The Railway Library...

A Collection Of Noteworthy Chapters, Addresses And Papers Relating To Railways, Mostly Pub. During The Year ... [v.1]-7 1909-1915, Volume 1



ANONYMOUS

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Footnote anchors in a table are of the form (a) and the corresponding Footnote is placed at the bottom of that table. Other Footnote anchors are of the form [A] with placement at the end of that Chapter.

Obvious typographical errors and punctuation errors have been corrected after careful comparison with other occurrences within the text and consultation of external sources.

More detail can be found at the end of the book.

The Railway Library
1909

A COLLECTION OF NOTEWORTHY CHAPTERS, ADDRESSES AND PAPERS RELATING TO RAILWAYS, MOSTLY PUBLISHED DURING THE YEAR.

COMPILED AND EDITED BY

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1910

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INTRODUCTION

In the following pages is presented a number of the more timely papers and addresses of the year 1909 on the present railway situation, together with chapters from two books of current interest on the same subject. As the object of the compilation has been to present in permanent and accessible form information in regard to American railways worthy of more than the ephemeral life of newspaper or pamphlet publication, it has been thought well to accompany the messages of today with a brief glance at the conditions on this continent before the days of railways. Happily for this purpose the first two chapters of Messrs. Cleveland and Powell's "Railroad Promotion and Capitalization in the United States," fresh from the press, afforded the very background needed, and the first report of the engineer of the

Pennsylvania Railroad provided the glasses through which the reader can look forward from the small beginnings to what is now known as the greatest railway system on the globe.

After this study of conditions as they were, and of the opportunities that invited the railway pioneers of 1848, it is instructive to read the utterances of the latest of our empire builders, whose foresight and indomitable will anticipated the development of our Pacific Northwest with railway facilities that already lag behind the necessities of its amazing growth.

Of the other addresses and papers it is unnecessary to say more than that they reflect the prevailing sentiments of all thoughtful railway officials respecting conditions of the gravest import to the great industry upon which the entire fabric of our national prosperity and well-being depends. Only the shallowest student of our social, economic and political system can view the persistent attacks upon the American system of transportation without serious alarm for the results. This alarm is the prevailing note of these papers and it comes from men who are at the helm and who see the financial breakers upon which the fierce blasts of political exigency are driving the railways.

The papers by Sir George S. Gibbs and Mr. A. M. Acworth, the leading authorities on British railways, discuss the alternative to wisely regulated railways—nationalization of railways. With a continuance of unwise and burdensome regulation of railways, which strips responsibility of all discretion, nationalization is inevitable.

The Bureau's statistics of American railways for the year ending June 30, 1909, is included in THE RAILWAY LIBRARY because it affords the latest data

not only as to the railways of the United States but for the world.

Acknowledgments are made to the authors and publishers of the various papers, and especially to the publishers of the two works from which important chapters have been extracted by their courteous permission, as well as that of their authors.

If this publication fulfils the purpose of its compilation, it will be succeeded by annual volumes of like character under the same title.

S. T.

Chicago, June 1, 1910.

PRE-RAILWAY ERA IN AMERICA

From Chapters I and II of "Railroad Promotion and Capitalization in the United States," by F. A. CLEVELAND and E. W. POWELL. Longmans, Green & Co., 1909.

(By permission of the authors.)

Inland transportation, as we know it, is the product of the last century. It had its beginning in the industrial revolution. In England at the close of the eighteenth century the manor as a productive agency had been supplanted by a system of domestic production, and this in turn was giving place to the factory. The combined influences of increasing

capital and invention had operated to centralize the industrial population in the towns. Ocean commerce was comparatively well developed, and manufacture was fast being established upon a modern basis; but inland transportation was still encumbered by such primitive methods as to make difficult the utilization of the resources of the interior. A century and a half before, Lord Bacon had called attention to the three great elements necessary to make a nation great and prosperous—"a fertile soil, busy workshops, and easy conveyance of men and things from one place to another,"—but the significance of this reflection was not appreciated until after the middle of the eighteenth century. The controlling force of custom —social inertia—had stood in the way of progress.

IN ENGLAND.

Until about the opening of the nineteenth century the principal manufacturing towns of Great Britain were situated on or near the coast; for in the inland country goods were still carried on the backs of men, or hauled in carts over heavy roads. Said Lardner: "The internal transport of goods in England was performed by wagon, and was not only intolerably slow, but so expensive as to exclude every object except manufactured articles, and such as, being of light weight and small bulk in proportion to their value, would allow of a high rate of transport. Thus the charge for carriage by wagon from London to Leeds was at the rate of £13 ($63.31) a ton, being 13½d. (27 cents) per ton per mile. Between Liverpool and Manchester it was 40s. ($9.60) a ton, or 15d. (30 cents) per ton per mile. Heavy articles, such as coal and other materials, could only be available for commerce where their position favored transport by sea, and, consequently, many of the

richest districts of the kingdom remained unproductive, awaiting the tardy advancement of the art of transport."

IN AMERICA.

Before the Revolution the American colonists lived in almost complete isolation. Travel by land was limited, for water communication presented fewer obstacles to progress. Population was arranged along the seaboard, or in isolated groups a short distance inland. Living narrow, self-centered lives, each community developed a distinct dialect and characteristic customs and dress. Social activities were limited to going to mill, market and church, or exchanging friendly calls; traveling on foot or on horseback along wooded trails. Even between seacoast towns there was little interchange of products or population; and a citizen of one colony going to another was at once struck with the many local peculiarities. It was less than twenty years before the Revolutionary war when the first stage line was opened between New York and Philadelphia, and three days were then required for a single trip. It was ten years later when the first stage line was established between Philadelphia and Baltimore.

METHODS OF TRAVEL AND TRANSPORT.

Between towns of considerable size there were country roads over which vehicles could pass when the weather would permit. The stage coach, which was the only public land conveyance, plied along the coast and between a few inland centers, but the coaches of that day were rude boxes swung on wheels by leathern straps instead of springs, with seats for a dozen or more and accommodations for a

limited amount of baggage. The rate of travel was from two to six miles an hour, according to the condition of the roads and the importance of the route. On the farm the mud-boat or stone sledge was in common use, and at times it was even employed to carry produce to local markets. In more progressive communities two-wheeled carts and wagons were to be found. The best of roads, however, were nothing but "mud roads"; and the wagons, commonly of the linchpin type, were clumsy and awkward. Some of the more primitive wagons had wheels made of cross sections of trees, trimmed and centered to roll on axles of wood. Those who traveled had little thought of time; companionship found expression in story-telling, gossip and tippling; and an emergency which required all to get out and "take a wheel" only added spice to the trip.

We have the following description of the roads about Philadelphia, the metropolis and commercial center of the New World: "On the best lines of communication the ruts were deep, the descents precipitous. * * * Near the great cities the state of the roads was so bad as to render all approach difficult and dangerous. Out of Philadelphia a quagmire of black mud covered a long stretch of road near the village of Rising Sun. There horses were often seen floundering in the mud up to their bellies. On the York road, long lines of wagons were every day to be met with, drawn up near Logan's hill, while the wagoners unhitched their teams, to assist each other in pulling through the mire. At some places, stakes were set up to warn teams of the quicksand pits; at others, the fences were pulled down, and a new road made through the fields." Transportation facilities were either entirely lacking or such as to make travel both expensive and hazardous. It is difficult to

realize that as late as 1780 the roads over a large part of Pennsylvania were narrow paths which had been made through the woods by Indians and traders.

ABSENCE OF ROADS IN THE INTERIOR.

The isolation of interior settlements finds apt illustration in the Wyoming valley. This rich region along the Susquehanna had been until 1786 almost completely cut off from the outer world. A small colony had moved in from the East, and taking color of title from Connecticut, disclaimed the sovereignty of the Quaker proprietary. War consequently broke out between this isolated settlement and the Pennsylvania government. Several military expeditions were sent out to reduce the "Yankees" to submission; but the absence of roads and the necessity of carrying provisions on horseback left the determined pioneers masters of the situation when the larger issue, the Revolutionary war, suspended local strife. The spring after Burgoyne's surrender at Saratoga the settlers of the Wyoming valley learned that a detachment of Johnson's "Royal Greens" and Butler's "Rangers," with a company of Tories, had allied themselves with the Seneca Indians, and were preparing to descend upon the valley. A courier was despatched to congress, and appeals for aid were made to the neighboring states, but the isolation which had before served for defense now brought disaster. With the June freshet the British allies came down from Tioga, and nothing but ruins were left to mark the scene. One of the reasons urged for the removal of the state capitol from Philadelphia to Harrisburg in 1799 was the cost of travel, which bore heavily upon legislators from the interior.

THE ROADS OF NEW ENGLAND.

The early settlers of Springfield, Massachusetts, were obliged to send their household goods from Roxbury around by way of Long Island Sound and the Connecticut river, but they themselves were able to proceed on foot along an Indian trail. In time this trail was widened, and as the "Bay path" and the "Boston road" occupied an important place among the transportation routes of the colonies. It was, however, little more than a narrow wagon path until after the Revolution, and so indistinct was it that travelers frequently wandered off the route. A curious stone post marks the place near the national armory at Springfield, where in 1763 a western Massachusetts merchant lost his way, and set up a guide for other travelers. Even as late as 1795 there were but two stages between Boston and New York, and a week was required for the journey. John Bernard, the English actor, thus described a typical New England road in 1797: "Though far better than in any other quarter of the Union, the frequent jolts and plunges of the vehicle brought it into sad comparison with the bowling-greens of England. Very often we surprised a family of pigs taking a bath in a gully of sufficient compass to admit the coach. As often, such chasms were filled with piles of stones that, at a distance, looked like Indian tumuli. The driver's skill in steering was eminent. I found there were two evils to be dreaded in New England traveling—a clayey soil in wet weather, which, unqualified with gravel, made the road a canal; and a sandy one in summer, which might emphatically be called an enormous insect preserve." Such testimony makes real the difficulties which attended travel over the important routes, and enables one to understand how it could have required Washington nearly two

weeks to make the trip from Philadelphia to Cambridge at the outbreak of the Revolution.

AFTER THE REVOLUTIONARY WAR.

Before the Revolution the subject of road improvement was seldom considered in public assemblies, and the early laws contain few provisions even for common roads. Those who proposed measures for general improvement met with little encouragement. As early as 1690 William Penn suggested the practicability of a waterway from the Schuylkill to the Susquehanna. In 1762 David Rittenhouse of Philadelphia, and Provost Smith of the University of Pennsylvania, proposed a similar project, and made surveys of the route by the Swatara and the Tulpehocken; in 1769 the American Philosophical Society interested itself in a canal survey between Chesapeake Bay and the Delaware, recommending the enterprise to the public. In 1768 Governor Moore of New York projected a canal around the Canajoharie Falls of the Mohawk. But to none of these suggestions was there any active response, for the time was not ripe for such undertakings.

Contributing to the road-making impulse immediately after the war of independence was a newly awakened community interest. At the time of the adoption of the constitution there were two distinct classes in the United States: a highly localized class of the seaboard and of the inland trade routes, and a widely distributed agricultural class. American commerce was largely confined to American products. England, France and Holland monopolized the trade of their colonies, and in other ways favored their own merchantmen in foreign trade. Such being the condition, our commercial

advantage lay in the development of our own resources. The settlement of the Middle Atlantic states and of the valleys of the interior only served to strengthen the interdependence of the people, who found a common interest in internal improvements. To the agriculturist, cheap conveyance to market was a prerequisite to profitable industry. To the commercial class on the seaboard and on the leading trade routes, inland improvement was at that time no less important.

FIRST ERA OF ROAD MAKING.

There was a notable change in the popular attitude toward road making after the war, and all public-spirited men now saw in better means of communication an instrument for the establishing of American supremacy over the western continent. Legislatures made generous appropriations for highways. An active migration set in from New York and northern Pennsylvania to the West. In 1738 the first regular mail service was established between Albany and Schenectady. In 1793 the horse path from Albany to the Connecticut valley was widened to a wagon road. Like activity in road making was shown throughout southern and western New York, middle Pennsylvania, Maryland and Virginia.

In 1785 Pennsylvania appropriated $10,000 to lay out a road from a point near the mouth of the Juanita to Pittsburgh. In 1786 an act was passed appropriating $1,500 "to view and open a road from Lehigh Water Gap to Wyoming," which was the first road into that valley from the Delaware. In 1787 another road was authorized between the Susquehanna and the Delaware. Activity in opening communication with the interior increased until by 1791 the movement had assumed proportions to be

styled a "mania." By a single act over $150,000 was appropriated for the improvement of eleven rivers and over a score of roads in different parts of the state. Other acts were passed at the same session, granting charters and appropriations for various transportation enterprises. New York in 1797 authorized the raising by *lotteries* of $45,000 for the improvement of various roads throughout the state. As if by common impulse, all the states now became interested in road improvement, and congress was asked to aid by this means the opening up of the resources of the interior.

BEGINNING OF THE CANALS AND PIKES.

The low cost of water transportation had early directed popular attention to canals as a means of overcoming obstructions in natural water courses, thereby serving the needs of the inland population, and also providing the means for diverting trade from one seaport to another. The Revolutionary war was hardly over when Charles Carroll organized a company to open a canal about the obstructions in the lower Susquehanna.

Those who took the most active interest in canal construction at this time were men who, like Washington, viewed the future with patriotic interest. This interest, however, was one which did not appeal to the private investor. An enterprise based upon such public consideration required government support.

This period also marked the beginning of turnpike construction. The first turnpike road in this country of which we have a record was built between Alexandria and the Lower Shenandoah. It was begun in 1785-6, and its completion was the cause of great

satisfaction to Jefferson and other public-spirited men of Virginia, who had labored in the cause of a "broader national life." Alexandria was at that time an important competitor of the other seaboard cities. Across the Maryland peninsula on the Chesapeake lay Baltimore, a commercial rival of both Alexandria and Philadelphia. In 1787 the grand jury sitting at Baltimore called attention to the deplorable condition of the roads leading to that city, and urged the authorities to take immediate action. As a result, the county government ordered the old Frederick, Reistertown and York roads turnpiked at public expense. To the west of Philadelphia lay the Susquehanna valley. The natural outlet of this growing region was down the Chesapeake to Baltimore. To attract traffic to the Quaker City a company was organized in Philadelphia in 1792 to build the Lancaster pike, which was the first turnpike in this country built by voluntary subscription.

EFFECT OF EUROPEAN WARS ON AMERICAN SITUATION.

The outbreak of the European wars in 1793 was followed by a marked change in the American industrial situation. The immediate effect upon the grain growing of the West was to increase the demand for wheat. Prices of cereals rose to twice their former height. The average price of flour during the seven years from 1785 to 1793 had been about $5.40 a barrel; the average price from 1793 to 1806 (the two years of peace, 1802 and 1803, excluded) was $9.12. Such was the inducement to grain growing during this period.

Back from the North Atlantic coast radiated rich valleys—large tracts of agricultural lands which were well adapted to grain growing. A rush set in for the unclaimed resources of New York, Pennsylvania and

Maryland, and for a time the tide of migration moved to the westward along the Ohio, and the border of the Great Lakes. Those who cultivated lands near the coast shared in the increased prosperity due to the European disturbance, but unless they could obtain better means of transportation, those who had located inland soon found that they could profit little. Grain as compared with cotton and tobacco was a low priced product. At best, the cost of transportation was ten dollars a ton for each hundred-mile haul; in many places it was much higher.

AMERICANS TURN TO HOME MARKETS.

Before 1807 the country had come to be divided into three sections: the commercial, shipbuilding East, the cotton and tobacco exporting South, and the isolated grain growing interior, linked with which was a languishing manufacturing interest on or near the seaboard. Beyond a limited range the producing proportion of our population could not participate in the profits of the European trade. The grain growers demanded a market, and the manufacturers saw their profits swept away by an influx of foreign goods. These were the interests which suffered from the diversion of capital to shipbuilding and foreign trade. Both looked to internal improvements as a solution of their troubles; their only hope was in a *home market*—in better roads, and in the development of the resources about them.

In the United States agriculturist and manufacturer turned to the national government for relief. But so long as the administration remained in the hands of the foreign trade party, the way was blocked to internal improvements. During the first three

administrations after the adoption of the constitution, the individualistic republicans had been unable to gain control of the government; but with the admission of Kentucky, Tennessee and Ohio and the settlement of the parts of the sea coast states remote from transportation facilities, the anti-commercial constituency gained the balance of power. It was to the voters of these new regions that Jefferson owed his success. It was to satisfy the demands of the West for an outlet to the gulf that Louisiana was purchased. To satisfy the insistent demand for internal improvements the national government also built the Cumberland road, and contributed to many other transportation projects. It was the open hostility of the West and South toward the commercial East which forced the embargo, and broke down the domination of the seaboard interests in national affairs.

RIVER TRAFFIC DEVELOPED BY PRIVATE CAPITAL.

The inland routes which required the least capital to utilize in a primitive way were the rivers. Here the chief obstacle was the current. In the early nineteenth century long lines of rafts, flat-boats and "arks" might be seen floating down the Connecticut, the Hudson, the Susquehanna and the Potomac. There were 2,800 miles of rivers tributary to the Atlantic seaboard which were navigable, or which needed only to be cleared of snags and rocks to render them available for use by small craft. It was estimated that on the eastern slope there were about 25,000 miles of streams which might be utilized by the construction of locks and canals. In the Mississippi valley there were 14,000 miles of navigable rivers, and about 75,000 more which were considered possibilities. But with a three or four-mile

current it was impracticable to row, pole or warp a boat and cargo upstream for a long distance. The result was that along those streams which nature had provided as highways the producer first built his boat out of the timbers of the forest, then loaded it with the produce of his farm or mill, and floated down stream to market. Upon reaching his destination, he abandoned his craft and returned by stage or on foot. This was indeed an expensive process—expensive in time, expensive in funds and expensive in human effort. It was an expense of production, however, and one which did not require capitalization.

It was not until 1807 that the steamboat became a commercial success. At this time New York was becoming well settled, and as the Hudson was a natural highway a boat which could drive against wind and stream had every promise of success. Robert Fulton, who had been interested in the problem of steam navigation since 1802, returned from Europe after several years of investigation, and brought back one of Watt's engines. He obtained the financial co-operation of Chancellor Livingston, and together they obtained a monopoly of steam navigation in New York waters. A boat was fitted with the Watt engine, and a successful trip was made from New York to Albany and return. The route yielded large profits from the start, and other boats were built. By 1813 six boats were doing a profitable business on the Hudson. The success of Fulton and Livingston proved attractive to others. Crowded out of New York's waters by the monopoly, John Stevens, in 1809, took a steamboat around from Hoboken into the Delaware. The Phoenix now found business so good in those waters where Fitch had failed that it was soon followed by two other boats. Soon the

whole Atlantic seaboard, including the St. Lawrence, was supplied with steam craft.

But enterprise in steamboat navigation was not confined to the coast. Business opportunities in the Mississippi valley attracted the attention of one Nicholas Roosevelt, who proposed to Fulton and Livingston that he would make a trip to New Orleans to survey the prospects for an inland water route, with the understanding that they should finance a steamboat line if his report was favorable. So favorable was it that he was placed in charge of the construction of a river boat at Pittsburg, and in 1811 the *New Orleans* made her maiden trip down the Mississippi. Thereafter Roosevelt's boat took a regular route between New Orleans and Natchez. Other boats were added, but it was not until 1815 that a voyage was made upstream from New Orleans to Louisville and Cincinnati. After assisting Jackson in the campaign about New Orleans, the *Enterprise*, taking advantage of high water, steamed to Louisville in *twenty-five days*. In 1817 the *Washington* accomplished the same feat while the river was within her banks, and the public became convinced of the practicability of upstream navigation. The same year the *Shelby* reduced the time to twenty days, and by 1823 *fifteen days sufficed*. With the success of the steamboat, the Middle West was opened to rapid communication with the gulf.

WAGON ROADS INTO THE INTERIOR.

From 1807 to 1815 two changes had a marked effect upon the national attitude toward internal improvements. Before the outbreak of the European wars manufactures had made some progress in New England and in Pennsylvania. During the first struggle, and before the peace of Amiens, the only

serious obstacle to American industry was the tendency to divert capital to wheat raising, shipbuilding and foreign trade. Prices were high, and the makers of goods found encouragement in large profits. With the cessation of hostilities American manufacturers looked to Congress for protection, for foreign goods poured into the country in such quantities and at such prices as to threaten the destruction of domestic production.

At the most, however, the manufacturing population was relatively small, but the disturbances to industry from 1815 to 1818 were such as to throw many out of employment, and to bring to the verge of bankruptcy and starvation those who had been engaged in shipbuilding and foreign trade. A great exodus to the interior was the result. In wagons, on horseback, or on foot—sometimes using handcarts, sleds and wheelbarrows to carry their provisions and light luggage—emigrants crowded the wooded paths that led to the West, where they might find conditions more favorable to independent livelihood.

All these conditions conspired to increase the depression in the East, and drive her people into agriculture and the development of the interior; while the opening of the Mississippi by the steamboat added to the attractions of the rich valleys in the Middle West. But upon his arrival in the West the newcomer found himself beyond the range of any market except New Orleans. To reach this market he "would produce or get together a quantity of corn, flour, bacon and such articles. He would build a flat-bottomed boat on the shore of some river or large creek, load his wares into it, and, awaiting the rise, with a few of his negroes to assist him, would float down to New Orleans. The voyage was long, tedious

and expensive. When he arrived there he found himself in a strange city, filled with sharpers ready to take advantage of his necessities. Everybody combined against him to profit by his ignorance of business, want of friends or commercial connections, and nine times out of ten he returned a broken merchant. His journey home was performed on foot, through three or four nations of Indians inhabiting the western parts of Mississippi, Tennessee and Kentucky. He returned to a desolate farm, which had been neglected whilst he had been gone. One crop was lost by absence and another by taking it to market. This kind of business was persevered in astonishingly for several years, to the great injury and utter ruin of a great many people." It was the demand for safe transportation arising out of this situation which made Roosevelt's steamboat enterprise a success.

DEVELOPMENT OF COASTWISE COMMERCE.

The British blockade of our coast during the war of 1812 had a marked effect upon the development of inland routes of transportation, as may be seen from the following: "The interruption of the coasting trade was indeed a very serious affair. For years past that trade had given occupation to thousands of coasters and tens of thousands of sailors. The shoes made at Lynn, the Yankee notions of Connecticut, the cotton cards, the domestic cottons, the playing cards produced in New England, the flour of the Middle States, the East India goods brought in from abroad had found a ready market at Charleston, Savannah and Augusta, whence great quantities of rice and cotton were brought North. On the arrival of the British fleet this trade, no longer to be carried on in safety by water, began of necessity to be carried on

by land. At first some merchants at Boston, having chartered a few wagons, despatched them with loads to Philadelphia, and even to Baltimore. This was enough. The hint was taken. A new industry sprang up, and by early summer the roads leading southward exhibited one continuous stream of huge canvas-covered wagons tugged along by double or triple teams of horses or of oxen. No distance was then too great, and hundreds of them would make their way from Salem and Boston to Augusta and Savannah. An estimate made towards the close of the year (1814) places the number of wagons thus employed at four thousand, and the number of cattle, horses and oxen at twenty thousand; nor does this seem excessive, for a traveler who drove from New York to Richmond declares that he passed two hundred and sixty wagons on the way."

THE CAPITALIZATION OF TURNPIKES.

Both overland trade and westward migration drew attention to the importance of good roads, both swelled the receipts of turnpike companies, and gave encouragement to investment of local capital in transportation improvement. By 1804 the Lancaster road had been extended to Pittsburg, and a regular stage line established which made a trip each way once a week. State governments lent every encouragement to the building of turnpike roads, *even to the extent of subscribing to their stock*. From contemporary writings and charter grants, it is estimated that nearly eight hundred turnpike companies were organized before the end of the war of 1812. Pennsylvania was pre-eminent in granting liberal charters, and toll rights, thereby encouraging the people of the more thickly settled districts to make such improvements for themselves. The

corporations thus formed had little difficulty in obtaining capital subscriptions, whether for the construction of turnpikes or bridges, or for the operation of ferries. To the stock of these corporations several of the states subscribed in varying amounts. Although a few toll roads were constructed before that time, the turnpike movement may be said to date from the opening of the nineteenth century. Turnpikes (so called from the revolving, or turning bar, or pike which, when set across a toll road, prevented passage until charges were paid) were macadamized or otherwise improved at a cost varying from $500 to $10,000 per mile. Almost without exception they followed in a general way the old lines which had been worked out when travel on foot or on horseback was the chief method of communication, but wherever possible they were made straight, going over and not around hills and other obstacles. When the Boston and Salem turnpike was built a small but deep pond was encountered, but instead of going around the road crossed on a floating bridge. The construction of bridges and the operation of ferries were parts of this larger turnpike movement, and like the turnpikes themselves, they were usually disappointing to those who had invested with the hope of large dividends. At best, this movement did but little to supply the great need for improved transportation. To passenger service it was a great boon, in that it added much to personal comfort, though the time and cost of travel were little reduced. *It required five dollars and fifty cents to pay tolls from Philadelphia to New York, besides the hotel bills and other expenses of the road.* It took a week to go from Philadelphia to Pittsburg. What the country most needed—a cheap method of handling the bulky products of the interior—was not supplied.

Freight was carried upon the turnpike with great difficulty and expense, and heavy goods were compelled to remain untouched on account of the high tolls.

REVIVAL OF CANAL CONSTRUCTION.

To meet this situation, canals had been proposed long before the period of turnpike building, and some surveys had been made, but because of lack of capital, construction was deferred. The earliest projects were for short cuts around rapids or falls, or between neighboring waters, but bolder plans followed. The first canal of any importance actually begun in the United States was the two-mile cut through the rocks about the South Hadley falls of the Connecticut. The Massachusetts legislature passed an act in 1792 incorporating the "Proprietors of the Locks and Canals on Connecticut River." Work was begun at once with Dutch capital, and in two years the canal was completed.

The Santee canal in South Carolina was the first large work of this kind constructed in the United States. It connected the Santee river with the Cooper river at Charleston, and it was opened in 1800. Its length was twenty-two miles, and its cost $600,000.

A much more important project was the Middlesex canal in Massachusetts, a charter for which was obtained in 1793. This canal extended from the Charles river to the Merrimac, twenty-seven miles, and was designed to attract to Boston the trade normally tributary to Portsmouth. Work was begun in 1794, and ten years later the canal was opened for traffic, though it was not entirely completed until 1808.

The successful completion of the Erie canal, which

became an assured fact long before its actual accomplishment in 1825, stimulated similar projects all over the country. The local strife between trade centers, combined with the local demand for outlet, set a number of private projects in motion. Boston, Philadelphia, Baltimore and Georgetown were successfully appealed to for support for transportation routes which would enable them to compete with New York for the trade of the West. The Blackstone Canal Company, chartered by Rhode Island and Massachusetts in 1823, began the construction of a canal along the Blackstone river to connect Providence and Worcester, and this route was opened for traffic in 1828. Another New England project started at about the same time was for a canal to extend from New Haven northwards to Northampton, and on up the Connecticut valley into Vermont. Two companies were chartered for this purpose, the Farmington canal in Connecticut in 1822 and the Hampshire and Hampden canal in Massachusetts in 1823. The Farmington canal was completed in 1830; but the work on the Hampshire and Hampden project was for a time abandoned for want of funds, and the canal was not cut through to Northampton until 1835. While carrying a large traffic this canal, like the Blackstone canal, was more beneficial to the general business of the section traversed than to those who held its stock. Other private works of this period upon which large sums were expended were: The Delaware and Raritan canal, connecting Philadelphia with New York; the James River and Kanawha, an unfinished canal project in Virginia; and the Chesapeake and Ohio canal, which was not extended further west than Cumberland.

SCARCITY OF CAPITAL FOR CANALS.

On account of local needs, few canal or navigation companies had difficulty in obtaining their first subscriptions, but most of them experienced trouble in collecting assessments and in obtaining additional subscriptions. This timidity of investors, it now appears, was not without ground, for few of the private canal companies were able to bring their construction work to completion, and fewer still paid any dividends to their stockholders. The Middlesex canal was profitable until the building of a parallel line of railroad; the Montague canal, also in Massachusetts, yielded a fair return during the first twenty years that followed its completion in 1800. The Delaware and Schuylkill canal may be cited as a third exception. But it early became evident that public works of the number and magnitude required could be constructed only at national expense. As the constitution contains no direct provision for internal improvements, the subject became a party question.

From the first Congress had appropriated money for lighthouses, public piers, buoys and other aids to navigation, and about such action there had been no dispute, for it was agreed that these matters lay strictly within federal jurisdiction. From the first, also, Congress had been petitioned for appropriations for internal improvements. Most of these demands were local in character, and so were easily disposed of; but when the directors of the Chesapeake and Delaware canal asked Congress to supply the funds which they had been unable to obtain from sales of shares, the question was forced to an issue. Two facts were incontestable, the general importance of the work, and the ability of the national government to carry it on in view of the revenue surplus in the treasury.

In another way Congress had already committed itself to the support of public works. So long as the country was made up of states bordering on the Atlantic seaboard, improvements were matters of interest to all alike, but with the admission of new states in the interior, and the prospect of future accessions to the westward as the country expanded, an element of injustice seemed to enter these appropriations, which benefited the seaboard states at the expense of all. The feeling of discontent was intensified by the fact that the favored states were more thickly settled, and therefore better able to incur the expense. With the admission of Ohio, however, this was remedied by the establishment of the five per cent. land fund, and the self-interest of the seaboard was appealed to by the argument that the building of roads into the West would so stimulate sales of the public lands as to increase the national revenues.

The matter of national aid to internal improvements was again brought before Congress in 1816 by Calhoun, who presented a bill providing for the direct construction of roads and canals and the improvement of waterways out of a fund to be created by setting apart the bonus and dividends received by the government from the United States bank. This bill, which was drawn up by Clay, passed through Congress in 1817, but it was vetoed by Madison, who, though favorably disposed toward public works, had inherited from Jefferson a doubt as to the rights of Congress to participate in their construction without a constitutional amendment specifically granting the authority. And Monroe, holding the same opinion, vetoed a bill for the repair of the Cumberland road, and submitted to Congress a long statement of the principles involved in his

decision. In the meantime, weary of waiting, New York had succeeded in building the Erie canal. Its success shifted the whole plan of promotion. With credit established abroad, internal improvements were taken up by the states, and for the next two decades transportation interest centers in state funding.

It was during this period of struggle for means of transportation facilities adequate to meet the demands of those whose fortunes had been cast in the remote interior that the railroad became the subject of serious economic interest.

(In subsequent chapters, Messrs. Cleveland & Powell trace the beginnings of the railroad, the physical and financial difficulties that beset them at every turn; the indomitable spirit with which they were projected, promoted and built into every quarter of the Union, until through the investment of billions of private capital the United States has been furnished with the best system of internal transportation in the world. To their pages the reader is referred for the continuation of this most interesting narrative.)

FIRST ANNUAL REPORT

OF THE CHIEF ENGINEER OF THE

PENNSYLVANIA RAILROAD COMPANY

June 12, 1848.

BY J. EDGAR THOMSON.
Chief Engineer.

ENGINEER DEPARTMENT, PENNSYLVANIA R. R. CO.

Philadelphia, June 12, 1848.

To the President and Directors of the
Pennsylvania Railroad Company:

GENTLEMEN—I have the honor to communicate to you the following Report of the operations of this Department since it was committed to my charge, now something more than a year.

Under the organization of the Engineer Department, as adopted previous to my acceptance of the office you have conferred upon me, the Road was to be divided into three divisions, Eastern, Western and Middle: Edward Miller, Esq., as associate engineer, was assigned to the Western, and W. B. Foster, Jr., to the Eastern division. These gentlemen had entered upon the survey of their respective lines, previous to my arrival, under instructions from the president, each with two full corps of assistants. The middle, or mountain division, not having been provided for, I concluded after a full consideration of the subject that the interest of the Company would be best promoted by so altering the organization as to abolish it altogether, and extend the eastern and western divisions to the summit of the Allegheny mountains, the natural boundary between them. Under this arrangement, the surveys

have since been prosecuted.

The Board having directed me to cause a location of the whole line, from Harrisburg to Pittsburg, to be made at the earliest practicable period, I at once commenced a reconnoissance of that portion of the intervening country, over which it seemed—from an inspection of a map of the State—that the Road would probably pass, for the purpose of determining the best plan of operations to carry out their views.

The Legislature, in their grant to the Company, wisely left the choice of a route for the Road, between its termini, entirely free, throwing upon the Board the responsibility of selecting, upon the wide field that was opened to them, a line for their great work, which would offer the cheapest railroad conveyance for the transportation of freight and the most expeditious for travel that could be selected between the west and the northern Atlantic cities.

Such a route, it was believed from previous surveys, lay within the borders of Pennsylvania, an expectation which has been fully justified by the results obtained from our examinations.

Of the several routes proposed, I found no difficulty—after a careful inspection of the plans of the various surveys, made under the authority of the Commonwealth, and my reconnoissance of the country—in coming to the conclusion that the valley of the Juniata offered advantages for a line which, whether we consider the low gradients that may be obtained along it or its general directness, the desiderata required, is without a rival.

This stream has its source in the Alleghenies, and consequently severs, as it flows towards the Atlantic, all the secondary mountain ranges that lie east of

them, and it heads opposite to the Black Lick and Conemaugh rivers, both of which sever those on the west, leaving the main Allegheny only to be surmounted, which would have to be encountered upon any other *direct* route, in addition to many of the inferior mountain ranges. A more northern route, by the west branch of the Susquehanna (which has its source beyond the Allegheny mountains), would have encountered less elevation at the principal summit, but its great increased length precluded its adoption; while, on the other hand, a southern route, though not indirect, was equally objectionable on account of the rugged character of the country, and the high gradients necessary to overcome the numerous summits upon it. A partial examination of one of the proposed southern routes was made, which followed the Cumberland Valley Railroad to near Shippensburg, and thence, crossing to the west side of the valley at Roxbury, it passed through the Blue Mountain, by a long tunnel, into Path valley; thence, following around the point of Dividing mountain, it crossed this valley and passed through Tuscarora, by another tunnel, to the valley of Augwick creek. Thence it would have been traced between Broad Top and Sideling mountains, and up Dunning and Bob's creeks to the summit of the Alleghenies at Bob's Creek gap; or, turning west by Bedford, crossed the Alleghenies at the head waters of the tributaries of Castleman's river, where the mountain is still much more elevated.

A line leaving the Cumberland Valley Railroad at Chambersburg, and turning the end of Blue mountain, thence seeking the low depression at Cowan's gap in Tuscarora, would be too circuitous to compare favorably with the bolder line from Shippensburg, already described.

But that line would encounter engineering difficulties of the most formidable character; leaving out of view its objectionable gradients, and considering it in reference to its cost, and the local accommodations it would extend to a large portion of the State—at present in a great measure deprived of the advantages of the State improvements—(the strongest argument in favor of the route), it will be found that equal accommodations could be extended to that region with a *less* expenditure of *capital* by placing the main stem of the road on the Juniata, and running a branch along one of the comparatively level valleys that lie between most of the parallel mountain ranges that we pass.

The facilities that railroads offer for extending their benefits to remote districts by means of lateral lines constitute one of their chief advantages over canals, and should prevent the error, too frequently committed in locating leading routes, of turning from a direct course to accommodate local interests to the injury of the great object intended to be accomplished.

Other modifications of the Juniata route have been suggested, and their merits fully considered, but, upon examination, all of them tended to confirm our preference in favor of the river line.

These conclusions were communicated to the Board, and the general route recommended having been adopted by them, I proceeded at once to make arrangements to have the line surveyed throughout. For this purpose three additional corps of engineers were organized—one for Mr. Miller's division, under the immediate direction of Mr. G. W. Leuffer, to operate on the summit and western slope of the mountain, and two upon Mr. Foster's, the first of

which was placed in charge of Edward Tilghman, Esq., to whom was assigned the district between Lewistown and the confluence of the Raystown branch and main Juniata rivers.

The other corps was given in charge to S. W. Mifflin, Esq., a gentleman of well-known professional skill and experience, to whom we committed the surveys of the region from the Raystown branch to the summit of the Alleghenies, embracing the most important and difficult district upon the whole route to Pittsburg.

These parties did not take the field until the close of July, but they prosecuted their examinations with so much energy and success that we were enabled to determine the general line of the eastern division in season to place the most difficult points upon it under contract in November of last year.

While these arrangements were in progress, the parties previously in the field were actively engaged in examining the country between Harrisburg and Lewistown.

At the instance of a number of gentlemen from Perry county, a line was tried up Little Juniata creek, leaving the Susquehanna at Petersburg, thence near Bloomfield and along Sherman's valley to Concord gap, where it passed the Tuscarora mountain, thence it followed Tuscarora valley to Shade creek, and down that stream to Augwick creek, along the valley of which it was carried to Drake's ferry on the Juniata. The advantage promised for this route was a considerable saving of distance. The result, however, demonstrated that not only would we have had to encounter gradients running up as high as sixty feet per mile, but the length of the line would be increased four miles by its adoption. It was

consequently abandoned.

After a careful examination of the country bordering on the Susquehanna and Juniata rivers, a line has been located as far up as Huntingdon, which is believed to be the best that can be obtained.

If the valleys of these streams had not been preoccupied by other improvements, a route would have been selected differing somewhat in its details from that adopted. Even for the short distance that we are brought into close proximity with them, the cost of the grading of the Road has been greatly enhanced by the confined ground we have been forced upon.

