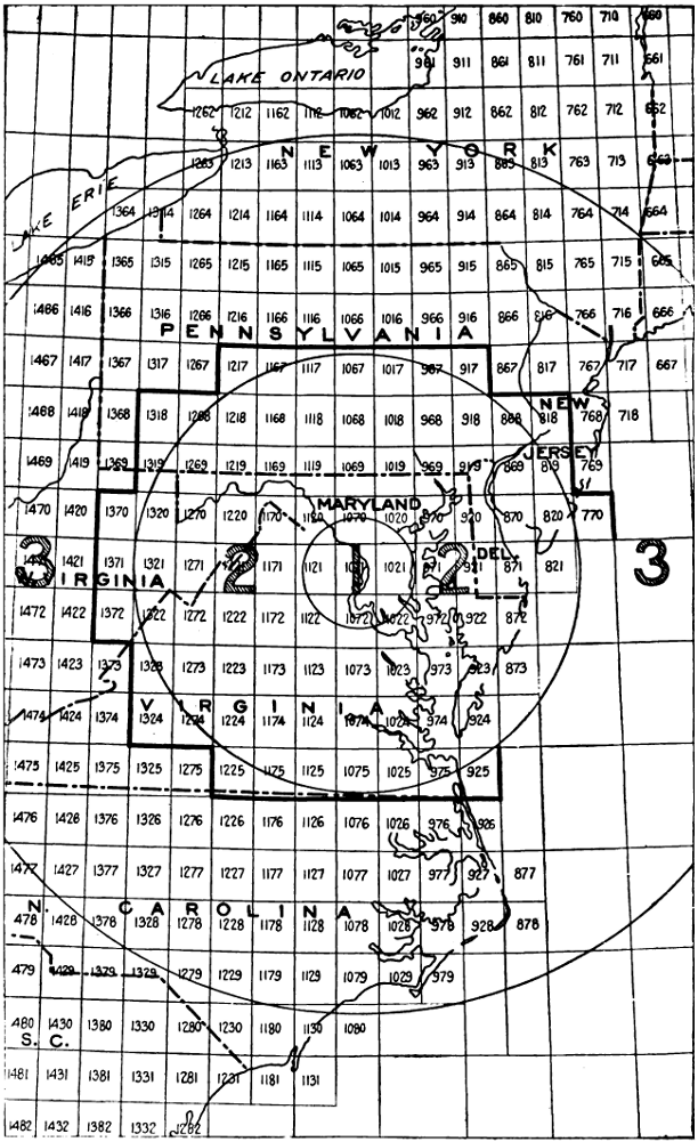
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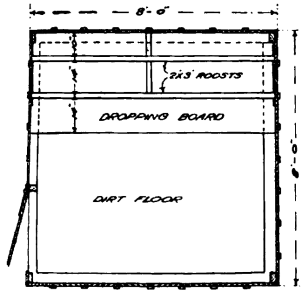
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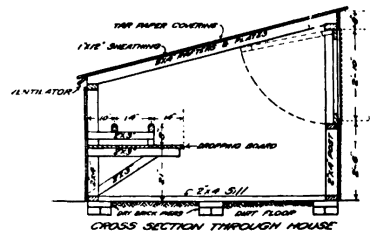
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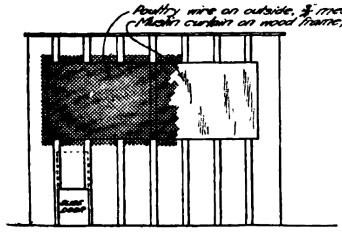
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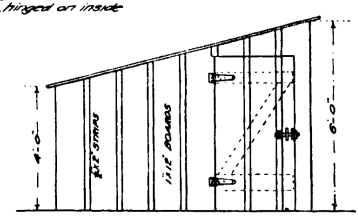
FLOOR PLAN