The located line commences at the Harrisburg and Lancaster Railroad depot; thence, passing through Harrisburg, it follows the sloping ground between the canal and the capitol ridge four miles, when it crosses the canal and, touching the point of Blue mountain, recrosses and passes to the west side of the Susquehanna river by a bridge 3,660 feet in length, and 44 feet above low water at grade line, which enables us to place the road on the top of the bridge. Thence we pursue this bank of the river through the villages of Duncannon and Petersburg to the Juniata, along the southern side of which it is continued through Newport and Perrysville to a point a short distance above Lewistown. Here the line crosses to the north side of the river, and within a short distance recrosses, to save nearly a mile of road, and one hundred and eighty degrees of curvature, together with some difficult ground along the bluff shores on the south side of the stream.

After regaining the southern side we follow the river slopes, over favorable ground, to Mr. Harvey's, about seven miles above Waynesburg, where the line

again crosses to the north side, and passing back of Newton Hamilton, cuts through the neck of land in the great bend of that stream, 40 feet in depth at the summit and 3,100 feet in length at grade. Descending along the eastern slope of the river, we once more cross it at Shaeffer's aqueduct, and continue upon its southwestern bank through Jack's narrows, without meeting any serious difficulties, and finally pass to its north side, along which it is continued through Huntingdon to the Little Juniata, above Petersburg. Above Huntingdon, a preliminary location has been carried up the Little Juniata to Logan's narrows, at which point this stream divides Bald Eagle and Brush mountains in its passage from Tuckahoe valley.

Along the Little Juniata, from Dorsey's forge to the Narrows, the line encounters much difficult ground, owing to the circuitous character of the stream, and the high hills and mountains which bound its course. To obtain a route with easy curves we are forced, within this distance, to tunnel the point of Tussey's mountain, and to cross the river twelve times. To follow the line recommended by Mr. Schlatter through this region curves of 400 feet radius would have had to be resorted to, which I deem wholly inadmissible upon a road of the importance of that you have in view.

At Logan's Narrows we reach the valley that skirts the whole eastern base of the Allegheny mountains. Here it becomes necessary to determine the plan to be adopted to overcome the great barrier that separates us from the West. If it is to be surmounted by a road, with the gradients of the western division, the ascent must commence at this point, and gradually wind its way to the summit, by an almost

continuous gradient, along the declivities of the mountains for nearly thirty-two miles, crossing the several streams that issue from it, by high bridges, and cutting through or tunneling their dividing summits.

Mr. Schlatter, in his Report to the Canal Commissioners, estimates the cost of grading the road, on this ascent, at $1,496,146, which I consider too low for a line with the gradient he adopted, but with the increased maximum grade found necessary on the western division, and a somewhat lengthened line, it would probably prove sufficient.

Upon my first reconnoissance of this portion of the country it occurred to me that its peculiar topographical features were lost sight of in the adoption of this plan of ascent, which seemed to look to the single object of obtaining a line with a particular gradient, without regard to the magnitude of the obstacles to be overcome to procure it; while, by pursuing a course from the Narrows, nearly in a direct line to Sugar Run gap (which we shall hereafter show is the best point to cross the mountain), the line would pass through a beautiful valley over comparatively favorable ground, gradually gaining elevation through its whole course, without exceeding the maximum inclination required on the line below, until it reaches the summit of the valley at Robinson's, a distance of fifteen miles. At this point we attain an elevation of 1,174 feet above tide, leaving but 980 feet to be overcome to reach the height found most suitable for passing the mountain, which is attained by a continuous gradient of 80 feet per mile, encountering no *very* formidable difficulties.

A resort to a gradient of 80 or more feet per mile is

by no means an unusual expedient on leading railroads.

Upon the Western Railroad, in Massachusetts, their maximum gradient is 83½ feet per mile. On the Baltimore & Ohio Railroad they now have, between the waters of the Patapsco and Potomac, on each side of Parr's ridge, gradients of 82 feet per mile, and from the greater elevation of the Allegheny mountains at the place they must cross, it is to be presumed that their gradients at that point will still be increased to a higher rate.

Many other instances might be cited, some running up to 120 feet per mile, but it seems unnecessary to extend the list. Theoretically, the power necessary to overcome a given height is the same at all inclinations of the plane of ascent, but in practice, it is to some extent dependent upon the kind of power to be applied.

In the case under consideration, the locomotive steam engine will be the medium used, where the power is carried with the train, and forms part of the load to be moved, consequently, the cost of power on a plane ascending 80 feet per mile is greater than upon one of a more moderate inclination of equal height, by the difference between the gravity of the engines required to carry the same load on both planes.

As a general principle this would be true when the lengths of the roads to overcome the same height are equal, and it is necessary to carry the locomotives, required for the high gradient, over the same distance that they must run upon the low gradient.

But in one of these cases the maximum gradient due to the line below Logan's Narrows is carried to

within 12¼ miles of the summit of the mountain—requiring extra power for that distance only—and in the other it ends 32 miles from it.

To explain more fully the relative value of the maximum gradients used on the different divisions of our Road, I have prepared the following table:

Table headings:
Col A: Division of Road.
Col B: Maximum Gradient, ascending westwardly, per mile.
Col C: Maximum Gradient, ascending eastwardly, per mile.
Col D: Gross load of a 20 ton freight locomotive, exclusive of engine, and a tender of 10 tons. Friction 8½ lbs. per T. Adhesion ½.
Col E: Load of merchandise for a 20 ton freight engine, the cars being estimated at 4/10ths of their weight and load.
Col F: Relative load of locomotive on each gradient, level being unit.
Col G: Number of locomotives of equal power necessary to carry the same load up each gradient.

A	B	C	D	E	F	G
From Harrisburg to Lewistown, 60-7/10 miles	16		346.6	207.9	0.534	1.87
		8	454.3	272.6	0.697	1.42
From Lewistown to foot of Allegheny Mts., 72 miles	21		300.7	180.4	0.464	2.15
		10½	414.6	248.8	0.640	1.56

From foot to summit of Allegheny Mountains, 12-3/10 miles	80		105.6	63.4	0.163	6.13
		Level	648.0	388.8	1.000	1.00
From summit to Pittsburg, 106 miles	47		172.4	103.4	0.266	3.76
	50	50	163.7	98.2	0.252	3.95
	52.8	52.8	156.2	93.7	0.241	4.14

It will be perceived from the foregoing table that three locomotives are fully sufficient to transport the same load up the 80 feet gradient that two will carry on the gradient of the western division, and one on the eastern; hence the practical working of the road on the two methods of ascent would be to run two locomotives with the load brought from below from Logan's Narrows to the summit, say 31¾ miles, up the 50 feet gradient; while, on the other, the same engine that brought the load from Harrisburg would continue with it to Robinson's (15 miles), where it would accompany the two destined for Pittsburg to the summit of the mountain and return.

In the first case the engines together will have traveled 63½ miles, and, in the other, the three 51¾, leaving a difference in distance to be traveled by the moving power due to each full train, from the east, 11¾ miles in favor of the 80 feet gradient.

In practice it will therefore be seen—chiefly on account of the actual distance saved—that transportation can be afforded cheaper, in this case, on the 80 feet gradient than on the 50, without

bringing into the estimate the interest on $841,000 that the latter would cost to obtain it more than the former. Under these circumstances we did not hesitate when the choice of routes was reduced to a selection between these two methods of overcoming the mountain, to decide in favor of the line by Robinson's, which has the additional advantage of bringing us within 6-1/3 miles of Hollidaysburg, where a connection may be made with the Allegheny Portage by a branch line, passing over favorable ground.

The distance from Harrisburg to Robinson's summit is 132-2/3 miles; upon the whole of this line, the only extraordinary impediments to the easy graduation of the road bed are the bridge over the Susquehanna, a deep and long cut near Newton Hamilton, and a tunnel 1,200 feet in length through a point of Tussey's mountain, and in this distance the maximum ascending gradient to Lewistown is 16 feet per mile, and descending 8 feet. Thence, to Robinson's summit, they are increased to 21 feet ascending, and 10-1/8 feet descending.

The descending gradients are generally so short that they will not be found, in practice, to decrease the load going east much below what is due to a fair *working* load for a locomotive on a level.

The maximum ascending gradient above Lewistown is determined by the deep cut near Newton Hamilton. The ascent of the Little Juniata seems, however, to require—to obtain an economical line—the use of this inclination, without much intermission, from Dorsey's forge to Robinson's summit. Below Lewistown the gradients are fixed to accommodate the increased trade that would fall upon the line between that place and Harrisburg,

without increasing the number of trains.

These low gradients insure to us the important advantages of a single pair of drivers for the passenger engines, upon the eastern division, and, with these rates of inclination, we are enabled to make the line conform to the natural features of the country (above high water mark) without decreasing the curvature below 955 feet radius, except at the east end of the Susquehanna bridge, where a radius of 880 feet has been admitted.

All of our efforts to save distance, by deviating, temporarily, from the immediate valley of the river, involved either the use of high gradients, not justified by the distance saved, or an increased cost that was equally unwarranted. The beautiful valley of the Kishacoquillas offered the greatest temptation to leave the river route; but here we would have had to encounter gradients, in both directions, of 26-4/10 feet per mile, a bridge over Mill creek, 1,200 feet long, 111 high; another over a small tributary of the Juniata, 850 feet long and 150 feet in height, together with several others, or embankments of great magnitude, across ravines in the north slope of the river hills. These difficulties, added to 342 feet of additional elevation to be surmounted at the Allentown summit, so greatly overbalanced the small increase of curvature and distance (7/10 of a mile), by the river route, that it could not be adopted. It was also ascertained that by the *use of the maximum gradients* required on the valley route, the shortest line could have been procured by the river, and at the least cost. A fact, conclusive in itself, as to the proper route.

I deemed it unnecessary to make further instrumental examinations of the Stone mountain

route, feeling satisfied that even if a line could be obtained in that direction which would approximate to an equality, in an engineering point of view, with the route selected—which, from a reconnoissance of a portion of the line and an examination of the plots of Mr. Schlatter's surveys, I should consider *quite* improbable—that its additional cost would entrench so much upon the means of the Company as to place it entirely out of the question.

A line was traced from Huntingdon to the Frankstown branch of the Juniata, below Williamsburg, across Tussey's mountain, by which a saving of distance could have been made nearly equal to the Stone mountain route, but its high gradients, cost, and the length of time that it would require to build the road over it rendered it equally objectionable. The valley of the Frankstown branch was also surveyed; the route by it joining the Little Juniata line at Robinson's ridge, but it proved both longer and more expensive than the latter. The searching examinations made of the whole region offering any chance for a more practicable route, on the north or south of the Juniata, leaves no doubt upon my mind but that the best line has been procured for the eastern division. Its comparatively easy curvature and low gradients, adapted in their inclination to the direction of the largest business, and extending from the eastern terminus of our Road to the foot of the great barrier that divides us from the west, give it advantages that are not equaled by any other route proposed, between the east and west, and can not be too highly appreciated by the Company.

Before determining the point to pass the mountain, a full examination of its crest was made, from Cedar

Swamp summit on the south, to Three Springs Gap at the head of Moshannon creek on the north, embracing a distance of 44 miles. The following table will show the elevation, above tide, of each summit within that distance; also, that at Emigh's Gap, on the northern route, and at the head waters of Castleman's river on the southern:

Tabular Statement of Depressions of Allegheny Mountain.

Name.	Waters Divided.	Authority.	Feet above Sugar Run Gap.	Feet below Sugar Run Gap.	Feet above Tide.
Summit of Chesa. & Ohio Canal	Castleman's and Potomac	U. S. Engineers	476		2739
Albright's Summit	do. do.		141		2424
Sand Patch do.	do. do.	J. Knight	129		2412
Chambersburg and Pittsburg Survey		H. Hage	264		2547
Cedar Swamp Gap	Raystown Branch of Juniata and S. Fork of Conemaugh	S. H. Long	160		2443
do.	Raystown B. and Conemaugh	do.	213		2496
Bob's Creek do.	Juniata and Conemaugh	do.	314		2597
Big Spring	do. do.	do.	222		2505
Laurel do.	do. do.	do.	175		2458
Adams do.	Juniata and Clearfield	C. L. Schlatter	41		2324
Portage and Summit					

Sugar Run Gap			S. H. Long	0		2283
do.	do.	do.	C. L. Schlatter	80		2363
Burgoon's			do.	75		2358
Kittanning do.	do.	do.	do.	67		2350
Dry do.	do.	do.	do.			
do.	Little Juniata and Clearfield			177		2460
Hamer's			E. Miller		17	2266
Schultz do.	do.	do.	do.		55	2228
Cock Run do.	do.	do.	do.		61	2222
Maple do.	do.	do.	do.		12	2271
Bell's do.	do.	do.	do.			
Three Springs Gap	Little Juniata and Moshannon				53	2230
do.	do.	do.	C. L. Schlatter		240	
Emigh's						2043

It will be perceived that the lowest point in the mountain, except at Emigh's, is Maple Gap, from which issues Bell's Run (a branch of the Little Juniata), on the east, and Sandy Run of Clearfield, on the west. This point is 61 feet below Sugar Run Gap and could be further reduced 150 feet by a tunnel 700 yards in length. If the ground had been favorable beyond the summit, this route would probably have offered the greatest advantages to cross the mountain, but it opens westwardly upon the deep valley of Clearfield, a descent into which would involve the necessity of a resort to as steep a gradient on the west side of the mountain as that required on the east; and the elevation thus lost would have to be regained by following up the valley to Laurel Swamp or Munster summits, in the ridge that separates Clearfield from the Conemaugh, which is here the true backbone of the country.

Any attempt to carry a line along the west slope of

the mountain, to avoid the descent to Clearfield, would, from the rugged character of the ground, prove impracticable, without a vast increase in its cost, length and curvature. No other point offers equal advantages to cross the mountain until we reach Sugar Run Gap, which is 41 feet below the Portage Railroad summit, and may be reduced 120 feet more by a tunnel 2,000 feet in length. Emigh's Gap, which is still lower than Maple Gap, could not, on account of its gradual slope, be reduced by a tunnel of moderate cost, and it is also too far north for a direct route to Pittsburg. South of the Portage the Alleghenies become the watershed of the Union, dividing the streams that flow into the gulf from those that empty into the Atlantic. They here assume a more elevated character than while separating only the tributaries of the Susquehanna, affording no opportunity to pass them by a line adapted to locomotive power—unless by a tunnel of immense extent—until we reach Bob's Creek Gap. The accompanying profile, which exhibits the crest line of the mountain (for 44 miles) will give a more definite idea of the relative height of these summits.

The mountain on each side of Bob's Creek Gap rises to a considerable height, making it appear, to a casual observer, a very deep depression; and, from this circumstance, it has generally been considered by the residents of the adjoining country to be the lowest pass in the Alleghenies, and, as it falls off rapidly on either side, it has also been supposed that it could be farther reduced by a tunnel of moderate extent. The several surveys of the mountain, however, prove it to be 212 feet higher than Sugar Run Gap, and, to reduce it to a level with the surface of the ground at the latter point, which is 120 feet above the grade of the adopted line, it would require

a tunnel 1¼ miles in length, to be constructed under very disadvantageous local circumstances.

Cedar Swamp Gap, still farther south, is 53 feet lower than Bob's Creek Gap, but it falls off on each side so gradually that it could not be reduced conveniently more than 40 feet.

Neither of these points, therefore, which are the only passes worthy of notice south of the Portage Railroad that lie within the region over which a direct line to Pittsburg must necessarily traverse, afford depressions that will compare favorably with those farther north; nor does the ground leading to them, east or west of the mountains, offer equal facilities to obtain a line of uniform ascent to the summit. The distance from the Conemaugh is too short to overcome the elevation with the gradient used on the western division, and, from the Juniata, the greater height to be ascended would continue the line so long upon the mountain steeps that it would be exceedingly expensive to procure a roadbed with a gradient even higher than 80 feet per mile.

From the foregoing description of the most favorable mountain passes, it will be seen that Sugar Run Gap offers the greatest facilities to cross the Allegheny.

It now becomes necessary to consider in what direction the Road can be carried thence to Pittsburg. From an inspection of a map of the State it will be seen that a straight line, drawn from this gap to Pittsburg, will fall on Munster, Beulah, and follow the valley of Black Lick for nearly its whole extent, and intersect the Conemaugh near Blairsville; thence it crosses the country lying within the elbow formed by the Kiskeminetas and Allegheny rivers, passing

the Loyalhanna and Crabtree waters, and following, generally, the high and broken ridge parting the Allegheny and Monongahela rivers. That line, which would approximate most nearly to this course, would —all other things being equal—be the most desirable for the Road.

The operations of the different corps, on this division, have been confined to surveys that were necessary to determine the point of crossing the mountain and to the regions between the Conemaugh and Pittsburg, west of the Chestnut ridge. Our examinations have not yet been sufficiently extensive to enable me to give a full description of that part of the country between the mountain and Blairsville, and I shall therefore leave it for a future report, with the simple remark that, from the information before me, I am satisfied that a practicable line may be obtained by the valleys, either of the Black Lick or Conemaugh, within the maximum gradient used upon the western division.

The district of country over which it will be necessary to carry the road from the Conemaugh to Pittsburg is one of remarkable intricacy. It lies wholly within the coal measures, and has, at some period, evidently been nearly a level plane of vast extent, covered by the ocean. The discharge of the waters from this wide spread field seems to have been sudden, forming numerous circuitous channels in every direction, cutting deeply into the soft horizontal strata of this region, in their descent to the tributaries of the Ohio, leaving the intervening ridges washed into so uneven a surface as to render the passage of a railroad along them entirely out of the question. A line following the Conemaugh—which bears northwest from Blairsville—to the

Allegheny would avoid this difficult country, but the length of the route would be increased fully 50 per cent., and it is, therefore, inadmissible.

A route with higher gradients than those adopted on the Juniata throughout this division seems to be called for by the topography of the country.

In his report upon the western division, Mr. Miller gives the following account of the surveys, conducted under his direction by Messrs. Day and Pemberton, his principal assistants: "If a straight line be drawn from Blairsville to Pittsburg, it will be seen that Turtle creek is the only stream that approximates to the proper course of the road, whilst the Loyalhanna, the chief tributary of the Conemaugh, crosses it nearly at right angles, and Spruce Run, Roaring Run, Porter's Run, Beaver Run and others intersect it at various angles of obliquity. Much time and labor were bestowed by Mr. Schlatter and his principal assistant, Mr. Roebling, upon the investigation of this district, and their maps and profiles, loaned to us by the Canal Commissioners, have been of much service in our examinations. From a careful investigation of Mr. Schlatter's preferred route on the ground, it appeared possible to avoid some of the most formidable obstacles which he encountered by adopting a higher gradient than his maximum of 45 feet per mile, and by a reasonable increase of distance at a few points.

"Our trial lines confirmed this, and, in the location made, a maximum of 1. in 100, or 52-8/10 feet per mile, has been used at several places. The cheapness of fuel throughout the whole extent of the western division renders this increase of gradient less objectionable than elsewhere. Bituminous coal, of the best quality, is everywhere abundant, and can be

delivered at the depots at from 56 to 84 cents per ton."

The principal changes made in the route referred to in Mr. Schlatter's report Mr. Miller describes as follows:

"Upon the White Thorn our line keeps the left bank, entirely to its mouth, avoiding a tunnel of 600 feet, leading into the valley of Buck Run, and a high bridge over White Thorn creek, and reducing that over the Loyalhanna, from 90 to 50 feet in height. West of Buchanan's summit we run level round the hill, between Porter's Run and Beaver Run, avoiding the Still House summit entirely, where a tunnel of 1,000 feet was proposed, with a cut of 70 feet at its western end, running out to grade in a distance of 1,700 feet.

"Passing Burnt Cabin summit, by a deep cut, the line descends along Turtle creek to the Monongahela.

"Below Murraysville the creek makes a double bend, like the letter S. The former line crossed one of these bends, by a tunnel 600 feet long, whilst ours crosses the other by a short, deep cut, following a remarkable pass by which the hill is nearly cut through. These changes have reduced many of the deep cuts, avoided several bridges, saved three tunnels, and reduced the length of a fourth, amounting in all to a reduction of 2,300 feet of tunneling."

After reaching the Monongahela, two routes present themselves, one following the bank of the stream to Pittsburg, and the other ascending along the slope of the river hills, enters a valley leading by Wilkinsburg and East Liberty. Thence, following this valley, it descends Two Mile Run, and enters the city

on the Allegheny side. The latter, though the longest route, and requiring gradients of 50 feet per mile, has been adopted as it presented the only apparently feasible route by which a connection could be formed with a road extending towards the great west.

The comparative cost of grading and damages, upon the two lines, would be rather in favor of the route adopted.

A line has also been located from the junction of Turtle and Bush creeks, which passes up Bush creek and through Greensburg to Bernhard's summit, thence by the valleys of Fourteen Mile Run, Sauxman's and Magee's Runs, to the Conemaugh, at the gap through Chestnut ridge.

If the Conemaugh route, by Johnstown, should be adopted, the line by Greensburg will be about 3¾ miles longer than that by Turtle creek, but passes east of the Loyalhanna, over much more favorable ground than any other line examined.

Its advantages, in relation to the local trade of a rich and populous section of country, west and east of Chestnut ridge, through the gap formed by the Loyalhanna, give it strong claim for consideration.

Whether the increased length of the line and the difficulties west of Greensburg will be sufficient to counterbalance these local advantages we will leave undecided until the comparative estimates have been fully made out. Another line was traced, leaving Greensburg and passing into Ligonier valley, through Chestnut ridge, at the Loyalhanna Gap, thence north of this ridge along Coalpit and Kendrick's Runs, to the Conemaugh, which resulted unfavorably.

Further examinations will be made through Ligonier valley, striking the Conemaugh higher up. The Black Lick and the country between it and the Conemaugh will also be examined during the season.

The following summary statement will exhibit the estimated cost and distances of a continuous railroad from Harrisburg to Pittsburg, via Johnstown and Blairsville, graded for a double track, and a single track and turnouts laid.

The estimate is based on prices that are believed to be ample to finish the road in a substantial manner. If the work should be pushed with *cautious energy*, it may be completed for a somewhat less sum.

The width of the roadbed at grade line in thorough cuts of earth is 32 feet, in rock 26 feet and on embankments 25 feet.

Items.	Places.	Dist. in miles	Cost. Dollars.
Graduation	{ Between Harrisburg and Lewistown	60.70	705,610
	{ " Lewistown and Huntingdon	36.70	582,342
	{ " Huntingdon and Robinson's	35.20	703,000
	{ " Robinson's and Sugar Run Gap	12.25	655,000
	{ " Sugar Run Gap and Johnstown	28.50	875,000
	{ " Johnstown and Blairsville	28.	445,000
	{ " Blairsville and Brush Creek	33.	925,000
	{ " Brush Creek and Pittsburg	15.	145,000

	Amount	249.35	5,035,952
	Superintendence, &c.		250,000
	Contingencies		350,000
Superstructure.	Single track, including an average of 450 feet of turn-outs, per mile		2,792,722
	Interest account		551,000
	Land damages and fencing		170,326
	Grand Total		9,150,000

That part of the line below Huntingdon has been located permanently; thence to Logan's Narrows the calculations are based on a preliminary location, and between this point and Blairsville upon an experimental survey, with liberal allowances for contingencies. Between Blairsville and Pittsburg the road has been carefully located. Upon that portion of it, between Blairsville and Turtle creek, gradients of 52-8/10 feet per mile have been admitted, which may be reduced to 50 feet per mile, by the expenditure of an additional sum of $40,000.

Our measurements of distances commence at the depot of the Harrisburg and Lancaster Railroad Company, 106¾ miles from the corner of Vine and Broad streets, in the city of Philadelphia, and terminate at the intersection of Liberty street, in the city of Pittsburg. Those made for the Commonwealth, under the direction of Mr. Schlatter, began at State street, in Harrisburg, and ended at Two Mile Run, on the Monongahela river, giving a difference in favor of Mr. Schlatter's line of about 1-8/10 miles in the points of starting. Between Blairsville and Pittsburg our distance has been actually increased 2-8/10 miles over that proposed by Mr. S., after making

allowance for about 6/10 of a mile of an unaccountable discrepancy in the two measurements. This increased distance is incurred to save three tunnels, and other expensive work, amounting, together, to $280,000, or $100,000 per mile.

The whole difference between Mr. Schlatter's and Mr. Miller's measurements, supposing the points of starting and ending to have been the same, is 4-3/10 miles. The difference between the points of starting of the two surveys, on Mr. Foster's division, is about 2/10 of a mile. From Harrisburg to Huntingdon we lose, by following the river route. 7/10 of a mile[A] on Mr. Schlatter's line, and save, from thence to the summit of the mountain, about four miles.

As a connection with the Allegheny Portage Railroad would insure to us most of the advantages of an independent road to the western base of the mountain, it is evidently the policy of the Company to make it at the earliest practicable moment. Our location falling within 6-1/3 miles of that road, it becomes a very small matter to effect a junction with it. If the present means of the Company, however, would justify the expenditure, the connection could readily be made at the foot of Plane No. 4, on the west side of the mountain, thus saving 7 out of 10 of the inclined planes. This could be effected for the additional sum of $1,250,000, or for $950,000 a junction might be made at the summit of the Portage, avoiding the five eastern planes.

The branch to, or above, Hollidaysburg is, however, the cheapest and most speedy way of effecting the connection, and when our road is carried over the mountain it will remain a good feeder to the main line, and a fair investment of the capital of the Company.

The following is an estimate of the cost of a continuous road from Harrisburg to Pittsburg, in connection with the Allegheny Portage Railroad, graded for a double track throughout, except the branch to Hollidaysburg:

Items.	Places.	Dist. in miles	Cost. Dollars.
Graduation	{ From Harrisburg to Robinson's	132.67	$1,990,952
	{ " Robinson's to Hollidaysburg	6.33	32,000
	{ " Hollidaysburg to Johnstown	36.67	
	{ " Johnstown to Pittsburg	76.00	1,515,000
	Total	251.67	3,537,952
	Superintendence and Contingencies		419,754
Superstructure.	Including turn-outs on 215 miles		2,408,000
	Cost of Road		$6,365,706
	Interest account		450,000
	Land damages and fencing		154,294
	Grand Total		$6,970,000

To the above amount should be added, for the purchase of depot grounds, erection of warehouses and shops, and the construction of cars and locomotives, as follows:

Warehouses, including ground at depots	$475,000.00
Shops and machinery	185,000.00
Locomotives	510,000.00
Passenger and burden cars	820,000.00
Total	$1,990,000.00

Making the whole cost of the Road, graded for a double and a single track laid, including outfit, $8,960,000.00.

It will not be necessary to expend the whole of this amount until some time after the Road is in use to Pittsburg. As the business increases the turnouts must be lengthened, depots and shops enlarged, and the number of locomotives and cars added to. These will not reach the sum estimated until probably four years after the Road is completed, in connection with the Allegheny Portage. We shall also reduce the cuttings and embankments to a single track width, wherever the character of the excavations or a deficiency of material for embankment will justify the curtailment. This will effect a saving, in the first outlay, of about $450,000, which will not be required until the business demands a double track.

The expenditure for the outfit, when the Road is opened through, will not exceed $1,340,000, leaving $650,000 of the estimate for this item to be disbursed after the Road is finished, to meet the demands of the increased business for the *time* stated.

This will leave the cost of the Road and outfit, when opened for use, in connection with the Portage Road to Pittsburg, as follows:

Cost of Road, with single track and turn-outs, as estimated		$6,365,706.00
Less estimated cost of unfinished grading required to prepare the Road for double track		450,000.00
Leaving cost of grading and superstructure of Road		$5,915,706.00
To this add interest account	$450,000	
And land damages and fencing	154,294	
		604,294.00
Also, cost of locomotives, shops, depots and cars		1,340,000.00
Total		$7,860,000.00

The Board having wisely determined in no event to enter into engagements beyond their ascertained means, I have thought it best, thus early, to present an estimate of the cost of the whole work for their guidance. It will be recollected that the estimate for the grading is made, in part, upon experimental surveys, with full allowances for contingencies. By the close of the year we hope to be able to give an estimate of the whole Road, in detail, from actual location, which may show a somewhat reduced cost.

Under the contemplated connection with that road, the Allegheny Portage becomes an important part of our line, and, for the information of the Board, I insert the following description of it, extracted from a pamphlet written by S. W. Roberts, Civil Engineer:

"The Portage Railroad consists of eleven levels, or graded lines, and ten inclined planes. The ascent from Johnstown to the summit is 1,171.58 feet, in a

distance of 26.59 miles, and the descent, from the summit to Hollidaysburg, is 1,398.71 feet in a distance of 10-1/10 miles. There are five inclined planes on each side of the mountain, varying, in inclination, from 4° 9´ to 5° 51´, or from 7.25 feet to 10.25 feet elevation to each 100 feet base. They are numbered eastwardly, the one nearest Johnstown being No. 1; that nearest Hollidaysburg, No. 10. The following table shows the length, rise and fall of each 'Level' or grade line, and each inclined plane."

	No.	From Johnstown		miles	Feet Rise,
Level	1	to Plane No. 1	4.13		101.46
Plane	1	Ascending	1607.74	feet	150.00
Level	2	Long Level	13.06	miles	189.58
Plane	2	Ascending	1760.43	feet	132.40
Level	3	Ascending	1.49	miles	14.50
Plane	3	Ascending	1480.25	feet	130.50
Level	4	Ascending	1.90	miles	18.80
Plane	4	Ascending	2695.94	feet	187.86
Level	5	Ascending	2.56	miles	25.80
Plane	5	Ascending	2628.60	feet	201.64
Level	6	Summit of Mountain	1.62	miles	19.04
			Total rise		1171.58

	No.	Descending		feet	Feet Fall
Plane	6		2713.85		266.50
Level	7	Descending	15	miles	0.00
Plane	7	Descending	2655.01	feet	260.50
Level	8	Descending	.66	miles	5.80
Plane	8	Descending	3116.92	feet	307.60
Level	9	Descending	1.25	miles	12.00
Plane	9	Descending	2720.80	feet	189.50
Level	10	Descending	1.76	miles	29.58

Plane	10	Descending	2295.61	feet	180.52
Level	11	To Hollidaysburg	3.72	miles	146.71
			Total fall		1398.71

In conformity with resolutions of the Board, eighteen miles of the grading on the eastern and fifteen on the western ends of the Road were placed under contract in July last. In November the contracts upon the eastern division were extended to Lewistown, and on the 17th ult., to Huntingdon, together with a few miles of heavy work along the Little Juniata, embracing altogether 106 miles.

Very little of the grading, on the western division, has been executed, as there appeared to be no sufficient reason for pressing that portion of the Road until the means of the Company would justify a larger expenditure upon it than they have heretofore.

The work upon the eastern division has been retarded from the scarcity of labor. Time seems to be required to collect the necessary force upon the line. With the exception, however, of the Susquehanna bridge, the grading will be prepared for the superstructure, to Lewistown, this year. The masonry of that important job was first allotted to contractors. The principal of the firm, though highly recommended by the officers of the Reading Railroad, proved unequal to the task he had undertaken, and their contract was abandoned. In consequence, the remnant of last season, after the contract was let, was mostly lost.

The work has been re-let to Holman, Simons and Burke, who have carried it forward satisfactorily. The prevalence of high water, since the season for

laying masonry commenced, has prevented as much progress, at this time, as could have been desired; but we still entertain hopes that it will be completed before the ensuing winter. If this is accomplished, the Road can be opened to Lewistown next spring. Under any ordinary circumstances it will be finished to Huntingdon (98½ miles) by the close of navigation in 1849—a point as low down as we may anticipate a profitable use of the Road from.

Our arrangements have been made with a view to the completion of the Road to the Allegheny Portage, early in the spring of 1850. An earlier period could not be fixed, owing to the magnitude of some of the work on the Little Juniata; a portion of which, embracing the tunnel, through a point of Tussey's mountain, was located and contracted for last December, to avoid delay and a premature expenditure of capital on the lighter work, which would have followed a general letting of the whole Road at that time, or since, even if it could have been prepared for contract in season.

If sufficient means shall be obtained to prosecute the western division, I would recommend that the heavy portions of the work, between the Conemaugh and the confluence of Brush and Turtle creeks, should be placed under contract, together with the grading, continuously from the Portage road to the point of divergence of the line from that river towards Pittsburg, if the Conemaugh route is adopted.

When the connection is made with the Portage Railroad, from the east, there will then be a continuous railroad from Philadelphia to Johnstown, 282 miles in length, and, if opened at the same time to near Blairsville, it will be extended to 310 miles,

with only 43 miles of turnpike thence to Pittsburg, or 75 miles of canal navigation, giving a line of communication, with the Ohio river, far superior to any railroad route existing, or any that will at that time be built. On freight destined to the interior of Ohio but one transshipment will then be necessary. The canal boats, loaded at the terminus of the Road, can be conveyed to any point upon the Ohio canal.

If your Road possesses no other source of revenue than the local travel and transportation of the rich and populous region to be traversed by it—secured, as it will be, from competing lines by *natural barriers* stretching out on either side from the Susquehanna to the Potomac—they would be sufficient to justify its construction. The influence of the Pennsylvania canal has called into activity all the elements necessary to render the enterprise profitable, and, in consequence, it will be more successful with that improvement, as a pioneer rival, than if it was now to enter upon an unoccupied field. Whatever may be the effect of your work upon the business of the canal—and I do not believe it will be injurious—there can be no doubt but that it will add very materially to the revenues of the Commonwealth.

Important as the local sources of revenue are to the Company, they will afford but a limited amount of business compared with that to be derived from the great West. The route of your improvement is directly on the line that would be most desirable for a railroad to pass from St. Louis, or the confluence of the Mississippi and Missouri rivers, through the center of the wealth and enterprise of the Mississippi valley to the Atlantic. With a map of the Union before you, it will be found to be impossible to draw a line upon it that would accommodate so large an

amount of population, or an equal extent of fertile country.

Through the broad bed of mountains that divide the Atlantic from the Western States—traversed by our route for 190 miles—natural gorges are found, cutting all of them to their bases, except the Allegheny, which is passed with comparatively easy gradients, and without encountering difficulties of a very unusual character. These favorable features of the country give to us a line which is the shortest and best that can be obtained between these sections of the Union, and insures to the Company the whole of the travel and light transportation, with much of the heavy trade, destined to Philadelphia and points north of this city, of the vast region between a line along the southern shores of Lake Erie, touching Lake Michigan, and extending to the far West, and the immediate valley of the Ohio river. The distance from Cleveland to New York being 80 miles shorter by this route than by the New York and Erie Railroad, much of the travel embarked upon the lakes for that city from the north and west must also be diverted to this line.

In view of these circumstances, can a reasonable doubt be entertained by any one as to the profitableness of the stock of the Pennsylvania Railroad Company? Its natural position must give to it more than sufficient business to make it yield large profits. Indeed, I confidently advance the opinion that when the Road shall have been completed that it will not be a question "whether it will pay an interest on its cost," *but to what point the rates of freight and passage shall be reduced to give the Company ample revenues and at the same time make the work most extensively useful to the public*.

Dividends from its revenue can be made of 6, 8 or 10 per cent. by changing the rates of freight and passage, at the discretion of the Directors.

From some experience in the management of the business of other roads, much less favorably situated than this, I feel no hesitation in making this prediction. I look upon the result as one upon which there can be no doubt entertained.

The inquiry may be made, "If this Road must prove a profitable investment, why other works in Pennsylvania, favorably located, have not yielded remunerating dividends to their proprietors?" In reply it can be stated that there is no important work, leading from Philadelphia, that ought not now to divide large profits, if their stock and funded debts exhibited a fair cash value of the property represented. Most, if not all, of these works, were commenced with inadequate capital, for the object in view, and from the anxiety of the stockholders to realize the large profits promised on their completion, and the *public* to *enjoy the use* of the improvement, they have been pressed forward faster than true economy, or the funds of the company, would justify. Engagements were made, relying upon fortune, or accident, to provide the means to meet them. These resources failing, they were thrown upon the mercy of either the contractors or the money lender. And, in consequence, the cost of the works has been rolled up to an amount not anticipated, and, in many cases, debts incurred, under the pressure of the moment, in the most objectionable shape, to meet which the whole of the receipts of the companies have necessarily been mortgaged.

In New England, and also in New York—where

railroads have, in many cases, been deprived of the privilege of carrying freight—judiciously located roads have invariably paid well. Their success has not been caused by the exercise of any peculiar skill or economy in their management, as generally supposed, for, in this respect, though they stand deservedly high, there is none that conduct their business, under all circumstances, with as much economy as the Baltimore and Ohio Railroad, or some other southern companies.

In closing this communication it gives me much pleasure to acknowledge the zealous and cordial co-operation that I have received from my Associate and Assistant Engineers in carrying on the important work that you have committed to our charge.

Respectfully submitted, by
Your obedient servant,

J. EDGAR THOMSON,
Chief Engineer.

Note.—By way of "Then and Now" contrast, the income account of the Pennsylvania Railroad Company for the year ending June 30, 1909, from Interstate Commerce Commission Bulletin No. 5 is subjoined.

Revenues and Expenses of the Pennsylvania Railroad Company for the year ending June 30, 1909.

Miles operated		4,087
Operating revenues		$138,449,119
From Freight	$100,356,160	
Passengers	28,774,281	
Other transportation	8,438,972	
Non-transportation	879,706	
Operating expenses		97,107,751

For Maintenance of Way and structures	$16,503,246	
Maintenance of equipment	27,225,887	
Traffic	1,844,365	
Transportation	48,064,176	
General	3,470,077	
Net operating revenue		41,341,368
Taxes(a)		2,370,314

(a) Exclusive of some $1,790,000 taxes paid on leased lines.

Observe that the amount expended on maintenance of way and structures in 1909 was more than double the total estimated cost of the road from Harrisburg to Pittsburg in 1848.

The amount expended during the calendar year 1909 in revision of grades and alignment, and for additional tracks, yards and other terminal facilities, abolition of grade crossings and improvement of equipment was $5,581,809, exclusive of $4,000,000 applied towards construction of New York Terminal Extension.

This road as it exists today is a living monument to the sound policy of the American railway practice of a dollar for improvements for every dollar of dividends. S. T.

FOOTNOTE:

[A] By an alteration of the line, since made, the distance lost by the river route is reduced to four-tenths of a mile.

RAILWAYS AND THE PACIFIC NORTHWEST

BY JAMES J. HILL.

[On the occasion of the completion of the Spokane, Portland & Seattle Ry., connecting Portland with British Columbia, Mr. Hill delivered three noteworthy addresses at Portland, November 6, 1908, at Tacoma November 9 and Seattle November 10. The speech at Portland was an earnest plea for a more intelligent and economical cultivation and conservation of the vast agricultural resources of the Pacific northwest; the other two related largely to the part played by the railways in the development of that territory. The portions of these addresses which follow are taken from the full reports which appeared in the Seattle and Tacoma newspapers the next days.]

MR. HILL AT SEATTLE.

After Mr. Hill had been introduced and warmly applauded as the "Empire Builder," who had been intimately associated with the development of the

northern tier of states from the Lakes to the Pacific Ocean, and he had acknowledged his obligation to the indomitable spirit of Seattle and its people, he began his address by disclaiming the ownership of the Great Northern railway. "Fifteen thousand people own it." said he. "The average holding is about 120 shares. Over 6,000 women are owners in the Great Northern railway, and I have to manage their affairs." Then he proceeded:

"It is three years since I was here, and I never expected that three months would pass without my coming to Seattle, but three years have passed and what do I find? I think the city in three years has doubled. I think it has doubled in everything that goes to make a city. Just look at the streets lined with commercial houses which would be a credit to any city in the world. It is far beyond what I expected to find, and I think that Seattle has a future. Seattle is entitled to her growth, and if the same spirit that has moved her citizens in the past continues, if the mantle of the older men falls on the shoulders of the younger men, Seattle cannot help but thrive. You have behind you one of the richest states in the Union; one of the very richest.

DEVELOPMENT OF RAILWAYS.

"Now, to come back to the relation of the railway to the development of the country. Next to the cultivation of the soil itself, in the amount of money invested and in the importance to all the people, is the railway property of this country. It is on a little different basis, I am sorry to say, from the general attitude of the public, from any other property. From what Judge Burke says as to the Golden Rule, if you

can have it fairly applied, it would make our hearts glad.

"We frequently hear about railroad watered stock. It is a hackneyed phrase which is used with which to catch gudgeons, and it has caught a great many. Now, let us see. You can open a bank—five of us sitting here, if we had the money, could open a bank, put up the building and draw our checks, and that is disposed of. We have a million or a million and a half of capital, and, conducting the business of the bank within the law applied to bankers, we can earn any dividend we like, and we can divide it, even up to 40 or 50 per cent., and it has been done, and nobody finds any fault. Now, we might start a manufacturing establishment and we can divide any profits that we can legally make up to 40 or 50 or 100 per cent., or we can start a mercantile establishment and conduct it so as to bring any profit —there is no limit so long as we are within the laws of trade. But take the railroad.

"Now, remember, you can run your manufacturing establishment twenty-four hours a day, or you can run it one day in the week, or you can run it half the time and you can close it and it will not affect you, or you need not run it at all; and if you do not like the business you can dispose of it. You can liquidate your bank and go out of business; and so with the mercantile establishment, you can close it at any time. But when you have invested your money in a railway, you have undertaken an obligation to serve the public; you have taken a business risk that is greater than the business risk of any other business in the world. If you do not run it, move your trains with regularity, move your trains so as to accommodate the business, the courts will appoint a

receiver and will issue receiver's certificates to an extent that would wipe out your investment. If there were anything left they would hand it back, but the chances are altogether that if you could not make it pay the receiver could not.

RAILROAD BIGGEST RISK.

"Now, I mention this simply to show that the business risk in building or operating a railway is greater than it is in any other business. There is nothing guaranteed, and sometimes you are told what appliances you may use; you are told what you must not use; you are told whom you can hire, and you are told when you can discharge him, and it has been at least hinted as to what you should pay him—what his wages and condition of work shall be. So that the only privilege that was left for the railroads was to pay the bills. That they are always expected to do, and it would be a great disappointment if they were not able to.

"In the section of this country, the portion of this country east of Chicago, I do not know anywhere north of the Ohio River, where a railroad, built with the greatest care and economy, could pay one per cent. on its cost; that is, a new road, built between any of the large cities of the west to the large cities of the east, paying the present price of real estate and terminals and the cost of construction, the cost of eliminating great profits, the cost of the necessary expenditure of money to make life and limb safe.

"Take, for instance, a railroad from New York to Chicago. I had curiosity enough to inquire from the leading real estate man who was getting the additional property for the New York Central, their terminals, what it would cost from Thirty-eighth

street to Harlem River, a narrow strip of blocks on the East Side, say ten blocks, from Thirty-eighth to Forty-eighth street, to be used as a terminal. He told me it ought to be secured for $200,000,000, but he would not like to take the contract. Now, follow that up through Albany and Syracuse, Rochester and Buffalo and Erie and Cleveland and on to Chicago, and if you can get into Chicago and get out of New York with any reasonable cost I want to say that when your road was finished, at the present rate, it could not pay 1 per cent. on what it cost in money.

NO ROOM FOR MORE ROADS.

"Now, what chance is there for more roads between New York and Chicago, or between any Atlantic city and any large city in the west? During the ten years from 1898 to 1908 the railroad mileage in the United States increased about 24½ per cent., the passenger business increased 125 per cent., and the freight business increased 148 per cent. The additional burden was placed on the railways, with an increase of over 148 per cent. in the tons moved. What is it costing the Pennsylvania road to get into the City of New York? I do not know the exact figures, but I have seen it estimated from time to time at one hundred millions of dollars to secure passenger facilities in the City of New York. When I think of these things and see what you have here I think that we have reason to congratulate ourselves, and I think that we had a narrow escape from being compelled to do our business west of Commercial street in place of where we are today. There are no places that I know of today where there is any room or any use for any other large railway enterprise.

"The Milwaukee & St. Paul are coming to the Coast —and we are glad they are there. At different times,

when people largely interested in that enterprise talked with me, I said, 'By all means build to the Coast; extend your road—if you do not, somebody who has more enterprise than you will take the business and will keep it on their own rails and you will not get a share of it.' But when that enterprise is finished, I do not know, north of the Platte River, where there is room for another railroad or occasion for one. There will be branches built, and they are necessary for the development of the country. You had expended, and there is being expended now, a very large sum during the last two years.

"The Northern Pacific and the Great Northern, within the State of Washington, have spent millions of dollars between Portland and Spokane. It ought not to frighten you; it will not wipe you out; you have your roots deep in the ground and they will stay there.

TACOMA IS WAKING.

"Now, I find in summing up the present population of the new country between Blaine and Vancouver—Portland is on the other side of the Columbia, although, fortunately, the state line does not limit our commerce or our right to trade with each other—there are over 700,000 people living on the line of the railway between Blaine and Vancouver. Portland claims 200,000, and I feel sure that she must be near that figure. Portland has grown rapidly, and I think possibly the young men have taken a sheet out of your book. There was a time when they were altogether too wealthy in Portland. Every man had business of his own to attend to and was so deeply engaged in it that he overlooked the business of the city. They did not take hold. You could come there if you were willing to bear all the expense and take

what you could get. But Portland has had an awakening, and I believe that Portland, notwithstanding its remoteness from the sea, will have a good growth. It has a good country behind it and there is no reason why it should not have a good growth.

"Another city down here where we were beautifully entertained last night, Tacoma—I remember when we came out here they really did not need us and we did not want to force ourselves on them, and so we stayed right here. But I think, and I hope, that Tacoma is getting its eyes open and that it wants more railways. We don't ask much; we want the privilege of a place for foothold, a place to do our business at our own expense; and I think that we will probably succeed in getting it—I hope so.

GROWTH PLEASES HIM.

"I wanted to come back to your city here. I was more than surprised at your growth and I am more than gratified. I rather gathered that you had grown fast and that possibly you wanted a resting spell, but I don't see that there is any rest for you now. I think that you will go on as you have begun, and I was more than glad to see what you are doing in the way of adjusting your street grades. It is inexpensive; the burden may be hard upon some people, and difficult to carry, but it will cost infinitely less to do it now than in five or ten years, after those streets were lined with buildings that had cost a great deal of money and you could not afford to throw them away. Lay your foundations right and the structure will take care of itself.

"It will grow by degrees, and, when it is finished it will be part of a complete whole and you will be glad

you did it. We have a good many communities to take care of along our railway, and with every one of them we have always the feeling that their prosperity means our prosperity. They have to earn the money before they can pay it to us, and what they do pay us we think is a small part; but we expect the railway business must depend upon close management and small savings.

"Take the dividend of the Great Northern railway. *Three copper cents in moving a ton of freight ten miles pays our dividends.* A ton of freight on a country road would be a fair load for a farmer's wagon, and ten miles would be a fair day's work if he returned the same night. We do that. Our dividend amounts to about 3 cents—a little less than three copper cents—for moving that load of freight. We find that we have neither poisoned the air nor the water and you have all the highways that you had before we came, but we give you a better one and a cheaper one.

MUST HAVE MONEY.

"And remember that you never can injure the railway without injuring yourselves. The railway has only two sources from which to get money. It must either earn it or borrow it, and if it borrows, and borrows judiciously, the rate of interest ought not to be high, but whatever it is, high or low, you pay it. Sometimes people who do not know better think that they are serving a good cause to stick the railway—the company is rich—a personal injury case or something of that kind—but it is a railway and they can afford it—stick them. Now, who pays the bill? Can we charge that up to the construction of a station?

"It is a part of the expense, and the law says that

you must pay us for the use of our property enough to pay our expenses and our taxes, and a reasonable return upon the investment, so that all is charged in your bills.

"We had in one thriving city on the Great Northern, I recall, a suit for $20,000. A young brakeman stumbled against a pile of cinders that it was represented the trackmen threw out from between the rails and poured water upon it, and it froze in the winter and was solid, and as he was running alongside of his train he stumbled and fell and was injured—some great injury to the spine that wrecked his entire nervous system, and we inquired and found out how the coal got there, and our experience and education have made us suspicious; we took the cinders to the laboratory and had them analyzed and absolutely they were anthracite, and there never was a ton of anthracite coal burned in a locomotive in the State of Minnesota; we followed it up and we found that the man who brought the suit —a professional suit bringer—had, with a brakeman and his own son, taken the cinders from his own office and piled them there and poured water on them. Now, I speak of that just as an illustration of some applications of that Golden Rule.

COMPARES RAILWAY COST.

"Your future growth will depend on yourselves hereafter, as it has largely depended upon your own efforts in the past. The commerce going to and from the Pacific Coast cities by the sea is being largely carried in foreign bottoms. There was a time when the American nation was a nation of seafaring men, but that does not apply any longer, and I am sorry that that is so. I believe that the people of the United States, I believe that the genius of the country is just

as able to carry upon the sea as upon the land. As matters stand today, any bay or inlet where a foreign flag can force its way inland into our country they can call to us to drop the bundle and they take it from us and we can't help ourselves. Now, we ought to be able to help ourselves, for on the land we have so far surpassed the others that there is no comparison.

"In Great Britain their average railway cost is $234,000 per mile. In the United States it is a little less than $60,000 per mile. In Germany it is about $110,000, in France about $140,000, in Austria about the same. Now let us see what they do with their two hundred and thirty-four thousand dollar machine and their one hundred and ten and one hundred and forty. In Great Britain they move an average of five hundred thousand ton miles to the mile of road at a cost of $2.16 for every hundred miles. In Germany they move about seven hundred thousand ton miles at a cost of a trifle under $1.36 for every hundred miles. In France 450,000 ton miles at a cost of $1.40 for every hundred miles. In Austria the cost is $1.50 for moving a ton of freight a hundred miles, and in the United States the cost is 74 cents and a fraction.

AGAINST SHIP SUBSIDY.

"Now we in the United States move the business for less than half the average cost of Europe. We pay from twice to four times the rate of wages, and we do it with an investment of about a third of their average. If we can do that on land, why can't we do it on the sea? I know that if the ships of the United States had the same care and the same opportunity that the ships of other nations have they would do it, and until then no subsidy, no ship subsidy, will ever

enable them to compete with other business, because in principle it is wrong to tax all the business of the country—to put your hand into the public treasury and hand out to one particular business a cash subsidy in order that it may live.

"I want to tell you that a steamship line that cannot live without a cash subsidy will make a mighty, mighty lean race with one. It ought to rest on a business foundation. That is the only reason for running ships, because they can be made to pay, and if we can make our railways pay and work at the low rates that the railways in the United States do carry and pay the scale of wages that they do pay, why can't we succeed on the high seas? If we can't, let us hand that business over to somebody who will do it cheaper and better; but I don't feel that the case is a hopeless one, but, on the other hand, I do feel that it would only limit the efforts of those who were trying to make and to build up a merchant marine for the United States; it would only limit their efforts to extend a subsidy to a few ships engaged in the business.

FOREIGNERS GET SUBSIDY.

"I remember on one occasion that I went home from here and there was no tonnage to move the stuff we had to send to the Orient. Absolutely no tonnage was available, and when I got home there was a reception to one of our public men, and the late Senator Mark Hanna was there. I took up in a few remarks the question of a subsidy, and I said. 'If we are going to have one, let us pay a subsidy for something that is going to do us some good. Let us pay a tonnage on the actual products that reach a new market.'

"That would have done some good. The tonnage of the products that does not reach a new market, we wouldn't have anything to pay on that, and on that that does we could afford to pay. Now, we were driven out of the business on the Atlantic, but we might retain a hold upon the business of this ocean. Immediately there was a scheme for Congress for an appropriation, I think of $9,000,000, for ship subsidies, and they found that 80 per cent. of it would go to one line, under the bill that was being then drawn—and that line on the Atlantic Ocean—and I know that the men and most of the officers lived on the other side of the Atlantic, and the stock was owned on the other side of the Atlantic. Now that would not build up a merchant marine for us.

"A company over there has disposed of this old boat to our people and taken what new money they got and built new boats. That was all and that was celebrated—a portion of that was celebrated as the inauguration of a new merchant marine for the United States. Think of it!

"But some of our statesmen were wise enough to believe that it was going to succeed, but it did not. It fell ingloriously. When we have a merchant marine it will be because there is a reason for it. But until that time comes, just put up with the business that we can get, and let the others carry it who can carry it lower and better than we can in this country.

"But bear this in mind: That all your great harbors in the country when compared with the railroad yards sink into insignificance in the tonnage that they move. I think that, in Seattle, I would be safe in saying that twenty tons are moved by rail where one goes by water, unless you can count saw logs. And I had occasion to look up St. Louis. The Mississippi at

St. Louis has from eight to twelve feet of water for nearly nine months in the year and boats run in and out of St. Louis, and we are all anxious to make a deep water channel from there to New Orleans.

"Now, in looking up the amount, I found that, notwithstanding they had from eight to twelve feet of water for nine months in the year, or about nine months, less than 1 per cent. of the tonnage that came into St. Louis moved by water; and out of over 1,500,000 tons of coal—and if there is any article among all the shipments that could be moved by water easily and cheaply it would be coal—not one ton of coal moved out of St. Louis by water last year.

"There is a scheme to spend the public money and create a channel fourteen feet deep to the levees at the mouth of the Mississippi, and there are plans to lath and plaster the bottoms of a great many other streams throughout the country, and so many that in order to get any appropriation for an enterprise of great national merit, it is necessary to divide up and load it down with a lot of appropriations. These make what is known as the pork barrel, the river and harbor bill. They load it down with the various enterprises that have no value to anybody, streams on which the government is called to spend more money than all the boats would bring if sold at auction, and in some cases where there have been no boats run for ten years.

LEADS WORLD IN TONNAGE.

"They say they ought to regulate the railroads. Now, when you come to consider the matter practically, I would rather have a railroad alongside of a navigable river, or a river with six or eight or ten feet of water in it, than to have it far away from

the river. A box car will beat any ten-foot channel in the world, but when we get twenty or twenty-five-foot channels, the box car is not in it in bulky freight. You have got to have depth of water.

"Some years ago I built six freight steamers on the Great Lakes and they were considered whales in their day. They could carry 3,000 tons. Today a lake steamer and a double channel through the Soo Canal carries 12,000 tons, and has two additional firemen and one deckhand, and that is all the additional crew.

"Sometime I would like to have the city council of the City of Seattle, if they had the time, run down to the head of Lake Superior, and see what is the greatest port in the matter of tons moved in the world. London was, and Duluth and Superior a few years ago were trailing along fifth or sixth place; but last year it took first place with the cities of the world, and it handled more tonnage than any other city. London had 30,000,000 tons and Duluth had 34,000,000.

"Now, to show the enormous importance of that load of tonnage, that tonnage that is greater than any other city in the world, I undertake to say, and do say, that there are not 1,000 people, men, women and children, connected directly or indirectly, with moving that traffic between the land and the water in both directions. There is such a thing as doing a very large business without a harbor at all.

SEATTLE SPIRIT WINS.

"Although as far as foreign commerce is concerned, as far as business is concerned, when we get to the seaside, we have to hand it over to the ships. It must

be done. But the great business is done in the railroad yards. I would not be without the harbor—far from it, but don't feel that the harbor is going to make you, and don't feel as a gentleman in public life in Washington, when a friend of mine talking with him said, 'You won't get any more railways built along the policies you advocate.' 'Oh, well,' he said, 'we have got them, we have got them.' And he was a member of the house committee of interstate commerce, a rather dangerous statement for him to make."

AT TACOMA.

In his address at the banquet of the Tacoma Chamber of Commerce on the preceding evening (November 9), Mr. Hill dwelt especially on the intimate relation of railway and agriculture interests. Among other things he said:

"The question of terminals means a great deal to a railroad and it is getting to be more and more full of meaning every year. Some cities, and large cities, today have all the railroads they will ever get, simply on account of the difficulty in getting terminals. I think the Northern Pacific terminals today—I think to buy them on the entire system—would cost more money than to grade the whole road, and I do not know but what it would cost more than to grade and put the rails down. That is a condition and, remember, that you pay the freight.

WILL SOON NEED ALL THE WHEAT WE RAISE.

"Within a comparatively short time, I will say that within six years, I will go on record, you won't send many cargoes of wheat from Tacoma by sea, simply

because the United States wants every bushel that will be raised within the United States to feed her own people, and will pay you more money for it. If they didn't pay you more money for it, it would go to the foreigner, but our own people will pay more money for it and take it somewhere and grind it into flour. If you look for greater avenues or greater economy in transportation, but it will cease to go out as wheat. I will give you an illustration and you can draw your own conclusions as well as I can: In 1882 the United Slates raised 504,000,000 bushels of wheat and we had 52,000,000 people and we exported somewhere between 175,000,000 and 200,000,000 bushels. Twenty-five years later, in 1907, we raised 634,000,000 bushels. We increased in that twenty-five years a little less than 25 per cent. in our wheat yield, or 130,000,000 bushels.

"Our population increased 64 per cent., and converging lines meet somewhere. Now, if we had 90,000,000 of people—and we have between 88,000,000 and 90,000,000 this year—and use six and a half bushels per capita, it would take 585,000,000 bushels for bread and seed. Professor Rogers, of the Minnesota Agricultural College, puts our consumption for bread and seed for the last few years at a trifle over or a trifle under seven bushels. I think he uses ten years for his average, and I use twenty-five to get an average of about six bushels and forty pounds, and I call it six and one-half bushels.

"On last year's crop, with 634,000,000, we have had about 59,000,000 bushels to sell and we sold about 80,000,000. What is the result? After the 15th of January wheat was higher in Minneapolis than it was in Chicago, even up to the first of August, and

part of the time it was higher than it was in New York, because they wanted it to make a loaf of bread to feed our people at home.

"We have not the great margin that we used to have. The seed on last year's crop went down to 59,000,000 bushels and, if my figures are equal to Professor Rogers'—and he is a professor of agriculture in the Agricultural College and maybe he has more time to look these questions up more carefully—but with his figures we hadn't a bushel to sell. Suppose we had 60,000,000 bushels to sell, and we are increasing in population at the rate of 2,000,000 per year, our natural figure is between 1,300,000 and 1,400,000, and allow 700,000 for immigration, not eleven, twelve, thirteen or fourteen as we have been having, but say seven and by 1950 you will have in the United States, it figures out to be accurate, 208,000,000, but suppose we have 200,000,000, it might come by 1945, or 1947, or it might be in 1955, but about that time we will have 200,000,000 people, and if they use six and a half bushels per capita for bread and seed, it would take 1,300,000,000 bushels to feed them.

PROBLEM OF THE WHEAT.

"That is a little more than twice what you are raising today, and you haven't any new fields to put a new plow in. From 1882, when we raised 504,000,000 bushels of wheat, following that time more than half of Minnesota, all the northern part of Minnesota, was brought under the plow, all of North Dakota, all of South Dakota, all of the state of Washington and all of Oregon, except 3,000,000 or 4,000,000 bushels raised in 1882, more than half of California, two-thirds or three-quarters in Kansas and

Nebraska, a large part, practically all of Oklahoma or the Indian Territory and a large part of Texas, and take what was raised in 1907 on the new fields that were opened up, any new territory after 1882, and you will find that it is approaching 300,000,000 bushels, but the increase in the whole country in that twenty-five years was only 130,000,000 bushels, so that the old fields fell off about 170,000,000 bushels.

"Are we increasing our yield per acre? By no manner of means. It has been a steady and uniform decline for the past thirty years. Now, we have as good wheat fields as there are anywhere on the continent, and they will be made better. I am not a disciple of Malthus, because Malthus was an honest man no doubt, but when he wrote he did not understand the science of modern agriculture or the adaptation of the soil or of the seed to the soil, or the commercial value of a correct analysis of the soil and the adaptation of the soil nor its commercial value as suited to the crop it is best fitted for. All these things we have learned, and while you are teaching your young people let me advise you that the school that is most entitled to your care and the school that will do the most for the state in every place and will turn out men and women as they have always in industry and intelligence and everything else that goes to make good citizenship, the school attended by the boy on the farm is certainly as good as the best.

"When your forests are cut and hauled away, and sold to somebody else you have then, and we will give you a perennial forest, a crop every year of great value too. But we ought to be able to take care of our land and we will. I have no doubt about the future. We will do what other people have been compelled to do. In 1790, Great Britain was down to

fourteen bushels. We are down to thirteen and nine-tenths now, average. They took the question up and it was much easier for them to control, as far as territory was concerned, because the territory was small, in the hands of a few land owners, mostly rented, and they faced conditions compelling the land owner to sub-fallow, and fertilize and carry one crop year after year. They appointed a royal commission and that royal commission went to work jointly. We have a royal commission, too, and they are able men. One is a professor at Cornell and another is a publisher of books in New York, and another is Mr. Pinchot, who is doing a great deal of work, but he is overrun with the work he has to do. This commission is to report in time for the meeting of Congress. Now, bear this in mind, Great Britain started in 1790 trying to keep the people on the land. The landlord was afraid of the great drift of the agricultural people to the colonies and the new republic, the United States at that time. The new republic was going to impoverish them, and leave them without any rent rolls. They went to work intelligently and in 1810 and 1811 Sir Humphrey David, the foremost scientist of his time, delivered most intelligent lectures on the qualities of the soil. In forty or fifty years after they started they had gotten their yield up to an average of twenty-five bushels per acre. Last year, it was 32.2. Starting at fourteen we ought to get up in place of 13.9 or 14, we ought to be able to get up to 28 or 30, and if we do we will have grain to feed our 200,000,000 people and to spare, and what do I hear? 'Some more, and then some?' Now in going over those questions, I am not worrying about the future of the country. I have more confidence in it today, the day for cheap wheat has left the United States, not to

return, and we can stand that. This land, this side of the range, you can devote to better uses than raising wheat. I do not know why you should not get returns, as I said, that would equal 10 per cent. on $2,000 per acre. You can do it. There is no question as to that."

SOUTHERN RAILWAYS AND THEIR NEEDS

BY
JOHN F. WALLACE.

Abstract of Address before Southern Commercial Congress Washington, D. C., Dec. 7 and 8, 1908.

This question has been extensively treated by leading railroad men, statesmen and Press of the South, and admirably covered by addresses on numerous occasions before various audiences throughout the South.

I therefore feel that the southern railroad situation is gradually becoming better understood, not only by the public at large, but by the railway men of the South, who are jointly appreciative of the fact that the greatest need of southern railroads is the confidence and support of the communities through which they run and serve.

Therefore, my remarks will be few, and are made in order that certain fundamentals may be read into

the record of this convention.

For the purposes of this address the South is described as that portion of the United States lying south of the Potomac and Ohio Rivers and east of the Mississippi.

Shortly after the close of the Civil war, the South realizing the changed order of things, accepted the situation in the spirit of American manhood and started on a new era of industrial and commercial development.

One of the first necessities was a comprehensive system of transportation facilities. The railroads, which prior to the Civil war had compared favorably with those in the North, at its close were practically bankrupt financially and physically, and were more the shadow than the substance of what they should have been.

Southerners with brains and energy, starting with 11,587 miles of detached, dilapidated and crippled railways, immediately commenced to lay the foundation of the present industrial and commercial prosperity in the South by constructing its lines of railway.

The efforts of these men and the confidence they were able to inspire in northern and foreign capital are best illustrated by the fact that today the South is served with 46,434 miles of railroad, serving eleven states, twenty million people, and representing a total investment in round numbers of two billion dollars.

Of these 46,434 miles of railroads only 1,134 miles approximately, or 2½ percent, are double track. It is possible that the next ten years will see at least one-

fourth, or over ten thousand, additional miles of second track.

It must be borne in mind that while transportation is the burden bearer of both production and commerce, it is only able to perform the full and complete measure of its functions when properly nourished and assisted by finance.

In ancient days the birth of civilization started with the ability to preserve food products. This grew from the temporary necessity of accumulating sufficient food to last from one chase to another, or to enable journeys to be performed or winter climates endured, to the storage of vast quantities of food to enable nations to survive years of famine, as was exemplified by the storage of grain in Egypt in the days of Joseph, which period history shows us was the crowning epoch of Egyptian civilization.

Today the measure of our modern civilization is our transportation facilities. Safe, efficient and rapid communication, and the economy of the world's transportation systems, are binding the nations of the earth closer together day by day, and helping to create the conditions which will ultimately place the crown of accomplishment upon our modern civilization.

Coming back to the South, from which we have been temporarily led astray, it is self-evident to the careful observer that all the diverse interests of this section—agriculture, mining, manufacture, commerce and banking—are unavoidably and irrevocably bound up with the transportation facilities furnished and to be furnished by the railway systems ramifying its territory and performing a service for the South similar to that performed by the arteries and blood-vessels in the

body of corporeal man.

It is also apparent to the impartial observer that if the South is to reach its highest state of development its transportation facilities should not lag, but should lead the march of progress, and that this development should be stimulated in every possible way; and men of the South should never forget for a single moment that *the needs of the railroads are the needs of the South.*

It has been our custom in America to anticipate future needs in transportation, and in a measure attempt to forestall and provide for them.

The policy of foreign countries has been practically the reverse. The railway systems of England have been constructed to take care of and supply a demand for transportation facilities that already existed.

The railroads of the United States in the South and West have been projected and constructed, and to a great extent financed, by men whose inspiration was a firm belief in an unseen future and whose assets were largely composed of hope and an undying faith in the future development of their country.

Now, the future demands for increased transportation facilities in the South are plainly indicated by past records, showing the growth of productive activities and the constant increase of tonnage to be moved.

If these requirements are to be met, demand and supply must move forward hand in hand. Additional tonnage will justify increased facilities and increased facilities will stimulate still greater tonnage.

During the past 25 years the total products of the

South, from agriculture, forest, mines and manufactures, have increased in valuation over 225 per cent. During the last five years of this period, ending in 1906, the increase has been 50 per cent.

The common fallacy that a railroad is completed when opened for traffic has long since passed away, at least in the minds of intelligent men.

The railroad of today is no sooner completed as a single track, than it becomes necessary to provide industrial spurs; additional or enlarged terminals; replace its temporary structures by permanent ones; widen its excavations; strengthen its embankments; provide passing tracks, additional shop facilities, enlarged passenger and freight stations, warehouses, elevators, docks and wharves at water terminals, additional tracks, heavier rail, rock ballast, elimination of curves, reduction of grades, block signals, elimination of grade crossings, heavier engines, larger and better cars, to the end that the constantly growing requirements and exactions of modern traffic conditions may be met; all of which requires increased expenditures, which it is easily seen could not in any event be provided for out of earnings.

During the next ten years the railroads of the South will require $1,000,000,000 to enable them to fully provide for the increased demands for transportation facilities, an average of $100,000,000 per annum. Including the estimated increased mileage and the present capital investment, the resulting average capitalization would amount to $53,000 per mile, being $20,000 per mile under the present average capitalization of all the railroads of the United States today, which is $73,000 per mile. [B]

Meeting the requirements of the railroad situation in the South by the expenditure of a round billion dollars during the next ten years, as outlined herein, would make the total investment in southern railways at the end of that period three billions of dollars on an estimated mileage of 56,000.

It would require average earnings of $9,000 gross per mile per annum, with operating expenses at 70 per cent of the gross, to yield sufficient net income to provide a return of 5 per cent on this total investment.

When these figures are compared with the present average gross earnings of the railroads of the United States, $11,400 per mile per annum, with an average cost of operation of $7,757 per annum, resulting in a ratio of operating expenses to gross earnings of 68 per cent, the above estimates appear reasonable and conservative.

Even if this expenditure is made and the results predicted obtained at the end of the ten-year period, southern railroads will still fall approximately 25 per cent short of yielding the present average gross earnings per mile per annum of the railroads of the United States today.

To provide funds to meet these ever-growing and incessant demands for additional facilities, the railroad companies must necessarily be large borrowers.

The prosperity of the South in the next decade, and in those to follow after, depends upon the ability of the owners and managers of southern railways to foresee and provide for future necessities, and upon the promptness with which the work is accomplished.

The ability of railroads to construct these improvements, which are so essential to the future prosperity of the South, depends upon the willingness of capital to furnish the necessary funds for the purpose.

While legislation may control and regulate the returns upon invested capital, there is no process by which it can compel that investment originally. While investment is easily retarded it is difficult to attract.

There is probably no form of capital investment more open to attack or more liable to depreciation through unfair or unwise legislation than the railway investments of today.

While the speaker is a firm believer in the principles of governmental control and supervision over the corporate entities which have been created by the people and for the people, it must not be forgotten that every shield has its reverse, and that the exercise of such control and supervision must necessarily be along the lines of right and justice, which no mere legislative enactment can change. Any variance brings its own reward, which frequently spells disaster.

The power to control, regulate and supervise necessarily carries with it responsibilities from which there can be no escape.

Every tax, every restriction, every requirement which costs money or reduces revenue to our southern railroads is a tax which must ultimately be paid by the communities which they serve.

The prosperity of the southern railroads and the prosperity of the South are irrevocably bound

together, and the *needs of the South are identical with the needs of the railroads*.

The basis of securing capital must necessarily be the ability of the borrower to inspire confidence in the lender that his capital will ultimately be returned to him intact, and that he will receive regularly and promptly adequate hire therefor.

No section of our great country has such reputation for united action as the South. In political matters this unity of action for years has led to the designation "The Solid South."

What the railroads in this section need today is *a solid South behind and beneath them*; a solid South taking a calm and rational view of the immense factor the railways have been and always will be in the development of its future greatness.

The recent reversion of sentiment in the State of Georgia, brought about by a calm and deliberate analysis of the present situation by the business men of that State, should be the keynote of the future action of the solid South.

The adoption of a policy of fairness and liberality towards the railroad interests on behalf of all the Southern States, and the ability to convince the financial world that this action is sincere and genuine and will be permanent, is the great paramount need of the railroads of the South today.

Prompt action along these lines will enable the railroad companies of this section to successfully compete in the markets of the world for the capital needed to carry out the improvements outlined, and thus provide the facilities which will enable the producers of the South to ride the crest of the wave of coming prosperity.

In its calls for capital the southern railroads must come into competition in the markets of the world, not only with the railroad requirements of the North, of the East and the West, but with all the lines of human industry and endeavor throughout the wide world.

The difference between the five or six per cent paid by southern railroads for the money which goes into their additional facilities or equipment, and the three or four per cent which may be yielded by the high-class world investments, is merely the gauge by which the confidence of the capitalist is measured in the integrity of his investments.

Today it is difficult to secure money for railroad development, either South or North, at any ordinary rate of interest. Why? Is it because money is scarce? No.

I can best answer this by a story of the panic of '93, when a citizen of Chicago dropped into the office of Lyman Gage, of the First National Bank of that city, and inquired of Mr. Gage if money was tight. He replied, "No, the bank had plenty of money." The citizen said, "That's fine; can I secure a loan of $100,000?" Mr. Gage replied, "Yes, you can have it; we will loan it to you. What is your collateral, what security can you give?" It is needless to say that the loan was not made.

The customer afterwards remarked to a friend that he had found that the trouble was not that money was tight, or that money was scarce, but was due to the scarcity of collateral or security, which is only another designation for guaranteed confidence.

This is the situation today. There is not a railroad in the South, North, East or West that could not

secure all of the funds necessary for any development it might desire to make provided it could show the capitalists to whom application for the loan was made that it could furnish security which would insure the repayment of the loan and the interest thereon as due.

I doubt if there is a single southern railway system, the officers of which would not gladly today take up, consider and block out a scheme for the improvement and betterment of their property, and commence preparations to enable their system to fully perform the increased functions of a common carrier, which the abundant years of the immediate future promise to require, if they could be sure, and in turn could assure their financial backers, that the earnings of their road would be amply and safely sufficient to provide for, and take care of, the investment necessary.

Therefore, *remember that the needs of the railroads are the needs of the South.*

I presume there is no planter, miner, manufacturer, producer of any sort, banker, merchant or professional man in the wide South who would not say in a moment that every thousand dollars of capital invested in his vicinity, or in his town, or in his state, would be gladly welcomed and eagerly sought for, by the planter paying eight per cent and the merchant and miscellaneous producer from six to eight per cent, and that approximately one billion of dollars injected into the commercial channels of the southern states during the next ten years would bring a relative measure of prosperity to every man, woman and child within its borders.

When it is considered that this amount of money could be invested in additional railroad

improvements and facilities; that under proper conditions it could be secured at a rate not in excess of five per cent; that approximately eighty per cent or more would be spent for southern labor and southern material, and would find its way through every artery and vein of southern trade and commerce, it would seem that the solid South would be thoroughly alive to the burning fact that—*The needs of the railroads are the needs of the South*.

I might talk to you for hours about the evil and unfairness of legislative enactments to retard and make unproductive railway investments; of the injustice of any body of men attempting by legislation, without giving the railroad corporations proper hearing, to arbitrarily adjust their rates of toll for either passenger or freight simply because politicians consider it a popular thing to do.

I might suggest a multitude of things which could be done to increase the credit of railroads throughout your section.

I might mention a multitude of things which have been done to injure and impair and prevent railroads securing the necessary capital to provide for their needs.

I might also attempt to enumerate the ill-advised actions of railroad managers and employees toward the public.

I might expatiate upon the foolishness and unwisdom of a corporation—the creature of the public—attempting to dictate to its master or declining to obey its commands.

It is doubtful, however, if the enumeration of the errors and shortcomings of the fellow-members of

the same family ever tends to a better understanding or more harmonious relationships. The need of the hour is a recognition of the interdependent relations which exist between us all, and to remember—intensely, actively, potently remember—that an "injury to one is an injury to all," and that "united we stand, divided we fall."

FOOTNOTE:

[B] This includes $15,000 per mile of duplicated capital.—S. T.

PROBLEMS CONFRONTING AMERICAN RAILWAYS

BY DANIEL WILLARD,
PRESIDENT OF THE BALTIMORE & OHIO RAILROAD.

[An Address delivered at Galesburg, Illinois, to Burlington Railroad Employes, February 20, 1909, by Mr. Willard, then Second Vice-President of the Chicago, Burlington & Quincy Railroad Company.]

A short time ago I had occasion to explain to some of your associates who happened to be in my office, some of the difficulties the railroads had been contending with during the two years just past, and I was asked if I would be willing to come to Galesburg and explain to other Burlington employes the things I

had endeavored to make clear to them. I replied that I would be very glad to do so, and I suppose that is how I happen to be here tonight.

I understand that this audience is composed largely of employes of the Burlington Railroad Company, and I am glad that that is so, and what I shall say will be addressed particularly to them.

So much has been said and written about railroads during the last two years, and by many well qualified to do both, as well as by some not qualified to do either, that it can hardly be possible that any new thing remains to be said, and I fear I shall only be able this evening to repeat to you collectively the same things I have already said to many of you individually.