CROSS SECTION THROUGH HOUSE

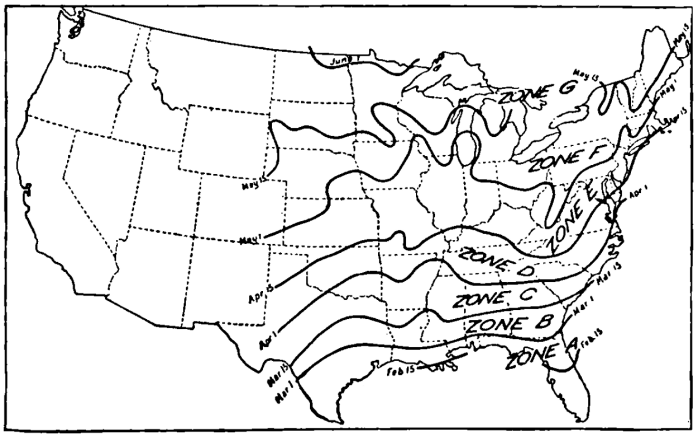


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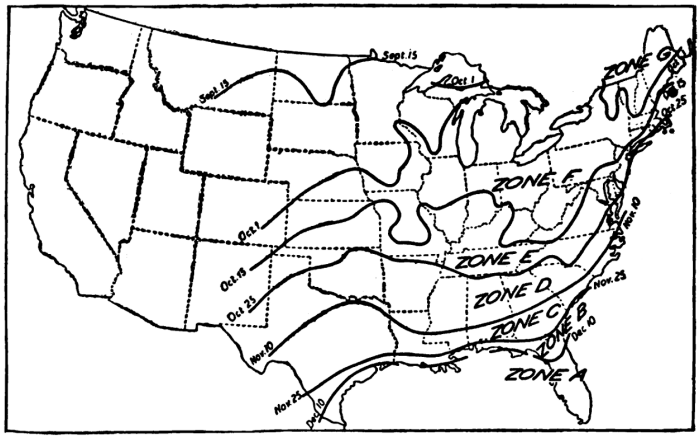


END ELEVATION

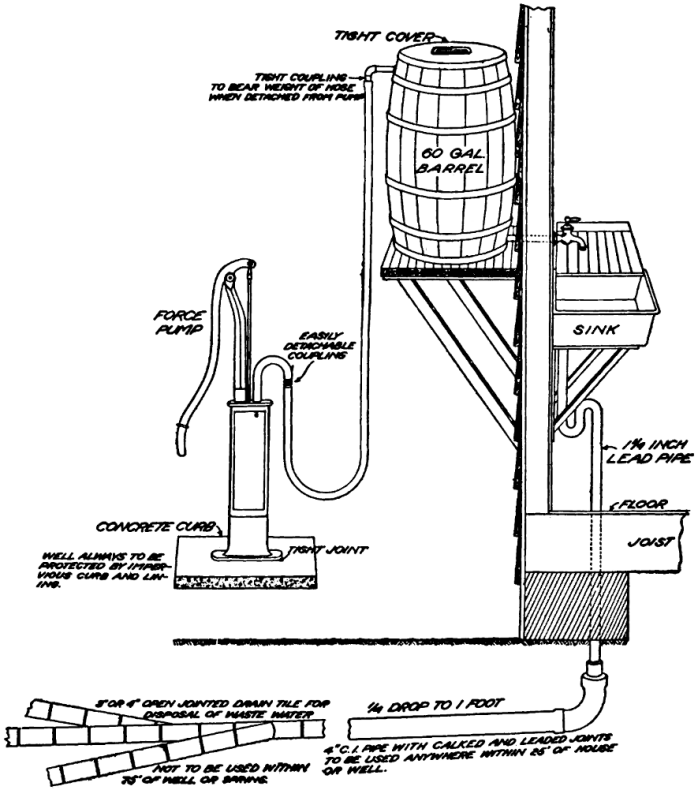
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TIGHT COVER
TIGHT COUPLING — TO BEAR WEIGHT OF HOSE WHEN DETACHED FROM PUMP
60 GAL. BARREL
FORCE PUMP
EASILY DETACHABLE COUPLING
SINK
1¼ INCH LEAD PIPE
FLOOR
JOIST
CONCRETE CURB
TIGHT JOINT
WELL ALWAYS TO BE PROTECTED BY IMPERVIOUS CURB AND LINING.
3" OR 4" OPEN JOINTED DRAIN TILE FOR DISPOSAL OF WASTE WATER
NOT TO BE USED WITHIN 75' OF WELL OR SPRING
¼ DROP TO 1 FOOT
4" C. I. PIPE WITH CALKED AND LEADED JOINTS TO BE USED ANYWHERE WITHIN 25' OF HOUSE OR WELL.

back