Under the Burlington plan of organization the Second Vice-President has direct charge of the operation of the line (responsible, of course, to the President), and for the last five years I have had the privilege and honor of holding that office. I refer to this only that I may by so doing establish my relationship with the various matters to which I shall later specifically refer, because I propose to confine my remarks chiefly to home matters; that is to say, to matters pertaining directly to the Burlington Company. I feel that I ought to be qualified to speak clearly on that subject, and while I have naturally read much concerning the general railroad question as a whole, the same sources of information have also been open to you, I have no doubt many of you have given the general subject as much or even more study than I have.

In October, 1907—16 months ago—the Burlington Company did the largest business in its entire history —ran the most trains, earned the most money and

employed the most men. During that month the names of 53,000 men appeared upon its pay-rolls; and the same condition existed quite generally throughout the entire United States. There was a well-nigh universal complaint of car shortage and lack of motive power.

Four months later, reports from the Car Efficiency Bureau in Chicago showed a surplus of over 325,000 freight cars on the American railroads. In the meantime the Burlington Company had reduced its force by nearly 18,000 men and it was estimated that the transportation business of the country had fallen off more than 30 per cent.

What caused this unprecedented change? Men far abler than I have undertaken to explain, and many reasons have been given, all, I presume, more or less in harmony with the facts, but influenced no doubt by each man's point of view. I say, candidly, I do not know what caused it; that is, assuming that there *was any one cause*, but I think I can point out to you *some* of the *contributing* causes, at least so far as the Burlington Company is concerned.

A railroad, as you all well know, is a living, growing thing. It is never finished, or if we think we have finished some certain part, as was probably thought when the original stone engine houses were built here some years ago, or when the first bridge was built across the Mississippi River at Burlington, it always happens that heavier, larger, and longer engines come along in course of time, forced upon us by the changed conditions, and our engine house which was built for all time becomes too short, and our bridge is too light, and both must be rebuilt. The same thing is going on in every department of railroad operations—ballast, ties, rails, coaches,

station buildings, even grades and curvature, all come within the changing influence of time and progress. I referred to the engine house specifically simply to illustrate my point.

Because of the constant change or evolution which is going on, it is necessary that Railroad Companies, if they expect to keep abreast of the times, should make annually large expenditures for such improvements as from time to time become desirable or necessary, if the standard of service is to be raised, or even maintained. These are called extraordinary expenditures, and it is customary on this Line to prepare each year, as of January 1st, what is called a Budget, being in effect a list of the more important improvements considered necessary by the officers of the Road. The Budget shows the separate items, with description of each, and also estimated cost. It may and does include such items as new cars or engines needed, additional sidetracks, new terminal yards, such as you have here, water treating plants, new coal chutes, etc.

On January 1, 1907, the sum total of the Burlington Budget, as it stood approved by the President on that date, amounted to something over $16,000,000.00. It included some new equipment and also some quite large improvements, such as new yard at Lincoln, grade reductions between Galesburg and Savanna, etc.

The Burlington System is over 9,000 miles in length, and goes through parts of eleven different states. On the 1st of January, 1907, the legislatures in all of the eleven states, I think, were in session. The Federal Congress was also in session at Washington. Bills having special reference to railroads were being introduced daily in some of the

legislative bodies above mentioned. I cannot say now that all of them were against the railroads, but I feel I am justified in saying that while perhaps some of them if passed might not have injured the railroads much, none, or at most very few, were intended to help the roads. In fact, the attitude of the Federal Congress as well as of most of the state legislatures was considered by nearly all railroad owners, and officers as well, as distinctly hostile. This belief may or may not have been justified by the facts—at any rate it existed. The owners of the Burlington Company believed it. Its executive officers believed it. I believed it.

The number of bills affecting railroads introduced in the legislatures of the eleven states above referred to, and in the Federal Congress, during the session of Winter of 1906-1907 was over 800—at least, over 800 such bills were actually laid upon my desk. Among these were bills reducing the passenger fares in several states; others about reciprocal demurrage —if any one can explain how such a matter can be made reciprocal; still others fixing the speed of stock trains, and the size of caboose cars; fixing the hours of labor for men in certain branches of the service (and I wish to say here that that part of the Federal law fixing limit of hours for men in train and engine service has my hearty support); bills having reference to the liability of the railroads to their patrons and employes, etc., etc. I do not wish you to understand that I criticise all, or for that matter, any, of the bills by this enumeration. I am now simply reciting the facts. But whether the bills were good or bad, desirable or undesirable, it was clear if some of them became laws that the expenses of the railroads would in consequence be largely increased, and no way was provided whereby the revenue or earnings

would be correspondingly raised—in fact, there seemed to be a demand from all directions that rates should be reduced, and they were reduced in many states.

Another important movement was also under way at the same time, and that was in the direction of a general wage increase in practically all departments. This one item alone cost the Burlington Company $3,000,000.00 a year.

Now, what effect do you suppose all these things had upon the Budget and similar questions? Just the same effect that the same kind of questions in a personal way would have had upon you and your personal affairs.

You will remember that I said the Budget amounted to $16,000,000 on January 1, 1907. That was just before this wave of anti-railroad legislation referred to had fully developed; but when we saw what was happening, when we read the bills that were being passed daily, and the others that were under consideration, we became very much concerned. It seemed clear to us that even if business continued good—and remember this was ten months before the panic of November—that our earnings would probably be considerably reduced by the reduction of freight and passenger rates in various states, and our expenses were certain to be much increased by some of the legislation and also by the advance in wages, and it was necessary to consider where the money was coming from to pay the large bills that would come due in connection with the Budget program. After considering the matter very carefully early in January, we decided, first, not to authorize anything further in the way of improvements unless actually necessary; and, second,

to stop as many things already authorized as it was possible to get along without. Among the things so put off or deferred were the building of a new engine house and necessary shop buildings at Clyde; the construction of a new line about 55 miles in length from Herrin to the Ohio River; double track between Galesburg and Bushnell; new passenger depots at Monmouth and several other places; work on new terminals at Lincoln, etc. Of course, it may not have seemed to you at the time that we were stopping, because we still had so many things under way, and you cannot prudently stop large undertakings all at once—for instance, we could not stop work on the new yard at Galesburg when it was half done, and you will recall that it required more than two years to complete the plan, but we did slow up as much as possible; that is to say, we tried to finish up such things as were authorized before January 1, 1907, and which were still considered necessary, but we did not start any new things. The effect of this is best shown by the size of the Budget on January 1, 1908—it was then a little over $8,000,000.00, or about one-half what is was twelve months before. In the meantime the November panic of 1907 had come upon us, and it seemed not only best, but necessary, to continue the policy decided upon in January of that year, and on the 1st of January, 1909, the Budget, as it then stood, and as it now stands, amounts to a little less than $1,000,000.00; and this brings us up to the present time.

In February, 1907, I had the honor to be invited to the annual banquet of the Commercial Club at Clarinda, Iowa, and I was asked to speak about the railroad situation. After referring to some of the proposed laws that were then under consideration in the various states, I continued as follows: "I will not

speak of the probable effect of such a public policy as I have referred to, on the general railroad situation, as others are much better qualified to do that, but speaking for the Company which I represent, we view the situation with much concern, and we have done, I think, what any prudent manager would do if he saw confronting him conditions which he was certain would increase his cost of operation a large but unknown amount and at the same time reduce his revenues—we have planned to curtail our expenditures wherever possible. I do not mean that we shall let the property suffer, or lower the character of the service, but we will not undertake extensions or large improvements until we can see more clearly where the money is coming from, or if it comes at all. How far reaching this policy of retrenchment, or perhaps I should say curtailment, will be, I, at least, cannot say; it will depend upon the future. Certain it is that our expenditures in that direction will be much less this year than last, which means, of course, fewer men employed and less material purchased." It is two years since that was written, and I regret to say that circumstances have not yet seemed to justify any considerable change of policy.

The Burlington Company has on its pay-rolls today about 38,000 men, 15,000 less than in October, 1907, and 7,000 less than in February, 1907. We are doing all the things that we consider necessary for the safe operation of the trains, and for the proper maintenance of the property, but conditions so far have not seemed to us to justify a resumption of the policy of betterments and extension followed during 1906 and the preceding years. I do not know absolutely that it is so, but I imagine that the other

Railroad Companies have been pursuing much the same course as we have here. The latest reports indicate that the total railroad mileage of the United States is about 230,000, so that the Burlington's mileage is about one-twenty-fifth of the whole, and if you multiply what has happened on this road by twenty-five, you will get a result for the whole country which will probably not be far from the truth. In fact the Eastern roads suffered much more from the actual business depression than we did in the West.

It has been stated by men who should be competent judges that from one-third to one-half of all manufactured steel and iron is used either directly or indirectly by the railroads, and that fully one-half of all the lumber manufactured is so used. When it became necessary for the railroads to stop buying new cars and engines, and also to stop all new construction and improvements, when possible to do so, you can well understand the effect that that course must have had upon the two particular lines of business just mentioned. Of course, many other lines were similarly affected, and it would seem logical that no full and real resumption of business can be expected until the railroads are again able to resume the policy which they were forced to abandon early in 1907.

When will that time come? I do not know. What will bring it about? I do not know that either, but I do know what will help matters greatly, at least so far as the Burlington Company is concerned; but before saying what I have in mind in that connection, I will digress a little, and briefly explain something of the financial responsibilities of a large Railroad Company, because in spite of all we hear

about corrupt management, stock watering, etc., it is still a fact that the railroads did cost something, and the money that was used for that purpose was all, or very nearly all, furnished by private persons like yourselves, and it was furnished by them for investment because they thought or hoped such an investment would be profitable to them, for there is, there can be no other reason for investing money in anything, unless it be invested for charitable purposes. The Burlington System today, as I have said, is over 9,000 miles in length. It has large terminals in Chicago, St. Louis, Kansas City, and the other great cities it reaches. It owns 1,600 locomotives, 1,200 passenger cars, and 52,000 freight cars. The last annual report shows that its bonded debt (or the size of its mortgage) amounts in round numbers to $165,000,000.00, equal to about $18,000.00 a mile. This mortgage is legally entitled to interest at the average rate of 4.185 per cent per annum, because it is so specified in the bond, and that interest must be paid, or the mortgage would be foreclosed just as would happen if you failed to pay the interest on a mortgage, in case you happened to have one on your home. In addition to the bonded debt above referred to, there is outstanding $110,000,000.00 of stock in round figures, or about $12,000.00 a mile, making a total capitalization of $30,000.00 per mile. We are constantly told that the American railroads are overcapitalized, and yet the Burlington Road could not be replaced today for twice its capitalization. I doubt if it could be duplicated for three times its outstanding capital. The stock, as you know, receives as interest or dividends whatever sum the Directors may decide to pay, out of what is left after paying the operating expenses, taxes, and interest on the mortgage. If

there is nothing left after paying the other items mentioned above, the stockholders receive nothing, so that there is a certain risk connected with an investment in railroad stock that does not apply to railway or Government bonds. For a number of years the Burlington Company has paid 8 per cent dividends to its stockholders. It has earned more than that, as the annual reports show, and the Directors might legally and properly have paid larger dividends, but they did not, and all the money earned in excess of 8 per cent on the stock has been spent for betterments, new equipment, etc. This policy, pursued through a long period of years, as it has been, explains how it is that the Burlington is in such good physical condition as it is today, and with such a low capitalization. With this explanation, you will understand, I am sure, that with an increase per year in wages alone of $3,000,000.00, together with other increases due to legislation, such as $325,000.00 per year because of the nine-hour law for operators, and a smaller income because of rates reduced (freight and passenger) in many states, the surplus, if any, after paying dividends would be much less than formerly, and if any new work was undertaken it would be necessary to keep its cost within such surplus as might be available, or else borrow the money with which to pay for such work. I hope I have now made clear why it was that we became worried about the Budget in January, 1907, and why for the last two years we have been trying, so to speak, to get our house in order. It will perhaps be said that we could have borrowed money for new extensions, betterments, etc., and that is actually what we were compelled to do, in order to complete the Budget plans above referred to; but what prudent man would want to borrow beyond his forced

necessities, at a time when the future seemed so uncertain, and when the interest on the money so borrowed would add that much more to his existing burdens? The same sound principles should and do underlie railroad operations that you should and do apply to your own personal affairs. The items are larger in the case of the railroad—that is all.

I will now repeat the question—What will bring about a resumption of business on railroads? And if I have succeeded in making clear what I sought to explain, I think you can answer the question just as well as 1 can, but I will give you my views, and you will now be in position to judge whether they seem sound or otherwise.

In my opinion, railroad business, which really means all business, will recover its former proportions when the influences and forces at work during the last two or three years shall have ceased doing the things that have contributed so largely towards bringing about the depression which we all deplore. Perhaps that is not quite clear. I do not mean that laws already made must necessarily be unmade, that wages raised must be reduced, but we must have a rest. We must be given time and opportunity to work out the new problems that have been forced upon us during the last two years. We must be given a chance to find out what it is going to cost to meet the new requirements, and also how much our revenues are going to be reduced by reduction of rates. Perhaps it will be found that by new methods growing out of the exigencies of the case we will still be able to earn a surplus sufficient to justify the resumption of extraordinary expenditures as formerly. If not, then, either rates must be advanced, or wages be reduced, or

improvements must wait or be carried on with borrowed money and railroads will be slow to increase their interest-bearing debt under such circumstances.

As I have said, two years ago during the legislative period, 800 bills affecting railroads were introduced in states reached by the Burlington System, including those proposed at Washington. So far this season, 272 such bills have been presented. It is too early now to venture even a guess as to how many of them will become laws, but until we know just what to expect, you can clearly see, I am sure, that we will not feel like incurring any new or unnecessary obligations.

Among the bills so far introduced are two in Illinois, called the full-crew bills. These two bills, if passed, will increase the cost of operation on the Burlington Road alone $96,000.00 a year, on basis of present business. In Nebraska a similar bill is under consideration. It is true that the two Illinois bills if they become laws will not necessarily make our operations in Illinois unprofitable, but that class of legislation will do much to discourage new developments, by making such developments more difficult, or rather, less profitable; and besides, in my opinion, such laws are not necessary.

As Burlington employes, you may be interested in what I am now going to tell you about the development of the coal business north through Galesburg. I need not tell you how much it has increased during the last four years, for you have seen it grow from practically nothing up to its present proportions. Some six or seven years ago the Burlington officers gave careful consideration to the problem of increasing the Company's business, and

you must bear in mind that freight shipments do not just *happen* to go this way or that. Well, they finally decided that the most promising opening was to try and develop a coal movement from Southern Illinois to the cities of St. Paul and Minneapolis, and the Northwest generally, where the winters are severe and fuel supply limited. It was found that if coal from Illinois was taken to the Twin Cities it would have to be sold in competition with coal from Pennsylvania and other eastern states shipped by water to Duluth. It was also found that the coal from Franklin and Williamson Counties in the southern part of the state, while of very good quality, would not bring the same price on the market in St. Paul as the eastern coal. It was also found that in order to be sold at a sufficient profit to the dealer, in competition with the eastern coal, the railroad would have to carry it from Herrin, Ill., to St. Paul, 648 miles, for not more than $2.10 per ton, or 3.2 mills per ton mile. It was also found that it was impossible to do this at a profit to the railroad, as conditions then were; that is to say, we could not haul coal at that rate and make money on a road full of one per cent grades. The engineers were put to work, however, and an estimate was prepared showing what it would cost to put the line from Savanna to Herrin all to a standard grade not exceeding sixteen feet per mile, the line above Savanna being all right. It was believed that it would pay to make the improvement—and you know the rest. The line was built from Centralia to Herrin, the Fenton-Thompson cut-off was built, grades were cut, and, altogether, more than $5,000,000 were spent to put the road in shape to haul coal to St. Paul in 3,000-ton trains. Of course, many new engines were bought, as well as new and high capacity cars suitable for the coal

trade. It is a low rate business, and as you know, the cars as a rule return empty, but handled over low grades and in full trains it pays a fair profit; but every additional item of cost, of course, reduces the profit.

Now to show the effect of proposed legislation. In Nebraska a bill has been introduced placing the limit of cars that can be legally handled in one train at fifty. If this bill becomes a law, how long will it be before somebody will want a similar one in Illinois, and if you are going to fix a limit so as to make it necessary to run more trains, and consequently employ more men, and that is the undoubted purpose of the bill, how long will it be before the limit will be reduced to forty, or even twenty-five? Where will the thing end, and when? With the mere possibility of such legislation looming up in the future, can you expect improvements such as I have just described to continue? Would you recommend them if in my place?

How long will such legislation find favor in our halls of Congress? Just as long as your representatives think you want it—by you I mean the majority of their constituents—and no longer. Your representatives and senators are human. They seek to obtain political preferment at the polls, and desire to remain in office. They must have a majority of the votes to be elected, and naturally they will shape their course so as to meet your wishes, as they understand them, because by so doing they hope to retain your support.

No one today questions the right of the properly constituted authorities to supervise the railroads. No one defends the rebate, or discrimination of any kind, but, as the Supreme Court of the United States

has recently well said, "*It must be remembered that railroads are the private property of their owners; that, while from the public character of the work in which they are engaged, the public has the power to prescribe rules for securing faithful and efficient service and equality between shippers and communities, yet in no proper sense is the public a general manager*."

No doubt there may be much in connection with railway management in the past (and for that matter at the present time as well) to criticise; but please tell me what line of human undertaking since the world began, be it industrial, educational or religious, has been free from criticism; and, granting all that is said against the railroads, then what? This is what we find: That the railroad rates in this country are the lowest in the world, with few minor exceptions not worth considering; that the wages paid railroad employes in the United States are higher than anywhere else in the world, and that the capitalization of American railroads per mile, as reported by the Interstate Commerce Commission, is but one-fourth as much as that of English railroads, and one-half that of the railroads of Germany and France, and one-third that of Belgium; and this has all been accomplished in a country where a high protective tariff obtains, and where everything the railroad uses costs more on that account. It is claimed that our manufacturers must have the protection of a high tariff in order to enable them to meet the prices of their foreign competitors and pay American wages; but the American railroad sells its product, that is, transportation, for less than any other nation and still pays higher wages. A locomotive engineer, for instance, receives $4.01 per day here as against $1.62 per day in England, and $1.01 per day in Belgium.

It is sometimes said that railroads have received great help from the people in the shape of land grants, and on that account should give much in return. Let me give one instance of how this has worked with the Burlington Company. In order to induce the original projectors of this line to extend the road through Iowa, this Company was given 359,000 acres of government land in that state, selling at that time at $1.25 per acre, amounting to less than $450,000 cash value. By an act of Congress, passed over thirty-two years ago, a reduction is made of 20 per cent from the mail pay on all land grant roads. At the present time the amount so deducted from the Burlington, because of the Iowa grant, amounts to over $65,000 a year, and since the law was passed has amounted in the aggregate to over $1,500,000, or more than three times the original value of the entire grant. Not only that, but it goes on without end. Do you think that is fair?

We do not ask for favors. We wish to be treated fairly; that is all. No one can possibly be more interested in the prosperity of the railroads than the railroad employes. From every dollar earned by the railroad forty-two cents go directly to pay wages of railway employes, while only twenty-one cents, or one-half that amount, go to pay interest and dividends. In no other country in the world does the railroad employe get so large a share and the security holder so little. Why should not the man who invests his money in railroad stock receive as much return in shape of dividends as the man who invests his in a farm or factory? The last census report of the government, that for 1900, showed that money invested in farm lands in the United States earned an average return of over 10 per cent, and money invested in manufactures earned over 19 per

cent. The governor of Iowa, in a printed article over his own signature, appearing in the February, 1907, number of "Farming," gave a number of specific instances where money invested in farm lands in Iowa earned from 18 to 23 per cent, and he referred to such cases as typical. The last report of the Interstate Commerce Commission shows total earnings of all railroads in the United States for year ending June 30, 1907, to have been $2,589,105,578. It also shows total capitalization as $13,053,974,156, and money paid as interest and dividends $551,128,713, equal to 4.2 per cent on capitalization. Certainly this does not seem excessive when compared with profits in farming and manufacturing as given above.

We are glad to know that our farmers and manufacturers are prosperous, because we have long since learned that when they are not prosperous the railroads cannot prosper. I fear they have not yet fully realized that it is better for them, also, that the railroads should prosper. We hear no complaints in Congress or elsewhere because our farmers and manufacturers are prosperous; in fact, we are all inclined to boast about it.

The last annual report of the Interstate Commerce Commission gives the aggregate capitalization of the railroads in the United States as over $13,000,000,000, showing that the railroad investment in our country is second in amount only to that in agriculture. It is estimated that the number of railroad stockholders today is over 400,000. We know that in 1907 over 1,600,000 men were employed on American railroads. Do you know of any good reason why this army of railroad men, together with the 400,000 stockholders, should not

receive as fair consideration from government and people at large as the farmer and manufacturer receive? And yet the government in effect lets the one have money without interest to buy his land, and by means of a tariff makes you pay more for much that you buy, so that the other can pay his employes good wages. Personally I make no complaint because of either of these things; but so far as I can learn no one in Congress has suggested that railroads should raise their rates so that you might receive higher wages, and yet the two things, rates and wages, are very closely related.

If anything I have said has helped you to a better understanding of the railroad problem, I am glad. If it has caused you to take a renewed or deeper interest in the subject, I am glad. I could go on and multiply cases in confirmation of what I have said had I the time, but what I have said already is perhaps sufficient. Do you intend to make railroading your life business? Are you interested in the prosperity of railroads, and particularly of the Burlington? Do you clearly see the relation between rates and wages? Do you think wages are too high? If not, perhaps you do not agree with one of your congressmen in Washington, who has just recently, on the floor of the house, urged that the Interstate Commerce Commission be given more power over rates, which means power to reduce them still more, because they have never, so far as I have heard, exercised their power over rates in any other way. Personally, I am glad I can claim to be a railroad man, and not only glad, but proud of it as well. I think the American railway is the one great institution above all others that Americans should be proud of.

Mr. W. R. Lawson, an Englishman, who investigated our railroads in 1903, wrote upon his return, in his book on American Industrial Problems: "The science of transportation is going to be the special contribution of the American people to political economy."

Mr. Neville Priestley, an English gentleman and Under Secretary to the Government of India, Railway Department, came to this country in 1904 for the purpose of investigating our American railroads. His report was submitted to the English government and printed.[C] Among other things he said: "American railway men are quick to see a new idea. They are quicker still to try it. They take a great pride in their profession and are striving to get at the science of it. That their methods are not always perfect is what might have been expected, but they have managed to do what no other country in the world has done, and that is, carry their goods traffic profitably at extraordinarily low rates, notwithstanding the fact that they pay more for their labor than any other country. It is in the study of how they do this that much benefit can be derived by other countries."

Mr. Leroy Beaulieu, a distinguished French economist, who visited this country in 1905 and made a careful examination of American economic conditions, wrote as follows upon his return to his native country: "All in all, the prosperity of the American railway system as well as the excellence of service it renders, is undeniable. If, therefore, one were in search of model railway methods, it would be wise to turn to those practiced under the free American system, not to those illustrated by a system operated under the debilitating control of the state."

It has been well said that "a prophet is not without

honor save in his own country and in his own house."

FOOTNOTE:

[C] A condensation of Mr. Priestley's able report was made for the Bureau of Railway News and can be had on application.

THE RAILROAD SITUATION OF TODAY

BY
FRANK TRUMBULL

PRESIDENT OF THE COLORADO & SOUTHERN RAILWAY COMPANY.

An Address to the Western Society of Engineers at their Annual Dinner, Chicago, Jan. 5, 1909.

Mr. President and Gentlemen of the Society:

I shall not attempt to deal with any technical phase of the railroad industry, and in saying this I am emboldened by a declaration which I find in the Constitution of your society, to-wit:

> "This Society shall neither endorse nor recommend any individual or any specific or engineering production, but the opinion of the Society may be expressed on such subjects as affect public welfare."

The American railroad administration of today has abundantly demonstrated its ability to solve all engineering and mechanical problems, and we may rely upon it that the same American enterprise and valor which have gridironed the continent with shining bands of steel will solve any technical problem that may be ahead of us for which money may be had.

I therefore proceed at once to engage your thought for a few minutes, if I may, upon what seems to me to be the great problem of the American railroad situation of today; that is, how to satisfactorily settle the relations between private capital and the users of the railroads.

FOUR YEARS' RETROSPECT.

During the last four years the American railroad has been in a seething cauldron of publicity; a good deal of refuse has risen to the surface and has needed to be skimmed off,—but I think I do not violate any confidence in saying that not all of it has come from the body of the railroad. Part of it seems to consist of political bacteria and defunct statutes which attempted to violate the voice of the people,—the Constitution which legislators had sworn to support. And in this connection, perhaps I ought, in passing, to say a word which has rarely been spoken in defense of the railroads, by pointing out the shame of putting them to the great cost of proving in the courts the unconstitutionality of statutes which ought never to have been enacted because they were never valid. In the last four years there has been much noise; the air has been filled with shouts and cries, and more or less dust. Hysteria and virtue, although really not at all alike, became confused, and a very large percentage of the public absorbed the idea that

the railroad highways are public property, forgetting that all of us are absolutely dependent upon private capital for the American railroad of today. Again, we seem to have been upon a storm-tossed ocean. Fortunate are we that through it all has run the Gulf Stream of our wonderful American resources. If it were not for that, we should all have been ruined. We have survived, but the pity of it is to think how much better off we might be, if "We, the People of the United States," would, in financial legislation, railroad regulation and other matters, only exercise our wisdom as much as we do our power. Legislation has been restrictive, not constructive. There is very little in it, thus far, to help the railroad. Nearly everything seems to have been thought of, except provision for money or for improving credit so as to command cheap money. The country has been flooded with conflicting laws and still the cry goes up for more bureaucratic power and more statutes. It reminds me of an immigration meeting in Mississippi:

The court-house was filled with an assemblage of white people, and when the meeting adjourned an old darkey asked one of the gentlemen who came out of the court-house what the meeting was for. The reply was that it was an immigration meeting. "What is dat?" asked the darkey, to which the gentleman responded, "We want to get more white people from the North and East to settle here." Whereupon the darkey said, "Foh de Lawd's sake, Majah, dars moh white people in dis county now dan us niggahs can support!"

I admit there have been many evils in railroad administration, but I modestly affirm that there have been no more than in other lines of business. The

railroad industry of this country is young and it acquired some children's diseases. Many people think the railroads would have recovered from measles, mumps and whooping cough without prescriptions from forty-seven varieties of doctors—forty-six states plus the Federal government. It has seemed many times that the railroad patient has been like the man who fell ill in some mysterious way. The consulting surgeons determined that an operation was necessary. They could not locate any definite malady, but they found five hundred dollars on him so they operated on him for that! Of one thing, however, we may be absolutely sure—that is that the law of compensation is always at work. If we have an excess of regulation, there is less of something else. It is entirely probable that if there had been no political regulation of railroads, the people of this country would have more roads, far better and safer roads, and a greater distribution of wealth than they have today. But I must not forget that, according to the subject assigned me, we are here not to look backward, but to look at the present, and then perhaps take a little look forward.

SOME CONTRADICTIONS.

From a mechanical and traffic standpoint the American railroad of today is one of the wonders of the age. I give one illustration only: Compare its splendid performance with a report I have here of the Northeastern Railway of England, which has a large mineral traffic. This report shows average contents of loaded freight cars to be 5.72 tons, and average contents of freight trains to be 114.7 tons.[D]

On the other hand, the American railroad situation in its political and governmental relations is a bundle of contradictions. If you were to engage your money

in merchandising or manufacturing, you would no doubt be appalled if you should discover that some one entirely outside of your line of business could fix the prices at which you must sell your product, and that the burden of proof that the prices so fixed are confiscatory, is upon you,—and that you could not abandon your operations. Yet this is precisely what may happen if you invest your money in a railroad. The contradiction is that there are no reciprocal assurances in your behalf. Neither the State nor the Federal government will give you any financial aid, nor will they guarantee you anything, nor will they even protect you against competition, as France has long since been wise enough to do.

A second contradiction is that although there was a four years' war to prevent a division of this country, and although thereafter our American genius connected up remote sections of our common country, and although the work of the railroads has been splendidly national, the attempt to regulate them has been lamentably local and Lilliputian. I need only cite the conflicts between the enactments and rate-making of different states and those of the federal government. We hear more or less these days about the "twilight zone" between the states on the one hand and the Federal government on the other; but for those who administer the affairs of a great railroad system, the phrase "twilight zone" is too polite a term. It is instead a jungle in which the wayfaring railroad man may easily lose his way, and possibly be actually devoured by "laws with teeth in them." We hear a great deal about the simple desire that the railroads shall obey the law; but who is wise enough to say what the law is, when only yesterday the Supreme Court of the United States left an important case unsettled, so far as it was concerned,

because it was divided four to four. These uncertain and conflicting laws and changes in rates confuse the railroad manager more than the public has ever realized.

A third contradiction is the attempt, by anti-trust laws, to maintain the competitive idea alongside regulation, as if unrestricted competition were compatible with compulsory uniformity in rates and service. The President of the United States and other high officials have spoken in no uncertain terms concerning the absurdity of a situation like this, and yet thus far there is no relief.

A fourth contradiction is found in the great increase in cost of producing transportation without the corresponding increases in selling prices which have taken place in other kinds of business in which private capital is engaged. The erroneous impression seems to prevail that the supply of capital for the railroad industry is an inexhaustible reservoir, regardless of the compensation which it shall receive and the conditions under which it shall perform its work.

A fifth contradiction is the effort to connect up rate-making with physical valuations. If it will be a satisfaction to the politicians to have a physical valuation of all the railroads in the United States, and the people are willing to be taxed to pay the great expense of obtaining it, perhaps no great harm will be done; but I believe all of us here would concede that valuations by the ablest engineers, if separately made, would not agree, and that before such valuations could be finished, they would be out of date. Some of us probably think that for rate-making purposes the Government may as well be employed in making a physical valuation of farms

and farm improvements in order to ascertain what is a fair price for wheat; or, for that matter, perhaps be as well employed in adding up car numbers. I know something of a piece of railroad out west, which in a great mining excitement was built through rocky and tortuous gorges, and with four per cent grade hung upon the precipitous sides of awful mountains in a climate described by one of the inhabitants as consisting of three seasons—July, August and winter. Later the boom evaporated and the business of the road got down to one train a day. In the low ebb of traffic a brakeman one day "sifted" into the trainmaster's office and asked for a job. The trainmaster put him through the catechism, and among other things inquired, "What would you think if you saw a train carrying green signals?" to which the applicant promptly responded, "I'd think business was picking up." Now, can any of us tell what they would do in Washington with a physical valuation of a road like that? Its rates today are only about one-fifth what they were at first.

A sixth contradiction is the wide-spread desire to regulate capitalization. Now it may be that there have been abuses; but if one asks any of these critics what is the grievance to be remedied, great silence usually falls upon them, for they are unable to show any more relation between rate-making and either physical valuation or capitalization than there is between the price of a pair of suspenders and the physical valuation or capitalization of a department store. Railroads are continually importuned to make rates that will "move the business," as in the case of the Western road just cited, and those parts of the United States which have the highest railroad capitalization have the lowest average freight rate. If you will look at the *American Review of Reviews* for

the month of June, 1908, you will find a very interesting article by Interstate Commerce Commissioner Lane on "Railroad Capitalization and Federal Regulation." His program is a very simple one, and while pointing out that there should be some way of insuring that the proceeds of all railroad securities shall be actually invested in "acquisition of property, construction, completion, extension, or improvement of facilities, the improvement or maintenance of service and the discharge or lawful refunding of obligations," he says:

> "Fundamentally, there is at present no inter-dependence of capitalization and rate—the latter is not in law, nor in railroad policy, the child of the former—though railroad men have sometimes expediently urged the claim, and courts have sometimes too kindly given it their nod of sanction."

Also,

> "The most potent kind of regulation is that which casts the burden upon the individual to do the regulating himself and makes him responsible to the law for dereliction; and the plan for the regulation of capitalization here presented is founded upon that theory—to require the directors of the railroad companies to make public announcement of their security issues, to publish the objects for which such issues are made, and be responsible for the use of the proceeds in the precise and limited manner announced. This is far too modest a program to please those who delight in elaborate methods of procedure involving much filing of forms and petitions and many hearings, appraisements, viseings, and solemn givings of consent; and without question it is not nearly as thoroughgoing a plan as others which have been devised. But the simpler the plan is, the better, if it may effect its purpose."

He further says that his program

> "does not guarantee the prospective purchaser of the stock that the stock certificate which bears a printed par value upon its face does in fact represent property of the full value so designated; *but this is not a duty which the Government for any reason is bound to assume*, and I know of no motive arising out of national policy which compels the assumption of such responsibility—certainly not at present."

If our complex government shall control all future issues of railroad capitalization, we may rely upon it that most of the new railroad construction in this country, instead of being independent, will be fathered by existing railroad systems, because their established credit, whatever it may be, will be required.

RECONCILIATION.

Is it not evident that these contradictions never can be reconciled by untrained men? I believe that for the American railroad the time has gone by when illiterate men will be put in charge of millions of dollars' worth of machinery and other property. We are in a new era. Railroading is rapidly coming to be a profession. We are necessarily in all things doing more and more specializing. Why not insist that the regulation also shall be in accordance with ethical principles and not determined by political expediency?

The great over-shadowing problem of reconciling private capital and the users of railroads, and the contradictions which I have mentioned, are the inheritance of this generation of railroad men; and I have no doubt that this generation, like all previous ones, will be equal to the task put upon it. Out of the painful processes of the last four years, we have

emerged with some gains. In the first place, the country now realizes that the one million, five hundred thousand employes and officers of American railroads are not surpassed in integrity by any other similar number of business men. During the four years hardly a voice has been lifted to say this, and so I am glad to have this opportunity to raise my own in their commendation. In the second place, it is easier for shippers and railroad traffic men to be honest than it ever was before. The stoppage of rebates is a distinct gain, morally as well as financially. In the third place, it has been demonstrated, I think, that our Government *ought* always to be bigger than any corporation, or any man, or any set of men, and this is a good thing for us never to forget.

Already publicity has brought about a friendlier feeling between the people and the railroads, and along certain paths I have no doubt we shall find our way out of our difficulties, for the American people are *not* unfair when they understand a situation.

Upon one occasion I was making a trip over a division of road where there was no competition and where we therefore enjoyed one hundred per cent of the business. There was an unexpected stop for something and a brakeman went to the rear to protect the train. Presently a wagon-load of girls came in sight. The brakeman took out his handkerchief and initiated a flirtation. Then discovering that I had seen the performance and evidently desiring to square himself, he said without hesitation, "If we make friends of these people they ride on our road." One could hardly convey better than that brakeman did to me, an idea which we should never abandon, namely, that one of the best

assets a road can have is friends, and I suggest that probably our first duty is to keep in good humor and be considerate one for another. That involves and includes good service to the public, and nothing will help more to keep the public in good humor. The people of this country already have the lowest rates and the highest wages in the world. They are the best people in the world and are entitled to the best service in everything. I believe they should insist upon having the best railroads, and when they so insist, and realize that our population has thus far doubled every thirty years and will soon be one hundred million, and not very long after that one hundred and twenty-five million, and that our transportation necessities double faster than our population does, they will set about finding out what is necessary to obtain adequate railroads, and then we shall probably hear less about rates and more about efficiency and safety. When the people do this they will soon discover that it is no more disgraceful to make money in building railroads than in selling land or in merchandising or in manufacturing or in mining. They will also discover that although the courts have said railroad investors are entitled to a reasonable return upon a fair value, no court—not even that great tribunal, the Supreme Court of the United States—can finally say what is a reasonable return. This question would still be unsettled because we have not yet gotten away from our dependence upon private capital. What is a reasonable return must be answered by the investor as well as by the commissions or the courts, because it always takes two to make a bargain, and money, like its human owners, will go where it has the best prospective reward and the greatest liberty. The people will find that what we need in this country is not more

bureaucratic government by untrained officials with brief tenures of political office, or more power to commissions, but more responsibility upon boards of directors. If statutes are necessary to insure this, well and good; but if regulation is general in character and national in scope, is directed against oppression and discrimination, and designed to promote safety and efficiency and faithful accounting, the people will get better results from intelligent and honest directors than they will from the best governmental management which can be devised; and so long as the railroads are owned by private investors, those investors will doubtless insist upon their directors having more and more to do.

I am aware that there is a socialistic trend all over the world. There is more and more disposition to prescribe medicine for other people to take, but no amount of legislation will change the fundamental laws of the universe. The fact is,—notwithstanding our Declaration of Independence,—men are not created equal. It is a fine thing for all of us that they are not. There is a diversity of gifts; money-making is one of them, but a man may have the talent for making money and be totally unable to build a bridge or paint a portrait or lead an orchestra or an army, and if fortunes are acquired under the laws which we ourselves have made, why should we be envious? Unless a rich man hoards money like a miser, it is—if not alarmed—continuously at work for all of us, through the banks or otherwise, in spite of anything he can do, and the cheaper it can be had, the greater the economy to society as a whole. It is impossible to reduce everybody to a dead level, and how monotonous it would be if we could! We don't satisfy everybody even in our form of government, which we are prone to think is the best in the world.

For example, at the last election six and a half million people did not get what they voted for. Part of them got what they really wanted, but on the face of the returns, six and a half million were disappointed, and yet the country goes happily on, apparently to greater prosperity than ever.

But how much happier and how much more prosperous we might be if there were not so much untrained meddling—if there were not so many brakes upon the wheels of our progress! A brake, we all admit, is a good thing in its place, but it has no *propulsive* power, and the efforts of the time to combine in one man or in any one body of men the four functions of prosecuting attorney, judge, jury and executioner, must sooner or later give way. First, because it is un-American, and where such a condition exists, as Alexander Hamilton pointed out to the people of New York, "There is no liberty." Second, because it will not work practically.

Reconciliation of private capital and the users of railroads might, of course, be brought about by government ownership, because if there were a deficit the people could pay it in their taxes. Even then railroad rates could not be made mathematically consistent, for government is never mathematically consistent. For example, if I mail a letter to San Francisco or London, I pay two cents, and if you mail a letter to Evanston you pay two cents. But nobody seems to want government ownership, although many people contend that that would be much fairer and more honest than governmental control of railroads without financial responsibility. Perhaps a middle ground may sometime be worked out by a profit-sharing arrangement, as in Chicago between the city and the

street railway companies. That would have its advantages. Among the advantages would be cheaper money for railroads, if the government would guarantee a minimum return on agreed valuations. But of course this would be much more complex than to work out an arrangement with corporations like street railways, which do a single kind of business at one rate, instead of a business affecting every commodity of human consumption and stretching through forty-six states and two territories. However, I think there is food for thought for all of us in what has been accomplished here in Chicago, and the professional intellect present tonight may well think it over.

Finally,—while a man has as good a right to increase his fortune by investing in railroads as in any other manner, no matter what it may be, I believe we shall find a solution for some of the puzzles that beset us,—not through the gospel of tyranny on the one hand, nor the gospel of equality on the other hand, but through a gospel of stewardship. Let us all feel that although the acquisitive faculty is undoubtedly planted in the human breast for some wise purpose, we are not here primarily for personal aggrandizement. We are here for service, and the greater our talents or our wealth or our opportunities the greater our responsibility. We are trustees—for the users of our railroads, for our employees, and for investors; and let us welcome all the additional responsibility which may be put upon us as directors or salaried officials. I am sure this sentiment will commend itself to all of you, because there is no body of men in the world which has a higher code of ethics and which has demonstrated personal fidelity in a higher degree than the Engineers of America.

FOOTNOTE:

[D] In the United States in 1908 the average contents of loaded freight cars was 19.6 tons and the average of a freight train was 351.80. On some of the mineral roads the averages were much greater.—S. T.

TRANSPORTATION CHARGE AND PRICES

BY LOGAN G. MCPHERSON,

Lecturer on Transportation, Johns Hopkins University. Author of "The Working of the Railroads."

CHAPTER VI.

Reprinted by permission from "Railway Freight Rates in Relation to the Industry and Commerce of the United States," by Logan G. McPherson. Copyright 1909 by Henry Holt and Company, New York.

Vastly the greater proportion of the commodities moved by the railroads are in the processes of commerce; that is, the conveyance from the place of consignment to place of receipt in the majority of cases is sequent to a transfer of ownership. The seller cannot continue in business unless he obtain a market for his material, or his merchandise, and the purchaser can not continue in business unless he secure the material, or the merchandise, which he

needs. The margin within which the added charge for transportation may be adjusted is therefore limited in one direction by the amount which the seller of a commodity will accept and the purchaser will pay and continue in business. If the seller or the purchaser cannot make a profit at least approximately as great as from other operations in which it might be feasible for him to engage he will, other things equal, change his business, and the railroad will no longer have the traffic that flowed from his operations. A railroad, therefore, must adjust its transportation charges that production may continue. This includes the adjustment of rates that products may be sent to markets, that the products of the region tributary to one railroad may reach markets in competition with similar products of other regions, and in competition with other products that will answer the same purpose.

The wider the markets that the producers can reach, the greater is the encouragement to production. The more numerous and varied the sources of supply of which the purchaser has choice, the more likely that his requirements will be met to his satisfaction. This is the case whether the sale or purchase be of food, whether it be of raw material to feed the processes of mill or factory, whether it be of wares for wholesale distribution, or whether the purchase be of merchandise by the retail dealer, or the final consumer.

It has long been claimed by the railroads of the United States that their rates of freight are lower than those of any other country, and that the nation's progress in industry and commerce has in large measure been due to the cheapness and the efficiency of its transportation service. By way of

proof has been instanced the proportion that the transportation charge bears to the selling price of the staple commodities. It is said that the rate charged for the transportation of food products does not affect their selling price in any market of the United States—that price being fixed by the processes of supply and demand which the amount of the freight rate does not influence. In the spring of 1907 inquiry was made upon this point among the produce dealers of the city of New York, who gave the information contained in the following paragraphs.

The price paid by the housekeeper per dozen for eggs during the season of shipment seldom exceeds by more than five cents the price received by the Western farmer who takes them to the country store. That is, the railroads bring eggs a thousand miles to New York for a cent or a cent and a half a dozen, and two thousand miles or so for about two cents and a half a dozen, the dealers taking the remainder of the five cents as payment for handling. The net difference between the price paid per pound for butter at the creamery, whether in New York City or in the Mississippi Valley, and that paid by the New York retail dealer averages about one and one-half cents for commission and one cent for freight.

In December, January and February turkeys are taken from the Texas ranches to marketing centers, the transportation charge on ten birds weighing one hundred and twenty pounds being about 25 cents. After these ten birds have been dressed and packed they weigh about one hundred and two pounds, and the freight rate from Texas to New York is $1.50 for 100 pounds. That is, a Texas turkey that retails in the New York market for 20 cents a pound will have paid one and three-fourths cents per pound to the

railroads that took it from the ranch to the concentration point and thence to the market. The farmer in Texas received about nine cents per pound, leaving a trifle over nine cents to be divided between the packing house, the produce merchant and the retail dealer. Chickens and other dressed poultry that come from Chicago pay a freight rate of about three-fourths of a cent a pound, the railroad company supplying a refrigerator car, and keeping them iced while in transit.

The rail rate from Chicago to New York on grain and grain products for domestic consumption has been about 17½ cents per 100 pounds; that is, a bushel of oats or corn or wheat, that may bring in New York anywhere from 40 cents to $1, has been brought from the Western farm for from eight to fifteen cents. Hay that has yielded the farmer $18 or $19 a ton and sells in New York at about $24 has paid the railroads somewhere from $3 to $5 per ton, according to whether it came from the meadows of the Ohio or the Mississippi Valleys.

A bullock that weighs 1,200 pounds will, at Chicago, bring on an average $5.50 per 100 pounds, which includes an average of five cents per 100 pounds for freight from the grazing grounds. Its total value at the stock yards, therefore, is $66. When it has passed through the packing house its weight will have been reduced to 700 pounds. From Chicago to New York it will pay 45 cents per 100 pounds freight or, in other words, the 700-pound carcass, which, if retailed at an average of 15 cents a pound would bring $105, has paid the railroads between $3.50 and $4 from the far West to the metropolis.

On potatoes the freight rate per barrel containing about two and a half bushels is $1.05 from Florida,

65 cents from South Carolina, 45 cents from North Carolina, 30 cents from Virginia, and from this 12 cents per bushel the rate scales down to five or six cents per bushel from nearby regions. The freight rate on tomatoes from Florida is 25 cents per package of six baskets, from Texas 15 cents for twelve quarts, from Mississippi 76 cents per 100 pounds, and from the nearby farms eight cents per bushel of twenty-eight quarts. The freight rate on cantaloups to New York ranges from less than a cent for a melon from the Carolinas to about two and a half cents for that from California. Oranges from Florida to New York pay the railroads from four to nine cents a dozen, and those from California six to twelve cents a dozen, as they may be large or small. A three-pound can of tomatoes from Maryland pays the railroad about one-half cent per can.

The freight rates to New York on foodstuffs have been selected as typical of the transportation charges applying on such commodities in the main channels of traffic from the West to the East; and, in so far as fruits and vegetables are concerned, from the South to the East. The transportation charge per consumer's unit on these foodstuffs is a trifle less to Philadelphia and adjacent Delaware and New Jersey; another fraction lower to the great Pittsburg district, and still lower to the cities of the West and South that are nearer the places of production. As prices of food products fluctuate within a fairly wide range and freight rates also fluctuate, though within but a very narrow range, the rates and prices specified in the foregoing, as well as in the succeeding paragraphs of this chapter, cannot be considered as of specific application at any given time in the future. They were exact at the time they were collated and will very closely approximate accuracy at any period.

As New York may be considered representative of the places to which edible products of the West and South are consigned, so also may St. Louis be considered a typical center of reception of the manufactured products of the East. The information given in the immediately following paragraphs was obtained from merchants and manufacturers of that city.

The transportation charge on the material entering into a pair of shoes made in a St. Louis factory averages one and one-quarter cents. The transportation charge required to place that pair of shoes in the hands of a consumer in any part of the United States averages between two and three cents. The material entering into an ordinary bedstead, such as retails in St. Louis for $8, will have paid the railroad about 40 cents. From ten pounds of nails made in Pittsburg and retailed in St. Louis the railroad will have obtained a trifle over two cents, and from ten pounds of wire two and one-half cents. An axe made in the Pittsburg district that retails in St. Louis for $1 will have paid the railroads one and one-fourth cents. At Kansas City that same axe will have paid freight of a fraction over four cents and at Denver, where the retail price will have advanced to $1.30, it will have paid 14 cents freight. A padlock retailing in St. Louis at 50 cents will have paid the railroads a little more than one-half cent; at Kansas City it will have paid one cent, and at Denver, where the retail price advances to 75 cents, it will have paid two cents to the railroads. An eighteen-gallon galvanized iron tub that retails in St. Louis at 80 cents will have paid the railroad from place of manufacture two and three-tenths cents; to Kansas City the freight rate will have been six and one-fourth cents, and to Denver 15 cents, but here the

retail price of that tub is $1. A stove that weighs two hundred pounds and retails in St. Louis for $18 will, in carload lots, pay 44 cents to Kansas City or Omaha, and retail there for $22; $1.48 to Denver, and retail there for $25; $2.50 to Seattle, and retail there for $30. When a housewife of St. Louis buys a dozen clothespins she has paid the railroad five ten thousandths of a cent. If she buys a washboard at 50 cents she has paid the railroad forty-two one-hundredths of a cent. In Denver she would pay for that washboard 60 cents, of which the railroad would have received two cents. The higher rates and prices that have been specified as applying in Kansas City and Denver may also be taken as applicable to cities in the interior South and Southwest, such as Oklahoma, Fort Worth and San Antonio.

In response to inquiries made concerning certain staple articles of daily and general use in various of the smaller cities and towns extending from Massachusetts to Georgia and Illinois, and from Michigan to Mississippi, it has been ascertained that throughout this region the transportation charge on such articles ranges as follows: On a man's suit of clothes, from two to eight cents; on calicos and ginghams, from one-fiftieth of a cent to one-fifth of a cent a yard; the freight charge paid on the entire apparel of a fully dressed man or woman in this section would range perhaps from six or seven to 16 or 18 cents. The rate on an ordinary dining room suite consisting of table, sideboard, six chairs and a china closet would average from 75 cents to $5, on a parlor suite of sofa and four chairs from 50 cents to $4, on a bedstead and its equipment from 75 cents to $1.50, in each case from the factory to the home. The lumber used in the ordinary eight-room house will have paid the railroads from $35 to $150, and

the brick from $6 or $8 to $50 or $60, as the kiln may be near or remote. A fifty-pound sack of flour from the mill, even at Minneapolis, in but a few cases has paid a freight rate of over eight or nine cents to the consumer. Products of the beef or the hog are carried from the western packing houses throughout this territory at rates that vary from a fifth of a cent to not exceeding a cent per pound.

It has not been difficult to secure such information as applies in the main to the transportation charge borne by a manufactured article from the place of making to the final market, or on foodstuff from the place of growth to the place of sale to the consumer. Data as to the amount of transportation charge carried by the various kinds of raw material entering into a manufactured product has not in many cases been so easy of ascertainment. A principal reason has been that the manufacturers in numbers of instances do not know what it is themselves. Many kinds of material are bought at a price which includes delivery at the factory, the freight rate not coming under the cognizance of the purchaser. The different materials used in a product may have come from such diverse sources, and paid such varying rates of freight, that the ascertainment of the total freight charge in any given unit of manufacture would be too difficult to be worth while. In numerous other cases the freight charge is confessedly so small an item that no attempt is made to apportion it as an item of expenditure per unit of product, the total simply being grouped in the aggregate of expense.

The statement that the transportation charge borne by the material entering into an ordinary pair of men's shoes averages one and a quarter cents is the result of a definite calculation made by one of the

largest shoe manufacturers of the country. A leading woolen manufacturer estimates that the price of wool at Boston will average perhaps 30 cents a pound "in the grease," including a transportation charge that will average one cent a pound. The loss in cleaning and scouring is about forty-five per cent., and the price of a pound of scoured wool will average about 63 cents at the mill. Of this about two cents is chargeable to transportation. One hundred pounds of wool will make about seventy pounds of straight woolen cloth, on which the transportation charge has therefore been a fraction less than three cents a pound. On cloth that is mixed with cotton the transportation charge is less. The rates on woolen goods from any of the New England mills are so low that a yard of cloth which will sell from $1.50 upwards in any of the western markets will not have paid the railroads more than five cents from the sheep's back in Colorado to Massachusetts and back again to the Mississippi River.

The following information as to the extent of the transportation charge borne by divers materials of various industries has been obtained in each instance from an authority in that industry.

The transportation charge on raw cotton to the mills in Massachusetts will average from one-half to two-thirds of a cent a pound, not exceeding one cent per pound even from plantations so remote as those of Texas. Cotton loses from fifteen to twenty per cent. in the cleaning, one hundred pounds of cotton making from eighty to eighty-five pounds of cotton goods. As ordinary calico will run about six yards to the pound and sell for about five cents, the cotton that has paid a freight rate of from 50 cents to $1 is woven into $24 worth of calico.

The transportation charge on a pair of rubber overshoes, including the rubber from South America, the cotton stock, and the shipment to the western markets, averages about two and one-half per cent. of the cost of those markets. That is, a pair of rubber overshoes retailing for 75 cents will have paid for transportation, all told, less than one and nine-tenths cents.

In no one of these examples, which, perhaps, are typical of the entire clothing industries in so far as the use of leather, wool and cotton are concerned, is the transportation charge an appreciable factor in the price either of the material to the manufacturer or of the finished article to the consumer.

A barrel of flour made in Minneapolis and transported to Boston is sold at the time of this writing by the milling company to a dealer of that city, or any other place in New England, for $6. Of that $6 accrues to the transportation agencies, for carrying the wheat of which that flour was made from the Western farm to the Minneapolis mill, and for carrying the flour from the mill to Boston, an amount that averages 85 cents. The proportion of the transportation charge to price at different markets varies with the freight rate. At New York the milling company would sell that barrel for $5.95, which would include a total transportation charge of 80 cents; at Philadelphia the selling price would be $5.90, the transportation charge 75 cents; at Buffalo or Pittsburg the selling price $5.80, and the total transportation charge 65 cents; at Atlanta the price $6.20, the transportation charge $1.05; at New Orleans the price $6.10, the transportation charge 95 cents.

Typical rates on leaf tobacco, averaging in value

$13 per 100 pounds from plantation to warehouse in Virginia and the Carolinas, are from 15 cents to 21 cents per 100 pounds; on the smoking tobacco into which this leaf is converted, and which sells at $48 per 100 pounds, from Richmond, Virginia, to New York City 30 cents, to Chicago 59 cents, to Kansas City $1.16. Rates from the plantation to the warehouse on the leaf tobacco of the Kentucky and Tennessee region, which also brings an average of $13 per 100 pounds, are from 5 cents for short to 20 cents for longer distances. The plug tobacco into which this leaf is converted is sold at $28 per 100 pounds, being distributed on such rates as these: St. Louis to Louisville, 25½ cents; to New York City, 58½ cents; to Kansas City, 35 cents; to Seattle, $2.20. Manufactured tobacco in all cases is sold at a price which includes delivery from the factory to the place of consignment, wherever it may be, in the United Stales.

The freight rate on cane sugar from the "central" in the Louisiana district to the final refinery ranges from 5 to 10 cents per 100 pounds, the refinery paying from $3.50 to $4.50 for the sugar. Sugar that is sold by the refining company at 4½ to 5½ cents a pound retails at 6 cents, the dealer making little or no profit. As a town of five to ten thousand people at the average per capita consumption of seventy-five pounds a year will consume a carload of sugar in about a week, the jobbing of sugar is greatly decentralized. Contrasting with this retail price of $6 per hundred pounds typical distributive rates are, from New York to Chicago 25 cents, to St. Paul 30 cents, to Kansas City 42 cents; from New Orleans to Chicago 25 cents, to Atlanta 24 cents, to Kansas City 34 cents.

The freight charge on sugar beets raised in Colorado and Utah from the farm to the refinery is always paid by the sugar company. It averages from 30 to 40 cents per ton, or for a distance of fifty miles is as much as 50 cents. A ton of beets contains about three hundred pounds of sugar, which, allowing for an average loss during extraction, would produce two hundred and forty pounds of refined sugar. This is sent from the factories to the principal places of storage—Kansas City, Omaha and St. Louis. The aggregate freight charge from the farm to St. Louis on these two hundred and forty pounds is about $1.70, and the aggregate revenue to the refinery at five cents a pound, $12.

While the price of bananas is subject to great fluctuation, a fair average at New York, Philadelphia, Baltimore, Charleston, Mobile and New Orleans, the ports of import, is $1.75 per 100 pounds. The average rail charge for carload lots from port to market is from 30 to 50 cents per 100 pounds. About one-third of the bananas consumed in this country are received at the North Atlantic ports, whence they are distributed throughout the Eastern and Middle States. The remaining two-thirds, which supply the South and West, are received at the Southern ports. Immediately upon receipt at New Orleans, for example, shipments are made to the North in train loads that they may be taken out of the warm climate before they spoil, and cars are re-consigned en route at the instance of the company which has very thoroughly organized the banana business, an allied company having about sixty agencies with men who devote their entire time to extending the sale of the fruit.

For hides that pay a freight rate from the packing

houses at Chicago to New York of 30 cents per 100 pounds, the butcher receives, according to quality, from $6 or $7 to $11 or $12 per 100 pounds. The butchers remote from market have the freight rate deducted from the price paid them for hides, but it is a trifle, seldom exceeding five cents per 100 pounds. The hide loses from twenty-five to thirty-five per cent. in the process of tanning; the price of leather is fixed by measure and not by weight. The rate on tanned leather, however, between Chicago and Boston is 39 cents per 100 pounds.

The railroads make low rates on fertilizer to encourage its use by the farmers, it being, of course, to the interest of a railroad to encourage the production of larger crops that its traffic may be augmented. Fertilizer of different grades brings from $18 and $20 to $55 and $60 a ton. Typical rail rates from the places of manufacture are from Jersey City to Trenton, New Jersey, $1.10 per ton, and from Boston to Portland $1.20 per ton—both rates applying in carload lots. In the South, where fertilizer is extensively utilized, representative rates are from Atlanta to Thomasville $2.50, from Charleston to Columbia $2.00 per ton.

When allowance is made for the elimination of water from pulp and the shrinkage in its manufacture into paper, the average freight rate borne by the material entering into paper at the northern New England mill is about 13½ cents per 100 pounds. The manufacturers consider 17 cents per 100 pounds to be the average freight rate on the paper from the mill to places north of the Ohio and east of the Mississippi Rivers. The aggregate freight charge borne on the average by the 100 pounds of paper which sells at the factory for $2.50 is therefore

30 cents.

As with all things else, the rates on the ores of the far western region have been adjusted under the necessity of the transportation agencies to so serve the mines that their products may be marketed. The rate upon the ore from the mine to the smelter, upon the metal from the smelter to the refinery, and upon the refined lead or refined copper from Chicago to the seaboard market, are all determined by this prime factor. The freight charges, for example, from the Coeur d'Alene district in northern Idaho on the ores from which the extraneous material has been roughly separated, to the Puget Sound refineries, reach a maximum of $6 per ton for a distance of four or five hundred miles, and the rate from Puget Sound to New York is $14.50, the average transportation charge, therefore, being about $20 per ton. The value of a ton of copper at 12 cents a pound is $240, and a ton of lead at four cents a pound is $80. Copper passes through manifold and expensive processes and its extensive consumption has followed the development of electricity. Lead does not require so many or so expensive workings, and it has long been a great staple of general use. The mine farther from a smelter naturally has to pay a higher rate of freight than a mine nearer to it, receiving, therefore, a lesser net price for its product, *but the railroads are obliged to so adjust rates that practically every mine can reach a market.*

The rate on refined petroleum between New York and Chicago is 27½ cents per 100 pounds, the average rate paid north of the Ohio and east of the Mississippi Rivers being from eight to ten cents per 100 pounds. From Toledo to Atlanta the rate is 48 cents, from Whiting 46½ cents, from New Orleans 35

cents. The rate from Chicago to the Missouri River is 22 cents, to St. Louis 10 cents; while the rate from the Kansas field to St. Louis is 17 cents. One hundred pounds of refined oil contain approximately sixteen gallons which, at an average price of 12½ cents a gallon at the refinery, would aggregate $2. The price per gallon to the consumer is increased one cent with each increment of seven cents in the freight charge.

The principal biscuit company receives from $8 to $16 per 100 pounds for its crackers and cakes, averaging $10 per 100 pounds for its leading brand. From its New York plant to Boston the freight rates are 19 cents per 100 pounds, to Atlanta 62 cents. The rate from Chicago to Montgomery is 69 cents, to Houston 81 cents, to Denver 97 cents. From either New York or Chicago to the Pacific Coast the rate is $1.60. These rates apply to carload lots, all goods being sold delivered, the company absorbing the freight. The retail price is the same all over the United States as it is with shoes, cigars, soap, proprietary medicines and dozens of other familiar articles.

On cotton, the great staple product of the South, the freight rate structure has been in process of development even a longer time than that affecting the movement of grain from the West. From the plantation into Memphis, the largest inland cotton center of the United States, a typical rate is 30 cents per 100 pounds for one hundred and fifty miles. From Memphis to Boston the rate is 57½ cents, and from Memphis to the Gulf 30 cents per 100 pounds. From Augusta, Ga., a central market of the Eastern cotton growing district, the rate to Charleston and Savannah is 21 cents, to Brunswick 23 cents and to Norfolk 26 cents per 100 pounds. A bale of cotton

contains five hundred pounds and is therefore worth, at 11 cents a pound, $55. The aggregate transportation charge on this bale from the plantation, one hundred and fifty miles from Memphis, to Boston, is $4.27.

Mainly because of the rapid shifting of the sources of supply, there has not yet been developed a stable structure of rates for the movement of lumber in all parts of the United States. By way of illustration, however, it may be said that a fair average rate on lumber into Memphis from the forests of Arkansas is six cents per 100 pounds, or $2.40 per 1,000 feet. Lumber going from Memphis to New Orleans for export will pay $4.80, or a total transportation charge from the forest of $7.20 per 1,000 feet. A fair average rate to the markets in Ohio and Indiana is $8 per 1,000 feet, a total transportation charge from the forest of $10.40. This is on the kind of lumber that in 1905 and 1906 sold at about $40. The rate on yellow pine from New Orleans to Chicago is 24 cents per 100 pounds.

There is an equalization of rates on the iron ore from the upper lakes in that the rates of the boat lines from the ore mines are the same to each of the Lake Erie ports. From thence to the furnaces they are adjusted under the policy of the railroads to make the transportation charge on the raw material required to make a ton of pig iron approximate the same amount at each of the competing furnaces of southern Ohio, Pittsburg, Wheeling, in the Mahoning and Shenango Valleys, and even as far as the Schuylkill Valley. How closely this equalization is effected is shown by the fact that the transportation charge on the ore, coke and limestone required to produce one ton of pig-iron is as follows in these

respective districts: At the furnaces on the Monongahela River in the Pittsburg district, $5.82; at the furnaces of the Mahoning and Shenango Valleys, $5.57; at the furnaces of the Wheeling district, $5.78. These charges compare favorably with those at the furnaces on the Lake Shore in the Chicago district, which aggregate $5.63 per ton of pig-iron, but are higher than at the furnaces on the Lake Shore in the Cleveland district, where they aggregate but $4.72. The rates on coal, which gives return loads to the cars that take the ore south front the Lake Erie ports, are maintained at established differences between the coal fields of Ohio, Pittsburg and West Virginia. The rates in effect in the spring of 1908 were $1 per ton from southern Ohio, 90 cents from southeastern Ohio, $1 per ton from the Pittsburg field and $1.15 a ton from West Virginia.

The claim of the railroads that the rates on foodstuffs are not high enough to enter as a factor in fixing the selling price is fully substantiated by the statements of the dealers in such products. That is, the conditions are, with negligible exceptions, such that if the price obtainable in the markets be sufficient to encourage the growing of livestock, grains, dairy products, fruits or vegetables, the rate of freight, from whatever locality to whatever market, is sufficiently low to allow the producer to enter that market. His profits are, however, as a matter of course, diminished by the amount of freight which he pays, and, as a rule, the farther the place of production from the markets the greater is the freight charge. The differences in the net return to the producer are almost invariably reflected in the value of the land, which is lower as the distance from the markets is greater. Largely because of the defective system of mercantile distribution the

grower of foodstuffs obtains a smaller proportion of the price paid by the consumer than accrues to the grower of any other agricultural product. Where, as in this country, the opportunity for the extension of cultivation is practically unlimited, a good market one season leads the farmers of any district to increase their production up to the point of minimum profit and the railroads are then besought for lower rates; when unfavorable weather or other conditions reduce their output they are also disgruntled. It therefore rarely happens that the grower, especially of the quickly perishable foodstuffs, is entirely satisfied with the freight rates.

A controversy, that it is scarcely an exaggeration to designate as typical, occurred several years ago between the growers of watermelons in a Southwestern State and the railroads conveying the melons to the primary markets. In comparatively a few years that region had become so productive that the shipments of watermelons over one road alone ranged from 1,400 to 1,800 cars during a watermelon season, deliveries being made all over Ohio and Indiana through dealers from those States who came down and bought the melons at the farms. The contention for lower rates had waxed so warm that a reduction in the watermelon rate became the issue upon which a legislative campaign was fought. The candidate pledged to secure a reduction in the rate was elected, and introduced a bill, which was enacted by the legislature, making the rate to the nearest primary market 7½ cents per 100 pounds. The railroad companies put this rate in effect and used it as a basis for the lowering of rates to the territory beyond. During the year of this rate reduction the traffic department of the railroad company referred to sent word to the farmers that

the company had handled 1,500 cars of melons that season, the prompt shipment of which had been highly satisfactory to the growers. It furthermore said that the movement of these melons from that territory was a one-way traffic entirely, it being necessary to send special cars empty for the crop. These were necessarily stock cars that there might be ample ventilation, but they had to be supplied with extra slats in order that the melons might not fall out. It was necessary for them to be switched in requisite number on side tracks especially built adjoining the farms where the fruit was grown; that switching engines be kept at work, putting cars in and taking cars out all night and all day. The cars of melons, moreover, had to be hauled on special trains at a high rate of speed to get them to the markets before they spoiled. This reduced the tonnage per train fifteen or twenty per cent below the maximum that could be hauled at the normal freight train speed. A car with the average allowable load of 1,100 watermelons would contain but about twelve tons, although its capacity would be eighteen or twenty tons; the weight of the car exceeded the weight of the load. The switching and other special movements necessitated the employment of night telegraph operators and other extra help at the melon fields.

All of these conditions led the assistant to the general manager of the company to make an analysis of the expenditure as compared with the earnings. Waybills were abstracted and the receipts listed. A tabulation was made of the revenue tonnage, the gross tonnage, the tare weight, and the expenses incurred in behalf of the traffic. He found that the handling of the 1,500 cars of watermelons involved a loss to the company of $12,000 if the expenses of

operation alone were considered.

The results of this investigation were brought to the attention of the traffic department and the next spring it sent a circular to the farmers in the truck region urging that the watermelon acreage be reduced, as the rates on that business were not remunerative, and stating that the railroad would not undertake to handle it except in the regular cars that were brought into the territory in the ordinary course of traffic; that there would be no special trains, nor special service of any character. The melon growers at once notified the State Railroad Commission, which, in turn, requested the railroad company and the melon growers to attend a meeting to discuss the whole subject. When the meeting convened the chairman called upon the railroads to say why they had caused so much trouble. The railroad representative, who was the aforesaid assistant to the general manager, stated that as he had been invited to attend the meeting it might be proper for whomsoever instigated it to open the discussion. Several shippers made statements of their complaints, all admitting, however, that the melon business had become very profitable,—one grower saying that $300 to $500 per car was being made out of a crop. The railroad representative then made a reply, showing the loss to the company from handling the business for the previous year, and stated that unless cost for the handling and something by way of profit could be obtained, the company would prefer to move other crops. He showed that it had been necessary to park 350 to 400 especially prepared stock cars in the melon territory; that it had taken a month or six weeks to gather these cars, which had to be hauled empty to

the melon fields. He then pointed out that the rate per melon was less than a cent and a quarter, whereas it had cost the farmer four or five cents per melon to bring it by wagon the one or two or three miles to the railroad track. The chairman objected to some of the analyses, especially to the contrast of four or five cents per melon for the wagon haul from the farm with the cent or a cent and a half per melon for the railroad haul of two hundred miles. When the railroad man had finished, farmers from all over the room began to ask questions directly of him. They wanted to know how much they should pay to afford the railroad some slight profit. They were told 12 or 12½, cents. The chairman said: "The rate cannot be changed. It has been fixed by law at 7½ cents and that is the rate. I am here to protect the people of these counties." The railroad man suggested that his company might be willing in addition to affix the necessary slats to the stock cars and perform the switching for $5 to $6 per car. The farmers were willing to accept this, but the chairman insisted that it was contrary to law, and finally said in his wrath, "If you men here are going to deal with the railroad company you can do it without me. This meeting is adjourned."

With one exception the farmers remained in the hall and expressed a willingness to pay a rate of 12 cents per 100 pounds.

Returning to the main discussion, we have found that the rates on raw materials are so adjusted as to permit the manufacture of any staple article at any logical place of manufacture. On the raw material of wearing apparel the freight rate is entirely unimportant. On the lumber that enters into building material, on the ore, coke, and limestone used in the

manufacture of iron and steel the freight rate is sufficient to become an appreciable factor in the cost of manufacture. On brick, coal and cement the selling price is the higher by the amount of the freight charge, which for distances sometimes not considerable exceeds the value of the commodity at the place of production. The freight charge, even on those heavier commodities, however, is far less in proportion to the wage of the day laborer as well as to the incomes and salaries received in the United States than in any other country. This is obviously a better test of comparison than that based upon rates of freight as expressed in money. To say that a specific rate is twenty cents in the United States, a shilling in Great Britain, a franc in France, or a mark in Germany, conveys an inadequate idea. When it is ascertained that the average wage of the day laborer in the United States is higher in comparison with the average rate of transportation than in any other country, the comparison is significant. In this country a continually increasing amount of railroad transportation can be purchased with the wage of the day laborer. With the sum of money representing the value of a given unit of any of the staple commodities of commerce, also can a continually increasing amount of railroad transportation be purchased.

That which makes possible the low freight rate of the American railroads is the magnitude of the scale upon which the transportation is conducted. The large cars, with a capacity of from thirty to fifty tons, and the powerful locomotives that draw a score or more of these loaded cars in one train, permit an almost infinitesimal freight charge per pound or per yard that, however, yields by the carload or by the trainload no inconsiderable revenue. For example,

the average weight of the carload of food products is about 30,000 pounds. If the freight on such a carload be $300 the rate per pound would be only one cent, and there is scarcely a commodity upon which a freight rate of one cent per pound makes any difference in the retail price. As a matter of fact a carload of food products does not bring to the railroad so much revenue as $300 unless it has been moved from a far region; for instance, from the Dakotas or Texas to New York. Specific complaint in regard to the freight rates of the United States for many years has not, except in a small minority of cases, been based on the ground that they have prevented foodstuffs from finding a market, raw material from reaching places of manufacture, or finished products from distribution. While the difference of a cent or two in the rate of freight may not in the least interfere with the conduct of industry or commerce in the aggregate, such a slight difference, may perhaps determine whether a manufacturer obtain his raw material from this or that source of supply, whether a wholesale dealer obtain his stock from the manufacturer in one, or the manufacturer in another city, whether a retail dealer make his purchases from the wholesale dealer in this city or in that city. That is, for example, the prices of the products at the sources of supply being equal, a difference in the rate of freight may determine whether Cleveland, Ohio, obtain potatoes from Michigan or from upper New York; whether a factory in Louisville obtain coal from the fields of southern Indiana or central Kentucky. A carpenter in Des Moines may perhaps pay a dollar for twenty pounds of nails without knowing or caring what the freight rate may have been, or where they may have come from. A difference, however, of a few cents a

hundred pounds in the rate of freight may have led the hardware dealer to have purchased the nails in Chicago or St. Louis or even directly from Pittsburg.

As the purchase of raw material tends toward the prosperity of the region where it is produced, as the operation of a factory tends to the increase of population, to appreciation in the value of real estate and the augmentation of business at the place of its location, so also does the growth of a wholesale business or of a retail business aid in the development of its surroundings. Producers, manufacturers, wholesalers and retailers naturally all desire to extend their sales, to reach further markets in competition with their rivals, and are supported in this desire by the communities to whose welfare they contribute. Any difference in freight rates that gives a producer of raw material, a manufacturer, a wholesale distributer, or a retail merchant an advantage over a competitor of another locality is therefore promptly made the subject of complaint.

The pressure brought upon the railroads by such competing producers, manufacturers and dealers has been a very important factor in the development of certain arrangements of freight rates, which we shall term the Regional Rate Structures, each of which has grown out of the various characteristics of a traffic region and has become adapted to those characteristics.

Other arrangements of freight rates which have grown out of the needs entailed by the production and marketing of certain of the principal articles entering into commerce we shall designate as the Commodity Rate Structures.

(End of Chapter VI.)

THE FREIGHT RATE PRIMER

Adapted from the Illustrated Pamphlet, So Entitled.

Issued by the New York Central and Hudson River Railroad Company.

THE A. B. C. OF THE MATTER.

"There has been much wild talk as to the extent of the over-capitalization of our railroads. The census reports on the commercial value of the railroads of the country, together with the reports made to the Interstate Commerce Commission by the railroads on their cost of construction, tend to show that, as a whole, the railroad property of the country is worth as much as the securities representing it, and that, in the consensus of opinion of investors, the total value of stock and bonds is greater than their total face value, notwithstanding the 'water' that has been injected in particular places. The huge value of terminals, the immense expenditures in recent years in double-tracking and improving grades, roadbeds and structures, have brought the total investments to a point where the opinion that the real value is greater than the face value is probably true."

(From President Roosevelt's Decoration-Day address at Indianapolis, May 30, 1907.)

THE X. Y. Z. OF THE SITUATION.

"An army of more than 1,500,000 men is employed directly in the operation and maintenance of the railroads in the United States, and millions of other men are furnished employment indirectly in the mines, the forests and the factories, supplying the railroads with approximately one and one-quarter

billions of dollars' worth of material and equipment annually consumed.

"These are wonderfully interesting and impressive facts; but the fact of greater interest and worthy of the most careful thought of every citizen of this country is that this vast army of men engaged in producing the commodity of transportation at an average cost more than *40 per cent lower* than is shown by any other country is paid an average wage more than *50 per cent higher* than is paid in any other country where railroads exist."

(W. C. Brown, before the Michigan Manufacturers' Association, June 22, 1908.)

LESSON I.

Freight Rates and the Clothes We Wear.

Whom have we here?

Eleven different types of American citizens, standing in a row, clad in the varied uniforms or togs of their several occupations or leisure from hod-carrier to the dude in dress suit and opera hat.

These men all live in the Mississippi Valley.

Their clothes were made in New England.

They paid the railroads *nine cents* apiece for transporting their clothes, including shoes and hats, from the point of manufacture to the Mississippi Valley.

The combined freight charges on *all* the clothes worn by the eleven men in the group, including shoes and hats, was *less than one dollar*.

If freight rates were advanced 10 per cent the

increased price to these men on their entire wearing apparel would be *less than one cent each*.

If they have to pay more than that per cent it will not be because freight rates are advanced.

LESSON II.

Freight Rates and Agricultural Implements.

Consider the McCormick harvester. It mows, gathers, binds and stacks the bearded grain, while its proud possessor cracks his whip above the backs of his three-horse team. It has banished the nightmare of farm mortgages from the great prairies of the West.

This particular harvester we are considering is cutting grain one hundred miles west of the Mississippi River. It was built in Chicago and sold for $130.

The farmer paid $1.76 to have it brought to him from Chicago, three hundred miles away.

If freight rates were advanced 10 per cent the cost of the harvester would be increased *seventeen and one-half cents*.

LESSON III.

Freight Rates and Cooking Utensils.

Next to the harvester the modern kitchen cooking range has added more joys and years to the farmer's life than anything in the cornucopia of modern civilization.

Here is a standard range. It is a thing of beauty as

well as a means for cooking everything your mother used to cook and much more.

The freight on a steel range, weighing from 400 to 500 pounds, from Detroit to points in the Mississippi Valley, approximates from $2 to $2.50 per stove on stoves which retail at from $55 to $60 each.

An increase of 10 per cent would add from twenty to *twenty-five cents* to the cost of the stove, which, divided by the life of the stove, taking the low average of ten years, would add one and one-half to *two cents* per year to the cost.

On heating stoves the increase would be about *one-third less*.

LESSON IV.

Freight Rates and Refrigerators.

What are the cold facts about refrigerators?

What cold storage is to the whole people, the modern refrigerator is to the individual family.

It preserves all things sweet and clean and wholesome.

Now the freight on a refrigerator, such as is used by the ordinary family, from Belding, Mich., where they are manufactured in large quantities, to New York is approximately seventy-five cents.

An increase of 10 per cent would add *seven and one-half cents* to the cost of the refrigerator, delivered in New York City.

LESSON V.

Freight Rates and Household Furniture.

Ever since Grand Rapids became the furniture hub of the Union there has been no excuse for any American family being without its antique or modern dining room set.

Look at this suite consisting of a solid table, six chairs, sideboard and china closet, etc. It could be bought F. O. B. at Grand Rapids for from $55 to $75, according to the wood and finish.

It weighs approximately 750 pounds and the freight from the factory to Chicago would be $1.60.

An increase of 10 per cent would add *sixteen cents* to the cost of all this furniture.

LESSON VI.

Freight Rates and a Business Suit.

Behold this business suit which no one would be ashamed to wear.

It might cost anywhere from $10 up to $35, according to the reputation of the tailor or the rent and advertising rates he pays.

The freight rate on such a suit of clothes, including hat and shoes, for a distance of 300 miles from any of our large jobbing or distributing centers is approximately *three and one-half cents*.

A 10 per cent increase would add a little more than *one-third of one cent* to the cost of this suit, and it would add no more if it cost $50 or $100.

LESSON VII.

Freight Rates and "King Cotton."

"Befo' de wah" cotton was king. Of our exports it still leads all our domestic products, having no second in sight.

If the entire cotton crop of the United States was compressed into one bale its value would be about $750,000,000.

Of this bale in 1908 the railways got a little "jag" worth according to the Interstate Commerce Commission $12,394,000, or less than 2 per cent.

An advance of 10 per cent in rates on cotton could not add more than one-fiftieth of a cent per pound to the price of cotton.

LESSON VIII.

Freight Rates and a Sack of Flour.

Minneapolis, as all good little school children know, is the seat of the flour industry of the United States.

If they do not learn this at school it is impressed upon their receptive minds by every illuminated billboard and painted rock that meets their gaze from Eastport to California.

There are half a dozen brands of flour ground at Minneapolis and every one is better than all others.

The rate on this incomparable product in carloads from Minneapolis to New York is 25 cents per hundred pounds.

That is 12½ cents per fifty-pound sack.

This flour is sold to the consumer in New York at approximately $1.85 per fifty-pound sack (or it was

when this was written).

An increase of 10 per cent in freight rates would add but one and one-quarter cents to the price of a fifty-pound sack, or a little less than two one-hundredths of one cent per pound.

The freight rate on a fifty-pound sack of flour from Minneapolis to Chicago is five cents per sack. An increase of 10 per cent in rates would add only five mills per sack between these points, or *one one-hundredth of one cent per pound.*

LESSON IX.

Freight Rates and Dressed Beef.

The reason cattle are butchered and carried to the consumer as dressed beef rather than driven to market on foot or hauled as live stock, is that the freight charge is less and the beef arrives in better condition.

Little children in New York and Boston appreciate this, if the wise grown-ups of the West sometimes seem to doubt it.

The rate on dressed beef from Chicago to New York is forty-five cents per hundred pounds. The average price of this beef to the consumer in New York is (or was) approximately twenty-five cents per pound. A 10 per cent increase in freight rates would add *less than five one-hundredths of one cent per pound.*

If freight rates were advanced 10 per cent, the increased cost in New York City of a two-rib roast of the best quality, weighing eight pounds, retailing for $1.92, would be *less than one-half cent.*

Surely this is not an excessive price to pay for *National prosperity and industrial peace*.

LESSON X.

Freight on Eggs, Butter and Poultry.

Eggs were cheaper when Columbus experimented with them than they are now, but it cost more to carry a dozen eggs or a firkin of butter ten miles in 1492 than it would to carry them 100 miles now.

The rate on butter and eggs from points in Eastern Iowa to New York—a distance of approximately 1,200 miles—is eighty-four cents per hundred pounds. On dressed poultry from the same points to New York the rate is ninety-six and one-half cents.

The eggs are sold to the consumer by the dozen and the other commodities by the pound; *and the consumer pays every farthing of freight that has accrued from the time the egg is laid, which he buys in the "original package," or as dressed poultry, or from the time the cow is milked, from which the butter is made*.

An increase of 10 per cent would add eight one-hundredths of one cent per pound to the price the consumer pays for butter and eggs, and it would add nine and one-half one-hundredths of one per cent per pound to the cost of dressed poultry, for which he pays from twenty to thirty cents per pound.

LESSON XI.

Freight Rates and Leather Belting.

Some little children and many of their mothers do not know that a great deal of the power that makes

the wheels go round in this industrial beehive is transmitted by belting.

The shops of the Lake Shore & Michigan Southern Railway at Elkhart, Indiana, are equipped with 13,288 running feet, or *practically two and one-half miles*, of leather belting. This belting cost the railroad company $6,235, or an average of 46.9 cents per running foot. The belting was shipped from Boston to Elkhart, a distance of 937 miles. The total freight charges amounted to $18.37, or fourteen one-hundredths of one cent per running foot. An increase of 10 per cent would add $1.83 to this cost, or *fourteen one-thousandths of one cent per running foot.*

This belting, moreover, cost the railroad company $1,082 more than it would have cost at the prices prevailing in 1899, representing an increase of 21 per cent. During this same period there was no change whatever in the freight rate.

LESSON XII.

The Railways and National Development.

Now listen to the sober words of the one man who has perhaps given more official attention to the subject than any other citizen of the republic:

"Without regard to the personnel of railroad officials, without regard primarily to the interest of stockholders, but in the interest of public welfare and national prosperity, we must permit railway earnings to be adequate for railroad improvement at advantage and profit.

"To my mind it is a most impressive fact, so great as to elude the grasp of imagination, that the railway traffic of the country fully doubled in the first seven

years of this twentieth century. This enormous addition to the volume of transportable goods overtaxed, as you know, the existing facilities, and the resulting condition perhaps accounts for much of the hostility which has been manifested in various quarters. For the man who has raised something by hard labor or made something with painstaking skill, which he could sell at a handsome profit in an eager market, and finds that he cannot get it carried to destination, and so sees his anticipated gains turned into a positive loss, is naturally exasperated and unthinkingly 'blames it' on the railroads, and is ready to hit them with anything he can lay his hands to; and as the state legislature seemed to be the most convenient weapon he wielded it for all it was worth.

"I dwell upon this a moment further, because it seems plain to me that the prosperity of the country is measured and will be measured by the ability of its railroads and waterways to transport its increasing commerce. With a country of such vast extent and limitless resources, with all the means of production developed to a wonderful state of efficiency, the continued advancement of this great people depends primarily upon such an increase of transportation facilities as will provide prompt and safe movement everywhere from producer to consumer; and that we shall not secure unless the men who are relied upon to manage these great highways of commerce have fitting opportunity, and the capital which is required for their needful expansion is permitted to realize fairly liberal returns."

(Hon. Martin A. Knapp, Chairman Interstate Commerce Commission, in "Annals of the American Academy of Political and Social Science.")

LESSON XIII.

LOOK UPON THIS PICTURE.

What is this I see?

Smokeless chimneys! Closed factories. Spiders' webs across the doors of opportunity. Grass growing rankly in the streets of industrial towns. Dejection on the face of nature and of man.

What does it mean?

The railways have ceased to earn enough to meet expenses and provide for the progressive maintenance of their equipment and plant.

Why, are not their receipts greater than ever?

True, but their expenses have increased more rapidly than their earnings and their net revenues have only been maintained by postponing purchases that must be made some time or the railways will be incapable of performing their public service with safety, dispatch and economy.

In 1908 and 1909 the railways scrimped maintenance $300,000,000 and this will have to be made good some time, some how, before they are on as sound an operating basis as they were before the panic of 1907.

What must be done to avert the consequences described above?

A readjustment of freight rates, involving a

reasonable increase applied to such articles and commodities as can stand it, without any appreciable hardship either to manufacturer, merchant or consumer, means the difference between grinding economy and a fair degree of prosperity.

The Reverse of the Picture.

Would a 10 per cent increase in freight rates mean such a difference?

It most certainly would.

It would mean the difference between closed shops and suspended improvements and the resumption of improvements with the ability to resume the large purchases of material and equipment, giving full employment to labor and furnishing improved transportation facilities, which, within a very short time the commerce of the country is going to demand more insistently than ever. To hundreds of thousands of workingmen it means the difference between steady, well-paid employment and walking the streets looking in vain for work.

LESSON XIV.

Narrow Margin Between Earnings and Expense.

"I have looked up the statement of about 80 per cent of the principal railroads of the country and find that during the last half of the year 1907, after the tremendous increase in expenses had become effective, while the gross earnings of the railroads increased $57,413,078 over the same period of the preceding year, their expenses increased $80,235,823, showing a net loss for the period, despite the tremendous business handled, of

$22,822,745.

"The converging lines of cost and compensation in railroad operation, which for years have been steadily approaching each other, are now separated by so narrow a margin that in order to pay fixed charges, taxes and operating expenses, with even a very moderate return to shareholders, there must be either *a moderate increase in freight rates* or a very *substantial reduction in the wages of railroad employes*."

(W. C. Brown, before the Mich. Mfrs. Assn., 6-22-08.)

LESSON XV.

WHICH SHALL IT BE?

"Is it not better, Mr. President, that you and I, and tens of thousands of people who buy and use automobiles, should pay a dollar or two more freight on our machines than that the family of the engineer, the conductor, the brakeman, the switchman or the humble section hand shall be deprived of the actual necessities and comforts of life, which we know they must give up if the monthly pay check is reduced?

"No question of greater importance confronts the people of the country today, for upon its righteous solution hangs the momentous issue of an early return of prosperity or a continuance of the depression of the past six months, emphasized and darkened by a struggle with organized labor such as this country has never experienced."

(W. C. Brown, before the Mich. Mfrs. Assn., 6-22-08.)

LESSON XVI.

MORAL.

"*Our prosperity came with the prosperity of the railroads; it declined when adversity struck the railroads. We do not believe we can have the full measure of prosperity again until the railroads are prosperous.*"

(National Prosperity Association of St. Louis.)

PROGRESSIVE SAFETY IN RAILWAY OPERATION

By A. H. SMITH, Vice-President of the N. Y. C. & H. R. R. Co.

An Address Delivered Before the National Association of Railroad Commissioners, at their Annual Convention, held in Washington, D. C., November 16, 1909.

In examining into the state of an art of such far-reaching importance and such diversified nature as that of transportation by rail, it seems necessary to acquaint ourselves with its beginnings and growth; to determine the elements upon which its development relies and the necessity which has invoked the various steps of improvement in the plant devoted to transportation and the art of employing and controlling it in the performance of a public service.

The lay observer will scarcely appreciate, in the absence of the actual analysis, that there exists so many branches of this subject, each branch of which, by itself, may be considered the object of a separate professional science and a distinct human industry.

EARLY RAILROAD HISTORY.

Railways had their origin in tramways laid over 200 years ago in the mineral districts of England, which conveyed coal to the sea. Animal motive power was used. By the discovery, in 1814, of the adhesion of a smooth wheel to a smooth rail, it became possible to consider the employment of the tractive power of a rolling locomotive, and for some time subsequent to this, to the trial trip of the "Rocket," in 1829, which may be described as the first successful steam locomotive, the experiments were along these lines.

While industrial railroads similar in character to the English existed in this country, the Baltimore & Ohio was the pioneer American railroad built for public use. On July 4, 1828, the first rail was laid by Charles Carroll, the only surviving signer of the Declaration of Independence, and thirteen miles were opened for traffic in 1830. In the same year the West Point Foundry began building locomotives, producing the "De Witt Clinton," in 1831. It weighed three and one-half tons, and was built for the Mohawk & Hudson Railroad, the pioneer company of the present New York Central Lines, which had been chartered in 1826, four years before actual construction was begun.

The line was opened from Albany to Schenectady in 1831; to Utica in 1836, and to Buffalo in 1842. Connections to New York and Boston were built in rapid succession.

About this time, in Pennsylvania, the Columbia Railroad was built from Philadelphia to Columbia, on the Susquehanna River, forming the pioneer division of the present Pennsylvania System.

Several companies were chartered about the same time in Massachusetts.

Following the panic of 1837 there was little industrial development and a lull in railroad construction, but with 1850 begins the era of rapid extension and the welding of short connecting lines under single ownerships. The consolidation was vigorously objected to at first. Originally there were eleven companies owning and operating the line between Albany and Buffalo. Between Buffalo and Cleveland, changes of passengers and freight were made at Dunkirk and Erie. The latter change was made necessary by the difference in gauge; to the east six feet and to the west four feet ten inches. Plans for the consolidation of some of these lines made in 1853 entailed for through operation the change of the gauge east to conform to that west of Erie, to obviate transfer. This proposition so aroused the inhabitants of Erie that they resorted to violence. In December, 1853, they tore down the railroad bridge, no trains going through until February, 1854. This same bridge was rebuilt in 1855, but again torn down and burned by a mob. Finally a compromise ended what is known as the Erie War and the gauge was changed, from which time dates the beginning of definite through operation.

In 1851 the Erie Railroad joined New York with Lake Erie. The Baltimore & Ohio reached the Ohio River. Two years later the Atlantic seaboard and Chicago were connected by rail, which the following year reached the Mississippi River. These extensions to the Western Frontier opened the traffic between the Ohio and Mississippi rivers.

In the early days the public desire for rail transportation facilities led to numerous enterprises

securing public financial support, but owing to the disaster that was experienced in some of these enterprises the Ohio law prohibited any town, county or State from rendering such assistance. When the Louisville & Nashville Railroad was built, Cincinnati found it imperative to have railroad communication to the South, but the prohibition of the aforesaid law prevented public assistance, and the scheme was devised of building and owning a line. This line went south through Kentucky to Chattanooga, was built and operated, and eventually leased to the Cincinnati, New Orleans & Texas Pacific.

The railroads played an important part in the conduct of the Civil War, many of them being practically devoted to the transportation of Government troops and supplies. Great damage was done to the many lines in the South owing to the military operations. By the close of the war there had been no pronounced advance in protection by the appliances which are now commonly employed in the control of train operation. This was largely due to the light equipment, slow speeds and sparse traffic.

The first Pacific railroad was begun, with Government aid, in the '60s. With the opening up of the West and the return to industrial pursuits of the people after the close of the war dates a remarkable era in railroad extension. In the decade from 1880 to 1890, 70,000 miles were built in the central and western districts, opening vast unoccupied agricultural, grazing and mineral sections to immigration and development. The panic of 1893 exerted considerable influence on railroad construction during the following decade.

The period since 1900 has been more one of

reconstruction and improving existing lines; the growth of industries and population tributary to existing lines necessitating this course.

The vastness of the railroad industry may be imagined when one considers that from fifteen to twenty per cent of the capital of the United States is invested in railroads. As an exhibit of the growth and importance let me quote the following statistics of railroad growth by decades since the first operation:

1830		23	Miles
1840		2,814	"
1850		9,021	"
1860		30,635	"
1870		52,914	"
1880		93,296	"
1890		163,597	"
1900		193,346	"
1909	about	250,000	"

Such is the exhibit of progress in the extent of railroads, broadly viewed. With the growth in extent the elements of safety have multiplied and have become very numerous; in fact, an almost indefinite subdivision of railroad property and operation in respect of safety might be conceived. We will consider, however, the beginnings and the growth of a few of the more important and striking items and

their relationship to the state of the art, as portraying in a more graphic manner the adjustment, if you may call it such, of safety to progress, or, as the subject has been assigned to me, "Progressive Safety."

AIR BRAKES.

As the density of traffic, and the speed, together with the weight of equipment, developed, following upon the greater transportation to be undertaken, the question of brakes was an important factor. More efficient brakes were needed; the essential characteristics being that they should be continuous throughout the length of the train, simultaneously applied and released, with a single point of control.

In 1869 George Westinghouse, Jr., brought forth what is known as the straight air brake, consisting of a pump, main reservoir, three-way valve, brake cylinder and train line. Application was made by admitting air from the main reservoir into the train line. The brakes were released by reducing the train-line pressure into the atmosphere through the three-way valve. The brakes were useless if there was a leak, a burst in the air line or a parted train.

With these shortcomings in mind, the automatic air brake was produced in 1873, in which the method was reversed. With the addition of an auxiliary reservoir under each passenger car and a triple valve, application of brakes was secured by reducing the train-line pressure, while admitting air from the main reservoir raised the pressure and released the brakes. On the application of the automatic air brake to freight cars it was found the reduction of pressure was not quick enough to set the rear brakes promptly, and in consequence accidents occurred from the bunching of the cars.

The consideration of the brake question by the Master Car Builders' Association in 1885, and public tests under their auspices in 1886, at which time the manufacturers were represented, did not succeed in stopping freight trains without violent and disastrous shocks. So discouraging did these tests seem for the time being, that a report was made, suggesting that the successful application of such brakes on long trains could only be accomplished by electricity. However, the following January witnessed the introduction of the Westinghouse Quick-Action air brake, which corrected the previous trouble and made practicable the application of air brakes to long freight trains. Continuing from this time there has been marked improvement and development in all features of the apparatus, without, however, modifying the essential elements of which it is constituted.

With the solution of a means of train control came a further growth in their size and weight; sooner or later this had to emphasize the necessity for efficient coupling devices. Not only were there accidents due to the primitive link and pin couplers, but the various standards in existence both complicated the operations of coupling and uncoupling of cars and involved the question of interchange and safety.

AUTOMATIC COUPLERS.

Owing to the large number of accidents, Mr. F. D. Adams, of the Boston & Albany Railroad, recommended to the Master Car Builders' Association, at its third convention, in 1869, that a uniform height should be established for couplers; their failure to meet when cars came together being considered the cause of numerous accidents. In 1871 that convention adopted 33 inches as the standard

height for standard-gauge cars. At the convention of 1873 Mr. M. N. Forney urged that a committee investigate the cause of accidents and make recommendation. This committee in the following year gave as the principal cause the same as reported by Mr. Adams eight years before. They pronounced the tests of automatic couplers to date a failure. Another committee at this same convention gave the first recognition to automatic couplers by reporting that a great advantage would be derived from a uniform drawbar, such as would be accepted as a standard and which would be a self-coupler. During several years following various models were examined, but nothing was found to meet the demands. In 1877 Mr. John Kirby, of the Lake Shore, reported that his company intended to equip 100 cars with self-couplers, and at the same meeting Mr. Garey, of the New York Central, told of having been waited upon by a committee of yardmasters, asking for dead blocks or some such safety device. This turned the attention of the Association from the coupler to the dead block. In the year following they invited the Yardmasters' Association to act in concert with their committee in reporting upon means of safety for protection of yard and train men in the performance of their duties.

This was the situation when on March 19, 1880, the Massachusetts Legislature instructed the Railroad Commission to investigate and report with recommendation as to means of prevention of accidents in the coupling of cars. They reported that they preferred to be guided by the action of the railroad companies, and any device made standard by them would, in their opinion, be the best recommendation for such device.

In 1882 the Connecticut Railroad Commissioners recommended to the Legislature that automatic couplers be required on all new cars.

In 1883 the Massachusetts Commissioners expressed the hope that the Master Car Builders' Association would at its convention agree upon some type of coupler for freight cars.

In 1884 the Association selected Mr. M. N. Forney to conduct tests of automatic couplers and report. Attention was called at that time to less than a dozen varieties that were worthy of consideration. With this action of the Association as a guide, the Massachusetts Commissioners undertook to solve the problem, and announced that they would not prescribe any coupler that had not been tested in actual traffic, but notified the railroad companies in the State that all new cars, and cars requiring new couplers, should be provided with one of five kinds specified. It happened that the kinds specified would not couple with each other.

In 1885 public tests were held at Buffalo by Mr. Forney. Forty-two couplers were tested, twelve of which were recommended for further tests. In the following year the trials made of power brakes on freight trains made it very evident that the link and pin type of coupling would not suffice, and it was eliminated from further consideration.

In 1887 the Executive Committee reported in favor of the Janney type of coupler and all other forms that would automatically couple with it under all conditions of service. This report was adopted in 1888 by a vote of 474 for and 194 against. The Executive Committee then undertook to establish contour lines, drawings and templates as standard, but found that the Janney patents covered the

contour of vertical plane couplers. This was remedied in 1888, when the Janney Coupler Company waived all claims for patents on contour lines of coupling surfaces of car couplers used on railroads members of the Master Car Builders' Association, which enabled the Association to formally adopt in all respects this type of coupler as standard. At the convention of 1889 such action was taken, on motion of Mr. Voorhees, General Superintendent of the New York Central Railroad, and since that time this type of coupler has been the standard, and called the "Master Car Builders' Coupler."

In 1893 Congress enacted a law requiring all railroads engaged in interstate commerce to provide on all cars and locomotives a continuous power brake capable of being controlled by the engineman in the locomotive cab, and also automatic couplers which would operate by impact. January 1, 1898, was the date set by which these changes must be made—subsequently extended two years. We now have uniformity in height and contour to insure perfect contact between all classes of equipment, and a positively locked knuckle. The design and attachments to car body are prescribed of a strength in excess of the power of locomotives, and in modern friction draft gear the strength reaches 250,000 pounds.

SIGNALING.

The need of indicating the conditions of the road to trains came with the increasing traffic and speed. As these conditions developed in England before they did here, the first steps were taken in that country. In 1834 the Liverpool & Manchester introduced the first system of fixed signals, consisting of an upright post

with a rotating disk at its top, showing red for danger and the absence of indication by day and a white light by night for clear. On the opening of the Great Western Railway this method was improved. Experiments by Messrs. Chappe, the inventors of optical telegraphy, showed that under certain conditions of illumination the color of any body would disappear. This demonstrated that the form, and not the color, of the day signal could be relied on. It was also found that a long, narrow surface could be seen further as projected against the horizon or landscape than the same area in a square or circle. Making use of these results, Sir Charles Gregory, in 1841, designed and erected at New Cross the first semaphore signal. There was no communication between stations; each signalman displaying his signal at danger after the passage of a train until a certain time had elapsed, when it was cleared. The only information conveyed to the engineman was that the preceding train had passed the station at least the required time before him.

The failure or inability to act with sufficient promptness at the display of the danger position, and the consequent collisions, led to the installation of additional signals to give advance information to the engineman of the position of the signal he was to obey. Thus we have clearly portrayed the inception of the present block and caution signals.

Mr. C. V. Walker, of the Southwestern Company, introduced the "Bell Code," which was the first audible method of communication between signal stations. The same year Mr. Tyer supplemented this with electric visual signals, the object being to give the operator indication of the signal having been received and given, and at all times to show the

exact position of the signal itself. This suggested the space interval between trains, in place of the time interval, making signal indications definite. In 1858 the positive block system was established in England, based on the space interval system.

Making use of telegraph communication, Mr. Ashbel Welch, Chief Engineer of the United New Jersey Canal and Railroad Company, devised and installed during 1863 and 1864 the first block system of signals in this country, on the double-track line between Philadelphia and New Brunswick. Signal stations were suitably spaced, and at each station a signal was provided, visible as far as possible each way. The signal itself was a white board by day and a white light by night, indicating "clear," shown through a glass aperture two feet in diameter in front of the block signal box. For the "danger" indication a red screen fell to cover the white board or light. On a train's passing a station the signalman released the screen, which fell by gravity, and did not raise it until advised by telegraph that the preceding train had passed the next station, thereby maintaining a space interval. Thus was evolved the telegraph block system, still generally used, with modifications of apparatus and signals, on lines of light traffic. Elaborations of this system were later installed following more closely the English practice, perhaps reaching the most complete development upon the New Haven and New York Central lines, where it is still in use. Notwithstanding numerous improvements in apparatus, the same practice of fixing a positive space interval by means of communication between block stations still holds. The addition of track circuits for locking and indicating purposes and interlocking between stations, more fully effected by the introduction of the "Coleman block instrument,"

in 1896, has thus evolved the controlled manual block system as now used.

AUTOMATIC SIGNALS.

In 1867 Thomas S. Hall patented an electric signal and alarm bell, used in connection with a switch or drawbridge. Its shortcoming lay in the fact that a break in the circuit or failure of the latter gave no danger indication. To correct this a closed circuit was necessary, although more expensive. In 1870 Mr. Wm. Robinson devised the plan of having the circuit closed at the point of danger, if conditions were favorable, and opened a short distance in advance of the signal. The wheels of the approaching train depressed a lever, which closed the circuit and cleared the signal, unless interrupted at the point of danger. Subsequent modifications were made, whereby the circuit once completed remained so through the agency of an electromagnet, and reopened when the train passed out of that portion of the track governed by the signal.

In 1871 Mr. Hall put in operation the first automatic electric block system, on the New York & Harlem Railroad, between the Grand Central Station and Mott Haven Junction. It was normal "safety." The wheels of a passing train striking a lever completed a circuit, which put the signal to danger, after the train, and held it so until the succeeding signal went to danger, when a separate circuit was completed, which released the former signal, allowing it to return to clear.

The disadvantage in having the wheels of a train strike a lever to complete the circuit led Mr. F. L. Pope to experiment. After a successful attempt in transmitting an electric circuit through an ordinary

track with fishplate joints, he made a signal test at East Cambridge, Mass. A section of track was insulated from the rest, with a wire circuit, including a battery and electromagnet for operating the signal, fastened at either end to the opposite rails. The metal wheels and axles completed the circuit, throwing the signal to danger against following trains. A detent served to keep the circuit closed until the next signal was reached, when a separate circuit released the detent, permitting the signal to clear.

In 1879 this system was put in service, and, with some alterations, still remains in some localities.

Following the original manual semaphore and the controlled manual system of operation came the pneumatic and electric systems, for localities which required a great number of signal movements. With the development of motors and batteries capable of economic operation, automatic signals of the semaphore type have been successfully and widely installed.

In the semaphore system numerous failures have occurred, due to the formation of ice and sleet upon the blades. This has led to the introduction of the so-called "upper quadrant" operation; that is, the motion of the signal being from horizontal to an upwardly inclined position and back.

On account of the widespread prevalence of electric lighting and the building up of the territory adjacent to railroads, changes in the color indication of night signals have been adopted, generally in such localities using green instead of white for the safety indication.

INTERLOCKING.

Developing with the manual operation of signals, and as a safeguard against mistakes of the signalmen, interlocking grew up as a means for preventing conflicting signals being given at the same time. As with signals, so with interlocking, England led at first. After a trip to that country in 1869, Mr. Ashbel Welch recommended the advantage derived from the English method of operating switches and signals in large yards and terminals, where the entire control fell to one man so located as to be in touch with the whole situation and equipped with a machine that would not permit of setting up conflicting routes. The plea resulted in the order of a twenty-lever Saxby & Farmer interlocking machine, which was installed in 1874 on the New Jersey Division of his line. Railroads were prompt to see its advantage, and in a short time machines performing the functions were made and installed in this country, not only for the protection of railroad intersections, but for the control of large terminal layouts. In 1876 the first power-operated interlocking system was perfected, which was the pneumatic type. In 1900 an all-electric interlocking system, advantageous where distant functions were to be embraced within the operation of the plant, and applicable to localities where electric traction was in use, was devised.

The more recent development of power-operated interlocking systems, with complete electric indication of the conditions on all tracks, has made it possible for larger systems to be consolidated under the control of a central plant, and thus under the direction of a central authority; these machines, being of a completely interlocked character, insure greater safety by the central control, as well as greater facility of operation.

TRAIN DISPATCHING.

In this country the first radical departure from the time interval and flagging method of operation came in 1851. The New York & Erie Railroad had established a single line of telegraph between Piermont, on the Hudson River, and Dunkirk, on Lake Erie, for company business. The Superintendent of Telegraph, Mr. Luther C. Tillottson, and the Division Superintendent were together in the Elmira depot on an occasion and learned that the westbound express from New York was four hours late. At Corning an eastbound stock train and a westbound freight at Elmira waited for the express. With this information, Mr. Tillottson suggested that the freight train at Elmira could be sent to Corning and the stock train at that point ordered to Elmira, with perfect safety, before the arrival of the express. The move was successful and encouraged similar operation, which shortly led to the adoption, with some modifications, of this train-dispatching method on the Susquehanna Division of the Erie. Its adoption over the entire line followed, in spite of the great opposition which Mr. Charles Minot, the General Superintendent, met when planning for its introduction. Some of the conductors and enginemen went so far as to resign rather than run on telegraphic orders against the time of another train.

This system spread rapidly to other lines and, in company with other features of railroad operation, has been progressively developed and improved. One of the important elements of safety in the dispatching practice has been the tendency to the same words in the same sequence to convey the same instructions, insuring a uniform understanding of the instructions instead of permitting a discretionary phraseology in originating or a misunderstanding in

construing the order transmitted. The rules for train dispatching now prescribe the use of standard forms of expression for orders governing the movement of trains.

Within the past few years experiments have been made with a system of train dispatching by telephone, now in successful operation upon some important lines, and growing in extent. Advantage lies in the ability to use trained railroad employes who cannot work under the telegraph system, not being telegraph operators. The telephone-dispatching system not only insures a rapid distribution of information, but by its greater capacity enables a more complete knowledge of the state of the line to be had in the controlling office, as well as in all the offices tributary to the dispatching system.

DEVELOPMENT OF THE LOCOMOTIVE.

While it is not our intention to take up your time with the recital, even in condensed form, of the development of all the items which go to make up the parts of a railroad, we cannot forego the opportunity to speak briefly about the locomotive, the motive power, giving action and effect to transportation.

As early as 1680 Sir Isaac Newton predicted steam-propelled carriages, and even made suggestions bearing on their design. Through the eighteenth century various types of steam vehicles appeared, more as curiosities than anything else, some of them forerunners of the locomotive and others of the automobile. It was not until 1803 that anything really deserving the name "locomotive" was built. Richard Trevithick, a Cornish miner, constructed the locomotive bearing his name, curiously enough as

the result of a wager. On trial this machine did convey ten tons of iron for nine miles on a cast-iron tramway by steam power, winning the wager. The desire of Christopher Blackett, a mine owner, to use steam motive power in place of animals led to the practical demonstration of adhesion. On this principle, Blackett's Superintendent, William Hedley, built his "Puffing Billy," a complicated affair of levers, beams and gears. On the completion of the Liverpool & Manchester Railroad, the directors, being undecided as to the motive power, offered a prize of five hundred pounds for a locomotive that would fulfill certain conditions. The test came off at Rainhill, in October, 1829, on a level piece of track about one and one-half miles long, between four competitors. Stephenson's "Rocket" won and gave the world the mechanical combination essentially represented in locomotive practice since that time. American locomotive practice followed the Stephenson model. Among the early builders were Phineas Davis, Ross Winans and Matthias Baldwin. The four-wheel engines of the English type proved injurious to the light rail and sharp curves on our early roads, and to overcome this Mr. John B. Jervis, Chief Engineer of the Mohawk & Hudson Railroad, introduced the four-wheel "Bogie" truck. For some twenty years this design remained, until in the '50s the demand for more tractive power brought about the addition of another pair of coupled drivers, thus evolving the well-known "American" type. Additional drivers were added with the demand for increased tractive power, leading in turn to the development of the "Mogul" and "Consolidated" types.

In the decade between 1880 and 1890 more drivers, such as in the ten-wheel type, began to be

used in high-speed service, and the adaptation of wide fire-boxes to the American type necessitated the addition of a trailer truck to support the rear end of the locomotive frame, and brought about the "Atlantic" type, in 1895.

The "Pacific" type, or the most modern high-speed passenger locomotive, is a development of this. In 1888 Anatole Mallett designed the articulated locomotive. In 1904 the first one of this type was placed in operation on an American railroad, and since that time has gained favor where maximum tractive power on heavy grades is required.

There is perhaps no more striking illustration of the progress of the art than can be obtained from an examination of the illustrations of the various types of locomotives built and operated since 1829. It all bespeaks a tremendous growth, based on a tremendous necessity. We can point to the strengthening of all parts commensurate with the work to be done; to the perfection of detail in materials; manufacture, maintenance and inspection; and possibly observe with pride that the motive power of the railroads of the present contributes an almost negligible part of the difficulties of modern railroad operation, due to features of design or control.

CAR CONSTRUCTION.

One of the early problems in transportation was to secure the carrying capacity of cars as well as safety. We have pointed out how it was necessary to add a guiding truck to the English locomotive, designed to adapt the same locomotive safely to American conditions. Both the excessive wheel loads on four-wheel freight cars and the greater liability to

accident or derailment led at an early time to the use of four-wheel trucks under cars. Between 1831 and 1834 Mr. Ross Winans, of Baltimore, made improvements on cars on the Baltimore & Ohio Railroad. He applied the swivel four-wheel truck, the outside bearing for axles, and the application of the draft gear to the car body and not to the trucks. The increase in lengths of passenger cars, with corresponding increases in weight, led, about 1880, to the quite general employment of a six-wheel truck instead of a four-wheel truck, and even eight-wheel trucks were used for a time, but rejected on account of the excessive length of wheel base and other complications.

In 1879 the Allen wheel, consisting of built-up construction with forged-steel tire, was introduced and rapidly became applied to cars in the most exacting service. Originally the tires were imported from the Krupp Works, in Germany, but later were manufactured here.

Great interest attaches itself at the present time to the manufacture of solid-steel forged wheels, on account of the reduction in parts.

In the latter '80s experiments were made in the development of steel framing for car construction, and built-up steel underframes were introduced shortly after; at first on cars for mineral traffic, where excessive weights and capacities were required. The success of this type of construction has led to its adaptation at the present time to all classes of equipment, and not only steel underframes, but complete steel construction in certain classes of service where the conditions require.

With the increase in through passenger service we note the appearance of the vestibule, protecting the

communication between cars. Originally this vestibule was narrow, about the width of the car door, and was introduced about 1882, although experimented with as far back as 1845. The equipment of the "Exposition Flyer," operated from New York to Chicago during the World's Fair, was the first, we believe, to appear with full-width vestibules, these being originally designed as offering less atmospheric resistance to high-speed trains, but having subsequently been found a more economical, attractive and safer form of construction.

The question of steel cars and composite steel and wooden cars is having very careful investigation and experiment at the present time. While considerably used, the results of the use of these cars must be awaited. After the factor of safety has been determined the question of tare weight per passenger carried will naturally arise. In this country our weights are now far in excess of all foreign railroad practice. This enters into the resistance and cost to produce the service.

CAR HEATING.

The original method of heating passenger cars by direct radiation from coal or wood stoves was a source of discomfort to the passengers as well as a menace in case of disaster. This brought about in the late '80s the introduction of the "Baker Hot-Water Heater," which was a great improvement for the comfort of passengers, but still left a fire in the car. In many instances of collisions and derailments during this period, especially in winter, the cars were set on fire and the wreckage consumed from the fire scattered from the stoves or heaters. Experimentally, steam from the locomotives was used, but the difficulties in securing satisfactory couplings between

the cars, the drain on the boiler, and the fact that the locomotive was sometimes detached from the train, were obstacles. One of the Western roads even attached a separate car for the sole purpose of supplying heat and light. The growth in the capacity of locomotive boilers, and the perfection of the couplings between cars, have led to the present practice of car heating, which entirely eliminates the presence of any fire or source of danger from that source.

CAR LIGHTING.

Car lighting has passed through the same stages as house lighting, possibly more gradually, on account of the greater difficulties. The old low-roofed passenger cars were illuminated by candles about two inches in diameter, placed in racks along the sides of the car. With the advent of mineral oil, just before the Civil War, the candles gave place to oil lamps. Great difficulty was experienced in maintaining a steady flame, until the principle of the student lamp was adopted. The flame was shielded from the outside air by a chimney, and the central draft to the burner provided the air necessary, at the right point, to insure combustion. For more than fifteen years this method prevailed, and while the presence of oil lamps in wrecks contributed fuel to the flames, the proof that they were in any way the principal cause was lacking. Still, to eliminate this contributory feature, attempts were made to use ordinary coal gas, compressed in tanks on each car. This, however, proved unsatisfactory. In 1870 a system of compressed gas made from crude petroleum had been invented by Julius Pintsch, of Berlin, and by 1887 had been put into a number of cars on European railroads. The light was too dim to

satisfy American conditions. It was only a question of time, however, for its proper and adequate development to our needs, when its use became general, on the perfection of the lamp and burner.

For the last fifteen years electric lighting of various types has been in use on cars in an experimental way. While possessing advantages, perhaps, in safety, owing to low voltages and small quantity of current, its general use has not yet been entirely practicable, owing to the complications involved, either in generating and satisfactorily controlling the current upon the cars, or in supplying it at terminals through storage batteries.

So far we have been considering largely features either of equipment or train control. Perhaps more important than these is the permanent way. Compared with engines, cars, signals and dispatching, the variety of problems presented in the construction and maintenance are many. We perhaps owe to the ancient beginnings and highly scientific development of the profession of civil engineering and its branches the fact that these problems of construction and maintenance are so well met and the source of so little anxiety in connection with railroad transportation at the present time. American engineering ingenuity and courage have devised structures to meet every requirement of railroad development. In bridge construction for centuries the simple beam or the arch were the only spans employed. The natural barriers to construction of railroads required something more than either. Between 1830 and 1850 many wooden trusses were built in the Eastern and Middle States after the design of Burr and Palmer. S. H. Long's introduction of counter-braces in truss construction in 1830 was a

long step in advance, and after ten years the celebrated Howe truss was brought out by the inventor. Four years later came the Pratt truss. In 1859 several riveted lattice trusses were built for the New York Central, varying from 40 to 90 feet in length, by Howard Carroll. The Lehigh Valley built a Whipple-Murphy pin-connected bridge of 165-foot span.

This progress in truss construction enabled the railroads to bridge streams and secure continuous roadway.

As an interesting historical note in connection with railroad bridges, we find that the first railroad bridge was built across the Mississippi River at Rock Island in 1856. It had hardly been completed, at great expense, before St. Louis steamboat interests demanded its removal as a nuisance and an obstruction to navigation. The United States District Court so adjudged it, and ordered its removal within six months. The presiding judge in his opinion stated that "if one railroad is able to transfer freight and passengers without delay and expense of changing at the river, financial necessity will compel competing roads to provide themselves with the same facilities," which led him to foresee great interference to river traffic and great mischief in the establishment of such a precedent.

The case was appealed, and Abraham Lincoln was the counsel for the bridge company before the United States Supreme Court. He argued that both the river and the railroad were great highways for the people, and while at the immediate time the water traffic was possibly greater, he predicted that the time might come when the railroads might equal or exceed the traffic on the river, and he consequently

felt that each interest was entitled to equal consideration. His broad grasp of the subject secured for his company a reversal of the decision of the lower court, and the bridge remained.

With the advent of steel the possibilities of bridge construction may be said to have become almost unlimited, and their design exceedingly simplified and standardized.

EVOLUTION OF THE RAIL.

Equally important is the evolution of the rail and its fastenings. The type of metal rails of which the bottom served as the running surface for flat wheels guided by a flange on the rail gave place to "edge" rails on which flanged wheels used the upper surface of the rail before the day of the steam locomotive.

Of the edge type, the first were cast iron, fish-bellied, in sections about three feet in length. They were supported by stone blocks or in cast-iron chairs which were in turn made secure to the stone. Later the same type was made of wrought iron by John Birkinshaw, in England, who rolled it up to 15 or 18 feet in length.

From 1820 to 1850 the flat strap rail, spiked to longitudinal timbers, in turn supported by cross-ties, was largely used in this country, as it was the only shape that could be rolled here. In 1834 Mr. Strickland designed the Bridge, or "U"-shaped section, which was used on some of our earlier roads and was the first style of edge rail rolled in this country, in 1844.

The present "T" section was invented in 1830 by Colonel Stevens, Chief Engineer of the Camden & Amboy Railway, and until 1845, when it was first

rolled in this country, had to be imported from England. The poor quality of the iron at this time required such a broad support, in the design of the rail, for the head, that no satisfactory plate fastening could be secured. Iron shoes, into which the rail ends fitted, were the means of connection.

The greatest improvement dates from 1855, when the first steel rails were rolled in England. Ten years later they were experimentally rolled here. In 1867, through the introduction of the Bessemer process, which made possible their manufacture at a greatly reduced cost, began a revolution in track construction.

While the decade from 1880 to 1890 witnessed the greatest rate of railroad building in this country, it also witnessed the substantial substitution of steel rails on our lines. The earlier rails weighed from 50 to 70 pounds per yard. The increasing weight of equipment brought out a heavier section, and fifteen years ago there was a large percentage of mileage on which weights of 90 pounds and over—and even 100 pounds—per yard had been introduced. Under special conditions rails weighing as high as 140 pounds per yard are used.

With the increasing weights of rails, and the development of steel manufacture, greater attention has been paid to details of analysis, process of manufacture, shape and laying, and it may be briefly stated that all these matters are uniformly prescribed at the present time.

Our rail fastenings, ties and ballast have kept pace with the development of the rail and equipment. An orthodox part of the rules governing the maintenance of railway property places in the hands of the maintenance force standard plans and

specifications, not only for the elements, such as rail and ties, but for the complete make-up of the finished track structure and roadbed, and these plans are the result of current experience and study of the several railroads, and of the various associations of engineers, maintenance officers and manufacturers, and it is safe to say that these plans, specifications and standard practices represent the best known state of the art.

GRADE-CROSSING ELIMINATION.

In the early days both the railroads and public ways used the natural surface of the ground, as a matter of economy. The public question then was how they were to get the railroads, and *not* how they were to restrict them in the manner of their construction. The districts traversed were sparsely settled and trains were few and slow in their movement; the highways were little used; all of which made for freedom from accident where the two crossed.

The conditions in England were vastly different. There the country was thickly settled and an assured traffic was evident from the inception of the enterprise, which would warrant expenditures on original construction that could not be entertained by the promoters of our first companies. So it was not through any blindness that made grade crossings grow up in this country, but it was purely the result of economic conditions which precluded their elimination.

With the increase in population and the development of the country came the need of increased transportation facilities. More frequent, faster and heavier trains were moving up the

railroads and a greater number of people came to use the highways. The inevitable result followed, and at length the great number of accidents occurring at the grade crossings attracted public attention.

The Legislature of Massachusetts took the first action in 1869, when it provided for the appointment of a Railroad Commission, to investigate and report upon "Safer and Better Methods of Construction and Operation." They very promptly took up the Grade-Crossing question.

At this time in

	there was 1 mile of		square
Massachusetts	track to	5.47	miles
	there was 1 mile of		square
New York	track to	14.12	miles
	there was 1 mile of		square
United States	track to	46.72	miles
	there was 1 mile of		square
Great Britain	track to	8.60	miles

This showed that the railroad network in Massachusetts was more extensive in proportion to the area of the State than existed in Great Britain. In their report the Commission suggested the avoidance of future crossings of railroads and highways at grade, and the propriety of the railroads changing some existing crossings which presented no great difficulty or expense.

In 1873 a law was passed providing for the separation of grade when a town and railroad effected an agreement. The cost was to be apportioned by a Commission appointed by the Superior Court. This law did accomplish something,

but hardly abolished existing crossings as fast as new ones were built. Under it the Fitchburg Railroad did away with twenty-five between 1875 and 1890, bearing varying portions of the expense.

In 1885 an Act provided that the County Commissioners could order the abolition of a grade crossing on a petition of twenty legal voters if the cost would not exceed $3,000. Again, in 1888 the Legislature asked the Governor to appoint another Commission to investigate and report upon a scheme for gradual abolition and the method of apportioning the expense. In February, 1889, this Commission, composed of Kimball, Weber and Locke, submitted systematic plans, with estimates, etc., in which they fixed forty years as not an unreasonable length of time for the completion of the work. The next step came in 1890 with the passage of the Grade Crossing Law, which provided that the directors of a railroad or the authorities of a town or city could petition the Supreme Court for a Commission on the Abolition of a Grade Crossing. This Commission was to determine the manner of the separation and by whom the work was to be done, and how the expense was to be divided as between the railroad, city and State. Before the report was presented to the Court for approval it was incumbent upon the Commissioners to ascertain that the aggregate proportion of the State's liability in this connection would not exceed $500,000 per year for ten years. While on the one hand the Legislature authorized this expenditure of $5,000,000 to abolish the crossings of highways with railroads at grade, they granted charters indefinitely to electric lines to cross steam roads at grade.

The New York State Board of Railroad Commissioners was created in 1882 and its

membership appointed by the Governor. Among the functions which they immediately assumed was the question of public safety in connection with crossings at grade of railroads and highways. The consideration which this received and the complaints of unsafe conditions, as well as the complications and adjudications involved, led to the passing of the Grade Crossing Law, which went into effect July 1, 1897.

Not only by the New York State law, but by the Massachusetts law, the method of elimination, as well as the apportionment of expense, is specific. The initiative is open to both the railroad and to the community, and the rapid progress of eliminations in these two States may be taken as an endorsement of the wisdom of such legislation, paving the way, as it does, for more progress on the question of eliminations than it is believed would ordinarily take place where no specific rule existed for the undertaking.

While the exact conditions throughout the country are not definitely known, it is believed that progress is being made quite generally in this direction. The influence of grade-crossing elimination upon the safety of operation is of such importance as to deserve serious consideration, as I will further suggest. Perhaps the elimination of grade crossings, thereby separating the public from the railroad except as authorized in connection with their patronage of it, is one of the most important factors as safety.

HUMAN ELEMENT IN OPERATION.

Notwithstanding the great improvements in roadbed, track, bridges, signals, equipment and other

respects, all securing increased service and safety in railroad operation, the human element is a vital factor. With a view of raising the standard of individual service, a system of physical and educational examinations has been adopted. In the early days of railroads the individual service was possibly less definitely classified and qualified than must prevail under the exactions of modern conditions. In keeping with the progress in mechanical and safety devices and the necessity of a better system, we have today a preliminary examination, both physical and as to fitness. Employes must pass examinations as to vision, color sense and hearing, and their knowledge of the fundamental rules and regulations, as well as the fundamental knowledge of road, appliances and equipment. These examinations are repeated from time to time as the class of service and further advancement of the employes may require. Many of the large railroads have established schools, with capable instructors, where employes may receive instruction upon the performance of their duties, as well as affording them an opportunity to fit themselves for promotion.

Beginning with the General Time Convention some thirty years ago, the need to standardize railroad practices and systematically qualify employes began to be realized.

The Convention, largely through the efforts of Mr. W. F. Allen, saw that, as time is the term in which railroad schedules are expressed, it was a fundamental necessity that there should be standard time, and that the timepieces of employes which should govern their observance of instructions and schedules must conform to the standard. This led to

the present system of standard time; to the system whereby employes must compare watches with standard clocks; must have watches inspected regularly and record taken of same; must compare watches and register before trips.

The General Time Convention led to the formation of the American Railway Association, consisting of the executive and operating officers of the railroads of the United States and Canada. The Association considers problems of railroad operation, construction and equipment, and recommends practices for their solution. Their investigations, conclusions and recommended practices embrace train operation, dispatching, block-signal operation, air-brake operation, physical and educational qualifications of employes, regulations for the transportation of dangerous articles, clearances, rail manufacture, safety appliances, inspection, car construction, track gauge, train heating and lighting, methods of loading, etc. Marked progress has been made in co-ordinating the work of the various organizations of railroad officers with the work of the Association, to secure the benefit of the broadest and most careful consideration of the subjects.

Assurance, therefore, exists that the experience and knowledge of railway management and officers will be brought from time to time into the text and fact of standard practices, promoting convenience by close interline relationships and uniformity of regulation, and causing a uniform, systematic and careful regard for safety.

BY WAY OF RECAPITULATION.

So, to recapitulate:

From a few miles of crude tramways the world has

in a century built 500,000 miles of steam operated and 100,000 miles of electrically operated roads; instead of spragging the wheels we rely on the automatic high-speed brake; the coupling of cars has become an imitation of the action of human hands instead of risking their destruction; each train finds the condition of road ahead and protects itself by the agency of electric circuits and semaphores, the sequence of whose operation discloses on behalf of safety any obstruction of the route; four-wheel barrows are replaced by steel cars, larger than the miner's cabin, and carrying more than his month's output; instead of traveling on a tramway stage coach, the passenger finds available for his comfort a modern hotel on wheels, with every luxury known to-day—electrically lighted, steam heated, weather-proof; the old strap iron, which became detached and penetrated the car floor, frequently impinging passengers to the roof, is replaced by the bar of steel weighing 100 pounds to the yard, whose manufacture, installation and maintenance is prescribed with every degree of refinement known to the chemist and engineer; we have learned to treat sub-grade, drainage and ballast as an architectural science, and our bridges, from the single-log span, now make continuous roadbed for high-speed operation, even over the continental rivers.

Some one has said that the builders' art consisted in making the structure proclaim the purpose for which designed, and to my mind there is nothing which quite so dramatically fulfils this as the modern steam locomotive. How many of you have seen a huge Pacific locomotive, drawing a train of 600 tons at a speed of 70 miles an hour, yet under control of one man, just the same as Stephenson's "Rocket," which could have been lifted off its track and set on

the ground by four strong men, and which was a world-wonder when for a short distance it attained a speed of twenty miles an hour? We know that our engineman with a Pacific locomotive and the high-speed train can stop his train with the air brake in a definite distance.

These comparisons, briefly as might be, between, we will say, the beginnings of the nineteenth and of the twentieth centuries, show how the commercial growth and increase of trade have produced a demand for transportation to be performed, and with the performance an economic revolution. We have, in a general way, though with far less than the thoroughness of which the subject is worthy, outlined what might be called the "state of the art," of railroad plant and operation, in a relative sense.

Progress of a pronounced character has occurred. That this progress has been accomplished by increased safety is demonstrated by common knowledge and confirmed by the records, both of the railroads and the public authorities. As an illustration, take the statistics of the Interstate Commerce Commission. The increased safety of railroad operation is indicated in part by the following figures:

> For the decade following the beginning of the records, namely, 1888 to 1897, the fatalities were 1 in 45,300,000; for the next decade, bringing it down to the present time, the fatalities were 1 in 54,900,000; the gain in ratio being, for the nation at large, fully 20 per cent.
>
> Looking at the conditions in the State of New York, where the density of travel is considerably in excess of that of the country as a whole, we find a report of the State Engineer in the year 1862 showing ratio of fatalities of 1 in 28,200,000; the average for six

years, 1902 to 1907, inclusive, shows 1 in 200,000,000; an increase in relative safety of 800 per cent.

We may assume that never before in the history of railroad transportation was there presented a bigger problem than to-day. The weights are greater; the distances are greater; the speed is greater; the population is more dense; prices and wages are higher, and the public service more exacting. A gathering of the official representatives of the nation and of every State, possibly with a desire for uniform and concerted action, even though it may be unofficial, points with emphasis to the attitude from which the public contemplates the employment of the railways in their behalf. It is, I believe, an accepted fact of our political constitution at the present time that the public, through its authorized representatives and through lawful channels, has a right to be reasonably assured in this respect. I believe that the co-operation manifested, as well as the inquiries by the various railway boards, has in a great sense aided in reaching our present standard of excellence, to which we can point with pride in comparison with any other national railway system of the globe. We are becoming more familiar—the railroad management and employes—with the standpoint of the public, and the public is becoming more familiar with the problems of the railroads. The mutual aim is: First, safety and service; and, second, economy. The public concern for the safety and service is for its own protection, and the railroad management must give both with economy.

So far we have been dealing largely with the progressive safety of railroad operation as furthered by the action of the railways, either initiatively or responsively, as the case might be. We have

described the improvement in roadway, equipment and appliances; the standardizing of regulations for operation; the selection of employees and their government.

With the better understanding of the problem of the railroad by the public through and in connection with the special boards represented here today, it might not be amiss to express the hope that such needs as cannot be met without the active support of public opinion and perhaps legislation will be clearly brought out. One of the thoughts that occurs to me was suggested by a recent exhibit, from the records, of the loss of life, damage to railroad property, as well as injury to persons and property conveyed, due to the presence of unauthorized persons upon railroad property, whether wilfully or carelessly trespassing. As an illustration of its seriousness: during last year over 5,000 trespassers lost their lives on railroads besides a large number injured. Numerous mishaps have been traced to acts of trespassers, which may be the secret of many unexplained casualties. The railroads are a highway for the migration of tramps and unemployed persons, who commit petty depredations, jeopardize the safety of trains and the lives of employees and passengers. It seems of no avail that thousands of the worst class are arrested by railroad police forces and convictions secured, as the sentences in the majority of cases serve rather to aggravate, than to mitigate, the evil. One line arrested over 9,000 trespassers during the past year, and secured convictions in 75 per cent of the cases; but in half of them sentence was suspended, which usually meant that the offender used the railroad to escape from the scene. I do not wish to be understood to asperse the administration of justice, nor to insist that offences of

a serious character are always committed by railroad trespassers, but the hazard involved is one that should not be permitted to exist, the railroad property destroyed or damaged bearing no relation to the risk of persons and property transported, and to the enormous loss of life involved.

I feel that the attention of those accustomed to broadly viewing problems of public concern should be brought to bear upon these facts, with the hope that measures may be taken to insure greater safety in this respect, as well as to save the waste of life and property now resulting from or incident to the practice. I might venture to suggest that the loss of life is far greater than entailed through decades by boiler explosions or rear-end collisions, the seriousness of which I do not wish to deprecate; and the situation might warrant special record of the facts being obtained in behalf of the public through the regular channels.

Wherein lies the increased safety of the future may perhaps be the query in many minds. It is universally sought.

It would be mere conjecture on my part, and, with your indulgence, I am not inclined to prophesy. As I see it, the great problem is to make our progress sure, taking no doubtful measures, adopting no specious devices which may appeal to us at first blush until we have satisfied ourselves that no greater risk is involved by the change.

The multiplication of rules enjoining obedience, together with devices for additional protection, may yield a false sense of security if fundamental obedience to existing rules and efficiency of existing appliances is one bit impaired by the addition. We must not embrace paper reforms, even though

clamor and pressure be great. An "ounce of prevention is better than a pound of cure," we grant, but reverse the proverb, and the pound of prevention may over-whelm us. The public official would seem to be in a judicial position, mindful of public justice and safety, basing his judgment and acts upon facts alone. Improvement in general safety and character of railroad operation must be the product not only of an enlightened public opinion and the conservative wisdom of public representatives, but progressive and careful management, coupled with a sense of discipline and responsibility and industry of railroad employees, who must jointly share the obligations of the problem.

Speaking of the compliance we have cheerfully made to the suggestions of the public representatives —the Commissions—in regard to improvements of service, facilities and conditions of operation, etc., we believe in the long run that these things mean a better standard and greater security for railroad property, as well as the enormous benefit that accrues to the public by reason of proper and efficient railway service, and we have only thoughts of admiration for the attitudes of the Commissions as we have found them. They have a large problem. We are glad to avail ourselves of their wisdom, and believe it to be the means whereby the responsibility of the carriers to the public is secured, and through whom the responsibility of the public to the railroads must be voiced.

Gentlemen, I thank you for your kind attention, and the favor, which I acknowledge, of being permitted to address you as best I may upon a subject to which we are all devoted. In the absence of a distinct literature on the subject that your

worthy President assigned to me, my efforts are perhaps a bit crudely devised, having no pattern. In another generation we may perhaps evolve a distinct species of railroad statesman and an encyclopedia from which we will be able to point back to the beginnings and the efforts at mutual advice, and to the growth and knowledge that have ensued, just as we have seen the day of small things in railroads to be the beginning of a constant growth to the wonders of today. I am sure that the American people can congratulate themselves upon an institution of the character of your Convention and of your several honorable bodies, and trust that this meeting will be such that you will feel that you have made definite progress in your concurrent aims.

RAILWAY MAIL PAY

BY
JULIUS KRUTTSCHNITT,
DIRECTOR OF MAINTENANCE AND OPERATION
OF THE UNION PACIFIC SYSTEM
AND SOUTHERN PACIFIC COMPANY.

The question of compensation to the railroads of the United States for carrying the mails has been under review before Congress at different times during the past ten years. The subject was exhaustively investigated by a Joint Commission of the Senate and House of Representatives in 1898 and 1899, which reached the following conclusion after

full consideration and taking of a mass of testimony on all sides of the question:

> "Upon a careful consideration of all the evidence and the statements and arguments submitted, and in view of all the services rendered by the railroads, we are of the opinion that the prices now paid to the railroad companies for the transportation of the mails are not excessive, and recommend that no reduction thereof be made at this time."

(See Report 2284, House of Representatives, 56th Congress, 2d Session.)

This Commission also concluded as to the pay for railway postoffice cars:

> "Taking in view all these facts as disclosed by the testimony filed herewith, we are of the opinion that the prices paid as compensation for the postal car service are not excessive, and recommend that no reduction be made therein so long as the methods, conditions and requirements of the postal service continue the same as at present."

Since the above recommendations were made, the operating costs on railroads, and, consequently, the cost of handling the mail, as hereafter shown, have been largely increased, through higher prices for both material and labor, so that if the railways were not over-paid ten years ago, the present rates, being lower than those paid at that time, would be too low and should really be increased to give the railroads a reasonable return. Far from doing this, legislation enacted in the past few years has had the effect of cutting down the mail pay of the railroads, whilst the special requirements as to service and equipment have been made more severe and exacting.

Recent acts of Congress or orders of the Postoffice Department, which have the force of law, that have

caused reduction of railroad revenues, are the following:

1. Act of Congress of March 2, 1907, reduced pay on all routes moving in excess of 5,000 pounds per day. This reduced the pay for handling mails $1,740,494.63, or 3½ per cent. of the total earnings. The same act reduced the rental rates for railway postal cars $935,974.09 per annum, or 16 per cent. The total reduction in pay to the railroads under this act was $2,676,468.72, or 6 per cent. of the total compensation for both classes of service.

2. Act of Congress of June 26, 1906, effective July 1, 1906, withdrew from the mails empty mail bags and certain supplies, to be thereafter shipped as freight or express. It may be conservatively estimated that the annual loss in mail revenue to the railroads by withdrawing these shipments from the mails is at least $1,000,000, with practically no reduction in space furnished because of this change.

3. Order of Postmaster-General of June 7, 1907, changing with each mail weighing thereafter the method of computing average weights on which pay is based from that always previously used and theretofore regarded as the proper interpretation of the law. The effect of this on the mail weighings of 1907 and 1908 was to reduce railway mail pay in two sections of the country, $2,222,108.92, or 9½ per cent., or at the rate of $4,500,000 per annum for all roads of the country.

4. Orders of Postmaster-General reducing railway postal car pay by allowing "shorter-car" pay on certain lines than heretofore authorized and changing certain full lines to half lines; that is, reducing pay for return movement, thus causing an annual loss to the railroads of $345,287.06. (Second

Assistant Postmaster-General's Annual Report 1908, page 13.)

The effect of all of these reductions on the mail revenue of the railroads aggregate $8,500,000 per annum, or 17 per cent. of the total pay received by them in the year ending June 30, 1908, for handling the mail and furnishing railway postal cars.

These reductions were made without justification and for the purpose of reducing railroad revenues—and, incidentally, the expenses of the Postoffice Department, at a time when the net earnings of the carriers seemed large to the public mind, although under these favorable conditions the returns to the shareholders approximated but 4 per cent., whilst farmers were receiving 10 per cent., manufacturers 15 per cent. and National banks 18 to 20 per cent.

It is true that there has been a large increase in the gross revenue of the railroads in the last ten years, but this has accrued from traffic other than carriage of the mails and has been accompanied by great increase in operating expenses. In fact, were it not for the economies of the carriers, effected by the use of more powerful locomotives and larger freight cars, the increase in operating expenses would, without doubt, have fully neutralized the growth in revenue. In the months preceding the panic of October, 1907, the railroads were quite generally showing decreases in net earnings in face of the largest gross earnings in their history. It was costing them much more than a dollar to handle every dollar increase in gross earnings.

Since the hasty enactment of ill-considered legislation reducing mail pay, the revenues of the roads have been seriously affected by a change in business conditions which has reduced traffic

without reducing prices of materials and labor. At the same time, legislation has increased labor costs by reducing hours of service.

In 1898 rates for transporting the mails were too low to cover the cost of service, they are much too low now, and the losses on the mail service as a whole—there are some routes that pay—are borne by freight traffic entirely.

RECEIPTS FROM MAIL AND OTHER RAILROAD TRAFFIC.

The latest statistics of operations of all railroads of the United States are for the year ending June 30, 1907, issued by the Interstate Commerce Commission, July 9, 1908. From them we compile the following exhibit comparing results of 1907 with 1898—when a Commission of Congress, after complete investigation of the subject, recommended that mail rates be not reduced.

Year ending June 30th—	1907.	1898.	Pct. Inc.	Pct. Dec.
Earnings from passengers	$ 564,606,343	$266,970,490	111	—
Earnings from express	$ 57,332,931	$ 25,908,075	121	—
Earnings from mails	$ 50,378,964	$ 34,608,352	46	—
Earnings from freight	$1,823,651,998	$876,727,719	108	—
Operating expenses	$1,748,515,814	$817,973,276	114	—
Passenger train mileage	541,439,176(a)	341,526,769	58	—
Freight train mileage	662,106,857(a)	503,766,258	31	—

(a) Including mixed trains.

Earnings per passenger train mile (cents):

	1907.	1898	Pct. Inc.	Pct. Dec.
From passengers	105.7	79.4	31	—
From express	10.7	7.7	38	—
From mails	9.4	10.3	10	
Total	125.8	97.4	29	—
Number passengers carried per train	51	39	31	—
Tons of mail carried per train	.86	.80	7	—
Earnings per freight train mile (cents):				
Earned from freight	274.0	173.1	58	—
Tons of freight carried per train	357.35	226.45	58	—
Operating expenses per total train mile (cents)	147.0	95.6	54	—
Net earnings per train mile (cents):				
Passenger trains	21.2	(Loss) 1.8		
Freight	127.0	77.5	64	—

Passenger earnings per passenger mile (cents)	2.014	1.973	2	—
Mail earnings per mail ton mile (cents)	10.66	12.57	—	15
Freight earnings per freight ton mile (cents)	0.759	0.753	1	—

Note.—Bear in mind these figures do not, of course, show effect of cut of $8,500,000 in mail pay effective July 1, 1907, or losses in net revenue through depression in business conditions commencing in latter part of 1907. As an index of the latter, the Commercial and Financial Chronicle of September 5, 1908, showed that 141 roads, aggregating 168,839 miles or 70 per cent. of all roads in the country, had suffered a loss of $63,484,902, or 24.97 per cent., in net earnings in the first half of the calendar year 1908, as compared with same period of previous year.

The foregoing statement clearly shows the difference between the revenue obtained from passenger trains as compared with freight trains. The control of the former is largely out of the hands of railroad operating officers, as to meet competitive and traffic conditions, heavier and more luxurious passenger cars must constantly be furnished, which, of course, means largely increased expense with very little increase in the paying train load. In fact, as to the mails, notwithstanding an increase in tonnage carried on the average train, the mail earnings per passenger train mile were actually less in 1907 than in 1898, due largely to the automatic reduction of railway mail pay per ton mile. Considering the freight train mile, the composition of which is almost

entirely within the control of the railroads, which institute methods for reducing cost of transportation, it will be observed that by such methods the railroads have been enabled to place 58 per cent. more tonnage in a train, bring them 58 per cent. more earnings, which can be applied as an offset to the increase of 54 per cent. in the cost of running a train one mile.

This increase in operating expenses per train mile last referred to has been brought about largely because of the increased cost of labor and materials, which, as is well known, has been general throughout the country.

Comparing results of operation of all railroads of the United States for the year ending June 30, 1907, with 1898, when this question was last up, it is shown by reports of the Interstate Commerce Commission that gross revenue from operations, as well as income from investments, increased $1,380,000,000. This is a very large sum, but let us see what becomes of it. Increased wages paid to employes consumed $577,000,000, or 42 per cent., purchase of material included in operating expenses, $354,000,000, or 26 per cent. of the increased income, and these material purchases represented largely labor involved in their production. Increases in betterments and miscellaneous deductions consumed $77,000,000, or 6 per cent. of the increased income. Larger payments for interest on funded debt and current liabilities consumed $96,000,000, or 7 per cent., and larger taxes 2.5 per cent., leaving $240,000,000, or 16.5 per cent. of the increased income for the owners of the properties, the stockholders. In 1898 dividends were less than 2 per cent. of the capital stock, and in 1907, even with

the large increase noted, they were only 4 per cent. Contrast this with the manufacturers' returns of 15 per cent., the farmers' of 10 per cent., and the National banks' of 18 to 20 per cent. on their capitalization.

Reduction in railway mail pay was not justified in 1898; it was far less justified in 1907. On the contrary, there has been a large fall in mail pay per ton mile, and conditions under which mails are transported are becoming more and more onerous. The cost of building a railway postoffice car to the present plans and specifications of the Postoffice Department is at least 50 per cent. more than it was in 1898, although pay received for handling these cars, that weigh from 25 to 30 per cent. more than formerly, has been arbitrarily cut over 16 per cent. by the Act of Congress of 1907, and has since been further cut through readjustment of routes. For the year ending June 30, 1908, the railroads received gross $48,155,379, including railway postoffice pay, for carrying 80 per cent. greater tonnage of mails than in 1898, a sum $12,747,629 less than it would have been but for the reduction of rate from 12.59 cents in 1898 to 9.94 cents in 1908. In face of this, as we have shown, arbitrary cuts of $8,500,000 more have been made, a grand total of over $21,000,000 less paid now than ten years ago.

About eighteen months ago the conclusion was reached that heavier and stronger cars were demanded by changed conditions resulting in heavier trains, greater speed and increased frequency and consequent risk of accident to clerks and mail in collisions and wrecks. After careful investigation and expert testimony the specifications were revised so that full 60-foot cars would weigh about 100,000

pounds instead of 80,000 pounds, and be greatly strengthened by the free use of steel plates and oak timbers. To meet the views of car builders, east and west, two plans and specifications, slightly differing, were adopted as standard, and railroads were given the option of conforming to one or the other. The best known anti-telescoping features were adopted in both plans, producing in the judgment of responsible car builders a car of exceptional resisting and carrying power. When new lines of cars are authorized by the Department, or new cars are ordered to take the place of old cars in service, companies operating the routes are furnished copies of these specifications and the superintendent of division is instructed to see that cars are built in conformity therewith. Inspections are made while the car is in the shop, and when it is completed a full report is made and forwarded to the Department. A decision is then reached as to whether the car is satisfactory and can be accepted.

(Annual Report Postmaster-General for 1905.)

This increase in weight of a postal car might not be thought of much moment, but it means to the railroads the movement of 1,000,000 additional gross ton miles per car per year, costing them $10,000 per annum in operating expenses, whilst, as shown, they receive 16 per cent. less railway postoffice pay now than formerly.

United States Postal Laws and Regulations, Section 1164, provide that the average weight of the mails used in fixing rates shall be established by the actual weighing of the mails for a period of not less than thirty days and "*not less frequently* than one in every four years." The construction placed upon this by the Department has been the one which reduced to the

minimum the pay which the railroads receive for services rendered. If mail traffic were stationary, weighing every four years would not matter much, but the increase of mail matter throughout the United States has been very great, and, because of the policy of the Department, to weigh the mails not more frequently than every four years, heavy losses have resulted through the railroads having to haul tonnage for three successive years following each weighing for which they receive no pay.

As a result of this policy of quadrennial weighings, the roads in Interstate Commerce Groups 7, 8, 9 and 10 (including the territory west of the Missouri river and the Mississippi below St. Louis) between 1878 and 1905 suffered a loss of $19,200,000, or 12 per cent. of the aggregate railway mail pay, compared with what they should have received if the mails had been weighed annually. In other words, this loss is equivalent to a reduction in the rate received per ton mile in these groups of states of 12 per cent. The loss to roads in the western part of the United States is most striking, due as it is to the rapid growth of that section. The same reduction, though to a slightly less degree, obtains in other parts of the United States.

COMPARATIVE RETURNS TO THE RAILROADS FROM CONDUCTING MAIL. PASSENGER AND FREIGHT SERVICE IN THE UNITED STATES.

In order to make a fair comparison of operating results from different classes of traffic, it is necessary to consider them under substantially similar conditions. The best measure of railroad service is work done, or weight multiplied by distance carried; in other words, the ton mileage. A comparison of services differing so widely as the mail, passenger and freight on the basis of ton mileage of such

business is, however, unfair, because in the two former an excessive proportion of dead weight must be transported for each ton of paying load, whilst with freight traffic the proportion of dead weight is small. The hauling power of a locomotive is measured not by revenue ton miles, but by ton miles of gross weight, it making little difference to the locomotive as to what this gross ton mileage is composed of, the gross tonnage and the speed at which it must be moved being the factors that consume the energy of the locomotive.

A computation has been made of ton mileage on each individual mail route by multiplying weight carried by length of route; to the sum of these we add the dead weight of cars. The report of the Second Assistant Postmaster-General for year ending June 30, 1908, page 32, gives the number of cars engaged in mail service, which we have multiplied by the average mileage made by the average car, based on experience of the Union Pacific and Southern Pacific Systems, to ascertain total car mileage for the United States. Multiplying this by the dead weight of a car gives the ton mileage of dead weight, which, added to the ton mileage of mails, gives the gross ton mileage, measure of work and cost imposed on the railroads in return for the pay they receive for handling the mails. These computations are shown in the following statements, the results being conservative, as for want of accurate data it has been necessary to omit some work which the railroads do, which, if ascertainable, would increase the cost. For example, we have made no charge for the dead weight of that portion of baggage cars devoted to the handling of pouch mail, such pouch service, according to the Postmaster-General's report, covering annually on railroads and

express trains 122,027,597 miles; nor for the dead weight of storage mail cars provided by the railroads. Neither has any account been taken of the value of transportation given mail clerks, which, based on the Postmaster-General's report of 1908, amounted to 629,778,443 miles, which at 2 cents a mile would be $12,500,000; nor for the value of transportation or postal commissions of Postoffice Department officials; nor does it take into account special service rendered by the railroads, such as delivering mail at stations, value of space furnished by the railroads and required of them by the Postoffice Department at important junction and terminal points for mail distribution and accommodation of government transfer clerks.

The statistics of passenger service in the following statements are based on the 1907 Annual Report of Statistics of Railways published by the Interstate Commerce Commission (1908 figures, which would show higher operating cost, not available), with the exception that the average mileage per car per annum run by passenger cars is based on the experience of the Union Pacific and Southern Pacific Systems.

Statistics of freight service are likewise based on the 1907 Report of Statistics of Railways, freight car mileage being actually reported by the Interstate Commerce Commission, dead weight per car being computed from all freight cars handled on Union Pacific and Southern Pacific Systems.

MAIL SERVICE.

Year Ending June 30, 1908.

Paid to the railroads for railway postoffice cars	$ 4,567,366
Paid to the railroads for mail transportation	43,588,013
Total	$48,155,379
Ton mileage of mails handled by railroads	484,683,135
Pay per revenue ton mile, including railway postal pay car	9.94c
Pay per revenue ton mile, excluding railway postal car pay	8.99c

	R. P. O.	Apartment.	Total.
Number of cars (Postoffice Department Report)	1,342	3,568	4,910
Average length (special mail weighing 1907), feet of mail apartment	59	27	—
Equivalent full R. P. O. cars	1,342	1,633	2,975
Miles run per car per annum (experience of U. P. System and Southern Pacific Company)	100,000	60,000	—
Total equivalent R. P. O. car miles	134,200,000	97,980,000	232,180,000

Miles traveled by R. P. O. clerks (miles reported as traveled by crews multiplied by average number of men per crews)	—	629,778,443
Gross ton mileage —		
Equivalent railway postal clerks, 232,180,000 miles, at 45 tons per car		10,448,100,000
Ton miles of clerks at 160 pounds per man		50,382,275
Revenue ton miles of mail, including pouch mail		484,683,135
Total gross ton miles(a)		10,983,165,410
Average weight of mail per equivalent full R. P. O. car (tons) (a)		2.09
Average weight of clerks per equivalent full R. P. O. car (tons)		.22
Average weight of car per equivalent full R. P. O. car (tons)		45.00
Rate of mail and R. P. O. car pay per gross ton mile (cents)		0.438
Ratio of paying to dead load(a)		1 to 21.7

(a) No portion of mileage or weight of storage cars or cars handling pouch mail has been considered.

PASSENGER SERVICE OTHER THAN MAILS.

Number of cars.	Miles run per car per annum.	Total car miles run per annum.

	(a)	(b)	
Baggage and express, excluding 2,975 equivalent postal cars	7,404	60,000	444,240,000
Sleepers, diners and parlor cars	2,000	100,000	200,000,000
Coaches, etc.	31,594	40,000	1,263,760,000
Total	40,998		1,908,000,000
Passenger train miles, including mixed trains			541,439,176
Cars per train mile—			
Mail	0.43		
Others	3.52		
Total	3.95		

Gross ton mileage—	
Baggage and express cars, 444,240,000x30 tons	13,327,000,000
Sleepers, diners and parlor cars, 200,000,000x50 tons	10,000,000,000
Coaches, etc., 1,263,000,000x40 tons	50,550,400,000
Total ton miles dead weight	73,877,400,000
Ton miles of passengers, 27,718,030 (a) passenger miles at 150 pounds per passenger	2,078,891,552
Ton miles of baggage and express, 444,240,000 car miles estimated at only 3 tons average load in a car	1,332,700,000
Total ton miles revenue load	3,411,591,552
Total gross ton miles	77,288,991,552
Total revenue received from passengers and express	$621,939,274

Total revenue received per gross ton mile (cents)	0.805
Total revenue received per revenue ton mile (cents)	18.23
Ratio of paying weight to dead load	1 to 21.7

FREIGHT SERVICE.

Total miles run by freight cars (a)	17,122,259,754
Total ton miles dead weight, each car estimated at 15 tons (b)	256,833,896,310
Total ton miles revenue freight (a)	236,601,390,413
Total gross ton miles	510,557,546,477
Ratio of paying to dead load	1 to 1.1
Total revenue received for transporting freight	$1,823,651,998
Total revenue received per gross ton mile (cents)	0.369
Total revenue received per revenue ton mile (cents), (a)	0.759
Tons per car revenue freight (loaded and empty)	13.8
Revenue per car mile (cents)	10.5

(a) Statistics of Railways of United States, 1907.

(b) Experience of Union Pacific and Southern Pacific Systems.

RELATIVE COST OF SERVICE.

To determine the relative costs to the railroads of performing mail, passenger and freight service, we must allocate the expenses to freight and passenger service as a whole, afterwards apportioning the latter to mails and other service. Railroad operating expenses apply jointly to both passenger and freight trains, so that, with few exceptions, it is impossible to determine exactly from any published statistics

the cost of passenger train service as distinguished from freight. There are some items of train mile expense directly connected with movement which are less for passenger than for freight trains, whilst, on the other hand, many other expenses are greater for passenger than for freight, such as danger from casualties, necessity of expensive terminals, delays to other traffic through preference given to passenger trains, additional main tracks, and, particularly, higher standards of maintenance of roadbed required for high speed passenger train movement.

On account of the impossibility of separating the expenses, we assume that the above factors about balance each other and that the average cost of running *all* trains can be taken as either passenger or freight train mile cost, respectively, without serious error.

We allocate a proportion of the passenger train cost to the mails on the basis of the gross ton miles handled in each class of passenger traffic.

The relative revenues and expenses are shown on opposite page, mail revenues being as shown by 1908 Report of Postoffice Department, and other statistics as given in the 1907 Statistics of Railways of the United States, published by the Interstate Commerce Commission, or are computed therefrom.

ALL RAILROADS IN UNITED STATES.

Summary of Mail, Passenger and Freight Service.

	Mails.	Other Passenger.	Total Passenger.	Freight.

Gross revenue	$ 48,155,379	$621,939,274	$670,094,653	$1,823,651,99
Operating expenses	$ 96,322,357	$677,614,637	$773,936,994	$ 974,577,82
Taxes and interest on bonds	$ 23,503,973	$165,582,552	$189,086,525	$ 235,468,46
Total expenses	$119,826,330	$843,197,189	$963,023,519	$1,210,046,28
Surplus	—	—	—	$ 613,605,71
Deficit	$ 71,670,951	$221,257,915	$292,928,866	-
Ton mileage (thousands)—				
Revenue weight	484,683	3,411,592	3,896,275	236,601,39
Dead weight	10,498,482	73,877,400	84,375,882	256,833,89
Total gross	10,983,165	77,288,992	88,272,157	493,435,28
Tons dead weight per ton revenue	21.7	21.7	21.7	1.
Per gross ton mile (cents) —				
Gross earnings	0.438	0.805	0.759	0.36
Operating expenses	0.877	0.877	0.877	0.19
Earnings over operating expenses	—	—	—	0.17
Operating expenses over earnings	0.439	0.072	0.118	-
Taxes and interest on bonds	0.214	0.214	0.214	0.04

Surplus	—	—	—	0.12
Deficit	0.653	0.286	0.332	-
Per cent of operating expenses to earnings	200	109	115	5
Gross expenses to earnings	249	135	144	6

Figures exclude dividends, betterments and additions, etc.

The above shows that whilst passenger service as a whole is unremunerative, the mail earnings are hardly what they should be to pay a fair share of the railroad operating expenses only, regardless of taxes and interest.

Or, put in another way, our computations have shown that in each passenger train run the railroads haul an average of 43/100 of a mail car, and the contents of this car yielded average earnings of 9.4 cents for each mile run. The computation just made shows that each freight car run, loaded or empty, yields a revenue to the carrier of 10.5 cents per mile. Incredible as this may seem, it is understandable when we reflect that the railroads transport 1.1 tons of dead weight for each ton of freight for which they are paid; with mail they transport 21.7 tons, or twenty times as much. The freight rate is .759c per ton mile, the mail rate 9.94c, or only thirteen times as much.

Arguing in still another way: Average number of cars in each passenger train handled in United States is 3.95, of which mail cars amount to 0.43, or 11 per

cent. Eleven per cent. of the average earnings of a passenger train is 13.8 cents, but mail contributed only 9.4 cents. That is, it should pay 47 per cent. more than it does to be made to contribute a fair share to the insufficient earnings of a passenger train. Mails are fairly responsible on basis of space used for 11 per cent. of the cost of running a passenger train, or 16.17 cents, and as dead weight per foot of space is greater with mails, their proportion of train mile cost is even larger. They pay little more than one-half this cost.

By building larger capacity cars and larger engines, the cost of handling freight traffic, entirely in the control of the carrier, has been reduced to follow rate reductions and increased expenses.

On the other hand, because methods of conducting passenger traffic are largely—and mail traffic entirely—beyond their control the cost of handling mail and passengers has been steadily increasing, and, as revenue has not increased, the net revenue or margin of profit has been cut to a point where it is unremunerative.

The argument advanced by advocates of reduced mail pay, that increasing density permitted economies and that lower rates would yield more net, is not applicable when the carriers' hands are tied and measures of economy so successfully applied to handling freight are prohibited. The following will illustrate this:

On routes where pouch service is used mail is handled with express and baggage without much increase of cost over other passenger traffic. A somewhat greater mail traffic obliges the railroads to furnish apartment cars, at increased expense and dead weight for the postoffice feature, but still

permitting the railroads to carry other traffic in the same car. A still further increase in weight means the establishment of full R. P. O. lines for which the railroads receive extra, but inadequate, compensation, these cars being used for no other class of traffic and adding largely to the weight and cost of train service. Even after the route has been made an R. P. O. route, the railroads are not permitted to economize by carrying more mail in the car, and as traffic density grows the roads must under the requirements of the Department add more cars, almost in proportion to the business, as the loads carried in R. P. O. cars, as shown by recent special weighing, average only 2¾ tons, and many of them return empty—for which empty haul the railroads often receive no pay. When the mail business has assumed very large proportions and the R. P. O. cars have multiplied in ratio therewith, special trains are then added to carry the bulk of the mail, being run at very high speed and adding to the railroad expense account in a far higher degree per unit of business than any other class of traffic.

In contrast to the above, baggage and express are very generally hauled in the same and a much lighter and less costly car than the mail car, and increase in tonnage is accommodated by hauling greater loads per car. In the case of freight, increased density means larger car and train loads and greatly reduced costs of operating per ton mile.

Despite these differences in conditions, the automatic scale has secured to the Government a larger reduction in mail rates per ton mile in the last ten years than the percentage of fall in freight rates, despite higher labor and material costs of railroad operating. As a result, the mail business—which,

according to evidence introduced before the Congressional Committee of 1899, was unprofitable at that time, has been made more unprofitable at the present time by the heavy rate reductions of 1906-7.

As the greatest reduction made deals with mail routes on which traffic is heaviest, a consideration should be given to the following conditions of handling mail on such routes:

HEAVY TRAFFIC MAIL ROUTES.

On very many of the heavy traffic routes where the principal reduction in pay occurred a large part of the mail is now handled in special mail trains run at excessively high rates of speed. Such trains introduce the following conditions:

1. A very much greater liability to accident. A large proportion of the deplorable accidents that have occurred on the American railroads in recent years have occurred to excessively high speed trains, accidents to such trains being almost invariably destructive to life and property. An examination of serious accidents on the Union Pacific System and Southern Pacific Company for the calendar year 1906 shows that 36 per cent. of the property damage from all causes, including negligence, as traceable to trains not under control and excessive speed, whilst 30 per cent. additional damage was due to causes that might prevent inferior trains getting out of their way, such as keeping main line on time of superior trains, failure to observe signals or orders, etc.

2. Mail trains run at excessive high speed are much more expensive to operate than other trains, for the following reasons:

(*a*) Fuel consumption per traffic unit is very much greater at high speed because of diminished tractive

power of locomotives.

(*b*) A relative greater hauling capacity of locomotives must be consumed in moving trains at higher speeds.

(*c*) Excessive speed requires higher standards of track maintenance, double-tracking, block signals, heavy rail, better ballasted roadbed, etc., etc.

(*d*) High speed means increased wear and tear on equipment and track.

(*e*) High speed trains are expensive, delaying and adding to the cost of other traffic.

3. Speed of trains carrying mails has been constantly increased, a study made of the speed per hour made on fastest trains on which R. P. O. cars are handled on seventeen of the principal mail routes giving the following results:

Average of fastest train on seventeen mail routes:

Year.	Speed (Miles per Hour.)	Relative.
1905	42.21	136
1899	39.23	126
1890	34.35	110
1885	31.34	100
Average increase per year	0.55	

With the above increase in speed, rates paid the railroads have automatically decreased whilst expenses have largely increased to provide for the above greater speed and because of increase in prices of labor and materials of all kinds in the past five or six years. This increase in speed has been made

coincident with growth of freight traffic, which is the railroads' profitable business, *the non-profitable high speed trains delaying the profitable ones, increasing their cost and incurring liability to accident.*

4. Earnings of mail trains supposedly high are not higher than other passenger trains, which, as a whole, earn very much less per mile run than freight, relative figures being as shown by last report of the Interstate Commerce Commission—as 100 is to 218, whilst the cost of running passenger trains is as much, if not more. This is particularly the case with high speed passenger trains, which is the most unprofitable business in which railroads are engaged. (On Union Pacific System last year earnings per passenger train mile were $1.71, per freight train mile $4.31.)

5. Passenger engines in hauling fast passenger trains on principal main lines at the present time have assumed, on account of increased weight of equipment and excessive speed required, enormous proportions. We now have in such service on our lines engines weighing exclusive of tender 222,000 pounds, this power being 60 per cent. heavier and twice as costly as locomotives used in the same class of service ten years ago, burning double the amount of fuel. Engineers running these locomotives receive higher pay because of the greater size of these engines—to say nothing of recent increases made in their schedules. Such heavy power moving at fast speed is extremely destructive to the roadbed, requiring a much higher standard of maintenance than formerly, maintenance of way cost in the past few years having gone up 50 per cent. Engine failures are largely confined to fast passenger trains, and, in general, expenses are increased all along the

line because of their introduction.

6. As illustrating the additions to expenses because of increased track maintenance on account of fast passenger and mail trains, we have made a study of statistics, using the Interstate Commerce report of 1906 as a basis, of seven roads having a large proportion of fast passenger service and seven roads having a moderate speed passenger service, but with a large proportion of freight service. On the roads first named the average cost of maintenance of way per mile was $2,951, and on roads in the latter class $1,565. The operating expenses per train mile in the former class were $1.47, and in the latter $1.33. The roads in the former class, on account of large number of excessively high-speed trains, were obliged to double-track their lines, which directly increased maintenance expenses.

PAY FOR RAILWAY POSTAL CARS.

The large reduction made by Act of March 2, 1907, in pay for railway postal cars was made in face of large increase in the cost of constructing such cars, due to higher prices of labor and material and greater cost of meeting the more exacting specifications of the Postoffice Department. Changing to steel construction, increases in weight, and generally heavier operating expenses, have created an extremely large increase in cost of moving these cars. The standard railway postal car of only a few years ago, 60 feet long, weighed 80,000 pounds and cost about $5,500. The standard railway postoffice cars, 60 feet long, of wooden construction, used on the railroads with which I am connected, weigh over 100,000 pounds each, or one-fourth more weight, and costs 40 per cent. more, whilst our new standard postal cars of steel construction weigh 108,000

pounds and cost over $9,000, or 60 per cent. more than the car of a few years ago.

An argument sometimes made in favor of a lowering of R. P. O. car pay is that for apartment cars used in runs where mail density does not require a full car, no additional compensation is allowed. But we feel that a fair consideration of the circumstances under which mail is handled as compared with other traffic will justify the conclusion that this is not an argument in favor of reducing R. P. O. pay, but rather for allowing the railroad additional compensation for the apartment cars as well. Both services require the furnishing of special features in the way of traveling postoffices not required except for the convenience of the Postoffice Department to enable it to do work while mail is in transit, such as ordinarily performed in office buildings. The full postal car is more expensive to the roads, as it always means additional car service, whilst in some cases of apartment cars the space not occupied by the traveling postoffice is adequate to take care of baggage and express, though very frequently this service also means additional car movement that would not be necessary but for the postoffice feature.

The saving to the railroads from reduction in car mileage that would be possible if it were not obliged to furnish traveling postoffices, but could use the space occupied by racks and other postoffice features by loading additional mail in cars, would be many times the revenue allowed by the railway postal cars.

To illustrate: The car mileage of postal cars (changing apartment cars to full cars on basis of length) is 232,180,000 per annum; the ton mileage of mail 484,683,135, or 2.09 tons per car. From figures obtained from the Postoffice Department,

average car weights shown on page 59, table "EE," special mail weighing of 1907, it is ascertained that storage mail cars, which, of course, contain no postoffice features, carry an average of 7.04 tons of mail. At this rate the whole mail business could be carried by the movement of 68,844,000 car miles, or 163,336,000 less than actually employed, due to the postoffice features. The total railway postal car pay is only $4,567,366, or only 2.8 cents per additional car mile, whilst the operating expenses chargeable to running these 163,336,000 car miles, of 70 per cent. of the total movement, amount to $67,000,000.

But for the postoffice feature, the combined weight of an entire route could many times be handled in a single car such as is used for express instead of several heavy and expensive postoffice cars, whilst often extra cars for storage mail must be added, for which no extra pay is allowed, the cost of running these storage cars also not being included in the computation of cost of service, as no accurate statistics of their number or car mileage are available.

In addition to the furnishing of storage cars, although many R. P. O. routes are paid for on a basis of 40 foot cars, it is not economical for the railroads to construct such cars which are not interchangeable with other equipment and which would have to be thrown aside if through growth of traffic larger cars are afterwards required. As a result, full 60-foot R. P. O. cars have for years been furnished on many 40 and 50-foot routes, the railroad getting no credit for this, whilst on many other routes R. P. O. cars have been run in advance of the fixing of R. P. O. pay for them.

On a number of routes postal car pay has been

allowed for running full cars in one direction only, classing such routes as half-lines. This obliges the railroads to move the car in the opposite direction without pay, the small additional compensation of less than 4 cents per mile run received in one direction being entirely inadequate to compensate the road for the empty haul—to say nothing of allowing anything for moving it in direction for which pay is received. To illustrate: The Union Pacific Railroad in one case between Council Bluffs, Iowa, and Ogden, Utah, 1,003 miles, receives no pay for handling east-bound a 60-foot mail car, which is paid for west-bound only, six mail cars being required on this line. The R. P. O. pay per car mile, including movement in both directions, is only 2.24 cents, or about what would be received for transporting a single passenger, although a standard passenger coach has a capacity for 70 passengers.

In connection with the railway postoffice, an item not often considered is the value of transportation furnished clerks in the railway mail and compartment cars. Figuring this at 2 cents per mile, which is about the lowest passenger fare, the total value of this transportation for clerks in railway postoffice cars would be $8,600,000 per annum, or $4,000,000 more than the railroads receive for the handling of these cars, and the value of transportation in the case of apartment cars would be $4,000,000 per annum additional. In addition to this, a large amount of free transportation is required annually by the Postoffice Department for inspectors and other officers of the Department.

The Postoffice Department issues annually about six hundred traveling commissions to postoffice inspectors and other postal officials, and requires

railroad companies to honor such commissions for free transportation on all trains on all lines on which mails are carried. In some cases these commissions are issued to Government officials whose official duties are in no way connected with the transportation of mails on railroads. The railroads have no control whatever over the issuance of these commissions and can not even secure from the Postoffice Department a list of them, the Department holding that the list is confidential. These commissions are frequently used for personal travel in violation of the rulings of the Interstate Commerce Commission. In brief, the Postoffice Department in effect arbitrarily issued about six hundred annual passes over every mail carrying railroad in the United States, which is equivalent to about 200,000 annual passes.

POSTAL DEFICIT.

In investigating the subject of railway mail pay, we have been struck very forcibly with changes which have taken place in the revenues and expenditures of the Postoffice Department since 1899, when this subject was last reviewed. Although postal operations still show a deficit, it is a fact that its revenues have increased in a remarkable degree, and the deficit is certainly not due to the amounts paid to the railroads for hauling mail, as these payments are relatively far less now than formerly. Revenues of the Postoffice Department have grown from $102,000,000 in 1900 to over $191,000,000 in 1908, or 87 per cent., this increase in revenue in eight years being as great as the entire increase in the previous thirty-five years.

But in this same period of eight years there was an

increase of $100,600,000, or 93 per cent., in Postoffice Department expenditures, of which only $10,900,000, or 11 per cent., was paid to the railroads, $33,935,000, or 34 per cent., going to Rural Free Delivery, $25,000,000, or 25 per cent., to postmasters and their clerks, and the balance to other items.

The following statement shows for the year 1895 and for the years 1899 to 1908, inclusive, postal revenue and postal expenditures divided between amounts paid the railroads, cost of rural delivery and other expenditures:

	REVENUE.	EXPENDITURES.			
Year.		Paid Railroads.	Rural Delivery.	Other.	To
1895	$ 70,983,000	$31,189,000(a)	$ —	$57,637,000	$88,8
1899	95,021,000	35,775,000	150,000	65,607,000	101,6
1900	102,355,000	37,315,000	420,000	70,005,000	107,7
1901	111,631,000	38,161,000	1,778,000	75,616,000	115,5
1902	121,848,000	39,519,000	3,998,000	81,269,000	124,7
1903	134,224,000	41,377,000	8,102,000	89,305,000	138,7
1904	143,583,000	43,971,000	12,682,000	95,709,000	152,3
1905	152,827,000	45,482,000	20,824,000	101,093,000	167,3
1906	167,933,000	46,953,000	24,774,000	106,543,000	178,2
1907	183,585,000	49,831,000	26,643,000	113,754,000	190,2
1908	191,479,000	48,155,000	34,355,000	125,842,000	208,3

(a) Includes $1,646,741 accrued in favor of Pacific Railroads 1895, but not charged to postal expenditures.

The railroads are themselves large contributors to the revenu the Postoffice Department. It is ascertained that nine roads, cove 27,500 miles, pay annually $261,000 for postage stamps, or at th of $2,000,000 for the entire railroad mileage of the country.

The next statement shows clearly that the ratio of

expenses to receipts of the Postoffice Department would in 1908 have been but 91 per cent. and no deficit but for the expenditures made for Rural Free Delivery, the amount paid the railroads being now only 25 per cent. of the total revenue as compared with 41 per cent. in 1895.

RATIO OF EXPENSES OF POSTOFFICE DEPARTMENT TO POSTAL REVENUES 1895-1908.

Year.	Percentage of Postal Rev. Paid to R'ys.	Percentage Paid to Rural Free Del.	Percentage Paid to Other Expenses.	Total.
1895	41	0	75	116
1899	38	0	69	107
1900	36	0	69	105
1901	34	1	69	104
1902	32	3	67	102
1903	31	6	66	103
1904	31	9	66	106
1905	30	14	66	110
1906	28	15	63	106
1907	27	15	62	104
1908	25	18	66	109

In order to avoid a deficit, attention has been concentrated on this 25 per cent. of the postal expenditure, which we contend is at least not an unfair compensation to the railroads for services rendered. Though the proportion of the total revenue going to the railroads has fallen one-third in ten years, the deficit still remains, and is it reasonable to suppose that any reduction in railway mail pay would not be speedily absorbed in other directions? On the contrary, ought not efforts be concentrated to bring within reasonable figures the other expenses of the Department, which now absorb 84 per cent. of its revenue as compared with only 69 per cent. in 1900—despite an actual growth in postal revenue in the same time of $89,000,000, or 87 per cent.?

It will be noted from these figures that a reduction of 10 per cent. in the ratio of railway mail pay to

total revenue can be entirely wiped out by an increase of only 3 per cent. in other postal expenses, whilst a retrenchment of 10 per cent. in the latter would have put the Department almost on a paying basis, notwithstanding the heavy cost of Rural Free Delivery. From 1895 to 1908 actual totals show that the railroads' pay has increased 54 per cent. for handling 114 per cent. more mail tonnage, whilst in the same period other expenses of the Postoffice Department have grown 178 per cent., revenues increasing 149 per cent.

Increased mail business means a direct increase in postal revenue, as postage remains the same regardless of tonnage, but carrying this increased business on the part of the railroads means less proportionate revenue to them according to volume of tonnage, so that the proportion of the postal revenue they now receive is very much less than formerly. Labor, material, and the price of everything sold in commerce have advanced materially, as we all know, in the past seven or eight years; railway mail pay being practically the only thing that has decreased in the face of conditions that should have raised it.

As a large increase in mail tonnage means to the Postoffice Department about an equal increase in revenue with a decreased payment per ton to the railroads through lower rates, the avoidance of a deficit would seem not a difficult matter if other postal expenses were kept at least within sufficient control, so they would not increase faster than the increase in volume of mail handled.

The Postoffice Department enjoys this peculiar advantage of receiving with the growth of the country an increase in revenue directly in proportion

to the increase in business handled. In disbursing this revenue, it must pay less to the railroads in proportion to the density of business, thus retaining to apply on other expenses a larger net revenue year by year. It is reasonable to suppose that the cost of many branches of the Department should not increase in the same ratio as tonnage of mail (for example, that expenses of individual postoffices and administrative and general expenses should not grow in this proportion). Yet, regardless of these favorable influences, expenditures in other directions have absorbed the great net revenues after paying the railroads, and it is in these directions that the cause of the postal deficit must be looked for.

The growth of these expenditures, which since 1900 has been much faster than the rise in mail tonnage, is shown in the following comparison of 1908 with 1898:

	1908.	1898.	Increase.	Pct.
Ton mileage of mails handled by railroads	484,683,135	272,714,017	211,969,118	78
Postal revenues	$191,478,663	$89,012,619	$102,466,044	115
Less paid to railroads	48,155,379	34,379,227	13,776,152	40
Net applicable to other expenditures	143,323,284	54,633,392	88,689,892	162
Other expenditures	160,196,507	63,654,297	96,542,210	152
Deficit	16,873,223	9,020,905	7,852,318	87
Per ton of mail handled by railroads (cents)—				

Postal revenues	39.5	32.6	+6.9
Paid to railroads	9.9	12.6	-2.7
Net applicable to other items	29.6	20.0	+9.6
Other expenditures	33.1	23.3	+9.4
Deficit	3.5	3.3	+0.2

Note.—The increase in gross postal revenue per unit of mail handled by railroads is no doubt due to increase in city mail not handled by railroads.

Chicago, Ill., March 1, 1909.

THE DIMINISHED PURCHASING POWER OF RAILWAY EARNINGS

By C. C. McCain.

Chairman of the Trunk Line Association, New York, 1909; Formerly Auditor Interstate Commerce Commission.

INTRODUCTION.

The ten years or more which have elapsed since the resumption of industrial activity that began some time in 1897 have been characterized by changes in

rates of wages for substantially all kinds of labor, and in the prices of most commodities which amount to a profound and material alteration in the value of money. Wages of railway labor, prices of railway materials and supplies and prices of commodities carried by railways and of those produced by the purchasers of railway transportation have rapidly increased. This is equivalent to a decrease in the value of the money in which railway charges are paid *for the appreciation of commodities is the depreciation of money*. Commodities cannot have generally augmented value without money having diminished value. Railway rates have not been adjusted to this diminished value of money. The involuntary and unsolicited reduction in railway rates has gone so far as seriously to threaten the stability of railway wages and that of the whole railway industry. Some adjustment through compensatory advances in money rates (*i. e.*, nominal rates) is, therefore, absolutely necessary. The extent of the changes which have taken place, their relation to the problem of railway rates and the adjustments which they have made necessary are set forth in the following pages.

TYPICAL UNCHANGED RATES.

A fifteen-ton car-load of fourth class freight carried all-rail between Chicago and New York at any time during the year 1897 would have brought the railways transporting it $105.00 in gross receipts.

There has been no change in the class-rates between Chicago and New York since 1897 and the same quantity of freight, classified in the same way, produces the same gross receipts now that it did in 1897.[E]

The rates between Chicago and New York, as is very well known, are the basis of all rates in the region north of the James, Potomac and Ohio Rivers, and east of the Mississippi River and of a large proportion of the rates applicable to traffic originating or destined to any point in that region. Without a change in rates between Chicago and New York there could have been, during the continuance of the system of rate adjustment that has been in force since long prior to the year 1897, no general change in the rates based upon those in force between those cities.

WAGES OF RAILWAY EMPLOYEES.

More than forty per cent. of the gross receipts of the railways of the United States are expended in the payment of employees, the sums annually paid out for that purpose since 1897 being as follows:

Year.	Amount paid to employees.
1897	$465,601,581
1898	495,055,618
1899	522,967,896
1900	577,264,841
1901	610,713,701
1902	676,028,592
1903	(a)776,321,415
1904	817,598,810
1905	839,944,680
1906	(a)927,801,653
1907	1,072,386,427
Total	$7,781,685,214

(a) Includes $19,000,000 estimated for Chicago, Milwaukee & St. Paul in 1903 and $27,000,000 for the Southern Pacific in 1906.

It is a matter of common knowledge and of frequent comment that a given sum of money will now buy very much less in labor or commodities than it would in 1897. The change has been gradual but substantially continuous and the aggregate result has been enormous. The consequence of this change has worked great hardship to those whose incomes have not been adjusted to the changed purchasing power of money but fortunately the rates of wages of nearly all workmen and the prices of practically all products of labor expended upon farms or in factories or otherwise have been raised sufficiently to more or less completely offset it. The principal sufferers are those salaried employees whose salaries have not been readjusted and those whose incomes are received under contracts covering long periods of time or are derived from the marketing of commodities or services at prices more or less effectively controlled by custom or statute. Many of the owners of railway bonds are in the second class and all interstate railways are, as to the disposal of their services, in the third class.

As already noted, the gross revenue derivable by the railways from the transportation of a carload consisting of fifteen tons of fourth class freight between Chicago and New York is the same now that it was in 1897—*i. e.*, $105.00. But $105.00 is worth much less to any railway now than it was in 1897 for money is worth at any time what it will buy at that time. The reports of the Interstate Commerce Commission show the following increases in rates of

average daily wages paid to railway employees:

Class of Employees.	Wages per day.		
	1897.	1907.	Increase, per cent.
Station agents	$1.73	$2.05	18.50
Other stationmen	1.62	1.78	9.88
Enginemen	3.65	4.30	17.81
Firemen	2.05	2.54	23.90
Conductors	3.07	3.69	20.20
Other trainmen	1.90	2.54	33.68
Machinists	2.23	2.87	28.70
Carpenters	2.01	2.40	19.40
Other shopmen	1.71	2.06	20.47
Section foreman	1.70	1.90	11.76
Other trackmen	1.16	1.46	25.86
Switchmen, flagmen and watchmen	1.72	1.87	8.72
Telegraph operators and despatchers	1.90	2.26	18.95
Employees, account floating equipment	1.86	2.27	22.04
All other employees and laborers	1.64	1.92	17.07

The foregoing affords a means of ascertaining the real value of $105.00 of railway gross receipts in 1897 and 1907 and the decrease from the earlier to the later year. The following table shows the number of days labor of each of the different classes of railway labor which $105.00 would buy in each of the years indicated:

	Number of days labor purchasable for $105.00.

Class of Employees.	1897.	1907.	Decrease, per cent.
Station agents	60.7	51.2	15.65
Other station men	64.8	59.0	8.95
Enginemen	28.8	24.4	15.28
Firemen	51.2	41.3	19.34
Conductors	34.2	28.5	16.67
Other trainmen	55.3	41.3	25.32
Machinists	47.1	36.6	22.29
Carpenters	52.2	43.8	16.09
Other shopmen	61.4	51.0	16.94
Section	61.8	55.3	10.52
Other trackmen	90.5	71.9	20.55
Switchmen, flagmen and watchmen	61.0	56.1	8.03
Telegraph operators and despatchers	55.3	46.5	15.91
Employees, account floating equipment	56.5	46.3	18.05
All other employees and laborers	64.0	54.7	14.53
Average			16.27

The foregoing shows that on the average the gross railway receipts derived from the service assumed as the basis of the calculation would purchase 16.27 per cent. less of the necessary services of railway employees, in 1907 than in 1897 and what is true of the receipts from this service is true of every dollar received by a railway—that is, no railway dollar will pay for more than eighty-four per cent., on the average, as much railway labor as it would in 1897.

The change in railway rates necessary fully to offset this decrease in the value of the money in which rates are paid would amount to an apparent advance of 19.43 per cent, of the money rates now in force.

COST OF FUEL FOR LOCOMOTIVES.

Next to labor the principal single item of expense incurred in the operation of the railways of the United States is for the fuel used in their locomotives. The expenditures for this purpose now constitute about eleven per cent. of the cost of operation and since 1897 have been as follows:

Year.	Cost of fuel for locomotives.
1897	$65,044,670
1898	72,469,777
1899	77,187,344
1900	90,593,965
1901	104,926,568
1902	120,074,192
1903	146,509,031
1904	158,948,886
1905	156,429,245
1906	170,499,133
1907	200,261,975
Total	$1,362,944,786

Thus, from 1897 to 1907, the cost of fuel for locomotives, in spite of the economies in its use partially suggested by the contemporaneous increase in the train-load of freight from 204.62 to 357.35 tons, or 74.64 per cent., increased 207.88 per cent., while passenger traffic increased but 126.15 per cent. and freight traffic by 148.69 per cent. Thus while there was one dollar spent for locomotive fuel in 1897 for each $17.25 of gross railway receipts the ratio had declined by 1907 to one dollar for locomotive fuel for each $12.93 of gross receipts—a

difference which must plainly be productive of profound changes in the proportion of gross receipts remaining after the payment of necessary operating expenses. The average prices of coal, per ton of 2,000 pounds, at the mines, in the several states, in the years 1897 and 1907, as given by the United States Geological Survey, were as follows:

State.	Price per ton.		
	1897.	1907.	Increase, per cent.
Alabama	$0.88	$1.29	46.59
Arkansas	1.06	1.68	56.49
California	(a)2.55	(a)3.81	49.41
Colorado	1.17	1.40	19.66
Georgia	(b)1.03	(b)1.38	33.98
Idaho	(c)3.33	(c)4.10	23.12
Illinois	.72	1.07	48.61
Indiana	.84	1.08	28.57
Iowa	1.13	1.62	43.36
Kansas	1.18	1.52	28.81
Kentucky	.79	1.06	34.18
Maryland	.76	1.20	57.89
Michigan	1.46	1.80	23.29
Missouri	1.08	1.64	51.85
Montana	1.76	1.94	10.23
New Mexico	1.38	1.46	5.80
North Dakota	1.08	1.61	49.07
Ohio	.78	1.10	41.03
Oklahoma	1.34	2.04	52.24
Oregon	3.09	2.34	Decrease
Pennsylvania—			
Bituminous	.69	1.04	50.72
Anthracite	1.51	1.91	26.49
Tennessee	.81	1.25	54.32
Texas	1.52	1.69	11.18
Utah	1.19	1.52	27.73

Virginia	.67	1.02	52.24
Washington	1.94	2.09	7.73
West Virginia	.63	.99	57.14
Wyoming	1.21	1.56	28.93

(a) Includes Alaska.

(b) Includes North Carolina.

(c) Includes Nebraska.

It will be noted that the cost of coal increased in every state of considerable production. In California much of the locomotive fuel used consists of petroleum, and the same fuel is used to some extent in Oregon and New Mexico.

The number of tons of coal purchasable at the mines in the several states with $105.00, the gross revenue from the typical shipment which has been used for illustrative purposes, in 1897 and in 1907, would have been as follows:

State.	Tons of coal purchasable for $105.00.		
	1897.	1907.	Decrease, per cent.
Alabama	119	81	31.93
Arkansas	99	62	37.37
California	41	28	31.71
Colorado	90	75	16.67
Georgia	102	76	25.49
Idaho	32	26	18.75
Illinois	146	98	32.88
Indiana	125	97	22.40

Iowa	93	65	30.11
Kansas	89	69	22.47
Kentucky	133	99	25.56
Maryland	138	88	36.23
Michigan	72	58	19.44
Missouri	97	64	34.02
Montana	60	54	10.00
New Mexico	76	72	5.26
North Dakota	97	65	32.99
Ohio	135	95	29.63
Oklahoma	78	51	34.62
Oregon	34	45	Increase
Pennsylvania—			
Bituminous	152	101	33.55
Anthracite	70	55	21.43
Tennessee	130	84	35.38
Texas	69	62	10.14
Utah	88	69	21.59
Virginia	157	103	34.39
Washington	54	50	7.41
West Virginia	167	106	36.53
Wyoming	87	67	22.99

In this connection it should be noted that the United States Department of Labor reports an increase, between 1897 and 1907, in the price of anthracite of 29.23 per cent., and in bituminous coal from the Georges Creek region of 85.54 per cent.

COST OF RAILWAY SUPPLIES.

Bulletin No. 75, of the United States Bureau of Labor, shows average prices for the following articles used by railways, or, as raw materials, for the manufacture of railway supplies:

Price.

Articles.	Unit.	1897.	1907.	Increase, per cent.
Axes, M. C. O. Yankee	Each	.39	.68	74.36
Coke, Connellsville, furnace	Ton	1.62	2.83	74.69
Bar iron, best refined, from mill	Pound	.011	.0175	59.09
Barbed wire, galvanized	Cwt.	1.80	2.63	46.11
Copper wire, bare	Pound	.1375	.2402	74.69
Doorknobs, steel, bronze, plated	Pair	.166	.450	171.08
Files, 8-inch	Dozen	.81	1.00	23.46
Hammers, Magdole, No. 1½	Each	.38	.47	23.68
Lead pipe	Cwt.	4.32	6.71	55.32
Locks, common, mortise	Each	.0833	.20	140.10
Nails, cut, 8-penny, fence and common	Cwt.	1.33	2.16	62.41
Nails, wire, 8-penny, fence and common	Cwt.	1.49	2.12	42.28
Pig iron, Bessemer	Ton	10.13	22.84	125.47
Pig iron, foundry No. 1	Ton	12.10	23.90	97.52
Pig iron, foundry No. 2	Ton	10.10	23.87	136.34
Pig iron, gray, forge, southern, coke	Ton	8.80	20.99	138.52
Steel billets	Ton	15.08	29.25	93.97
Steel rails	Ton	18.75	28.00	49.33
Steel sheets, black, No. 27	Pound	0.019	0.025	31.58
Tin, pig	Pound	.1358	.3875	185.35
Tin, plates, domestic, Bessemer, coke	Cwt.	3.18	4.09	28.62
Zinc, sheet	Cwt.	4.94	7.49	51.62

Brick, common domestic	M	4.94	6.16	24.70
Cement, Rosendale	Bbl.	.75	.95	26.67
Doors, pine	Each	.81	1.88	132.10
Lumber, hemlock	M feet	11.00	22.25	102.27
Lime, common	Bbl.	.72	.95	31.94
Linseed oil, raw	Gal.	.33	.43	30.30
Lumber, maple, hard	M feet	26.50	32.25	21.70
Lumber, oak, white, plain	M feet	36.25	55.21	52.30
Lumber, oak, white, quartered	M feet	53.83	80.00	48.62
Lumber, pine, yellow	M feet	16.44	30.50	85.52
Lumber, poplar	M feet	30.67	58.08	89.37
Shingles, cypress	M	2.35	4.23	80.00
Lumber, spruce	M feet	14.00	24.00	71.43
Window glass, American, single, firsts,				
6 by 8 to 10 by 15 inch	50 sq. ft.	2.20	2.81	27.73
Window glass, American, single, thirds,				
6 by 8 to 10 by 15 inch	50 sq. ft.	1.96	2.24	14.29

The bulletin indicates that putty, Portland cement and Ames shovels are about the only exceptions to the general rule of greatly increased prices of railway supplies. It is plain that as to all of the important supplies and materials included in the foregoing list the $105.00 of gross receipts from the typical shipment heretofore used as an example would show the same, or a greater, loss in purchasing power which has characterized the comparisons previously shown.

Evidence from official sources thus shows that in purchasing the same quantities either of labor or of supplies the railways have now to expend much larger sums than they did ten years ago. The official statistics already quoted are fully supported and their pertinence to the problem in hand is fully proven by the accounting records of the purchasing departments of the several railways. The Trunk Line Association has obtained detailed information concerning purchases in 1897 and 1907, by important railways represented in its organization, and this information has been carefully and accurately tabulated. A table showing the largely increased cost of articles which this tabulation reveals has been made Appendix B and will be found at pages 194 to 198 of this pamphlet. An examination of this appendix and, particularly of the classes of labor and of the articles shown to have greatly increased in cost, discloses the unquestionable fact that the increased cost pervades the whole aggregate of operating expenses and that there is no considerable exception to the rule that every item of operating expenditure is now very much greater than it was in 1897.

OTHER COSTS OF SUPPLYING RAILWAY SERVICES.

The cost of railway transportation which must be borne out of the receipts for railway services includes operating expenses, interest on capital and taxes. Before discussing the increase in the rate of interest demanded it is worth while to note that the exactions made by the taxing power upon the railways have also notably increased.

The sums annually paid as taxes on railway property since 1897 follow:

	Miles operated and included in reports of taxes paid.	Taxes paid.	
		Amount.	Average per mile operated.
1897	183,284.25	$43,137,844	$235.36
1898	184,648.26	43,828,224	237.36
1899	187,534.68	46,337,632	247.09
1900	192,556.03	48,332,273	251.00
1901	195,561.92	50,944,372	260.50
1902	200,154.56	54,465,437	272.12
1903	205,313.54	57,849,569	281.76
1904	212,243.20	61,696,354	290.69
1905	216,973.61	63,474,679	292.55
1906	222,340.30	74,785,615	336.36
1907	227,454.83	80,312,375	353.09
	* *	$625,164,374	* *

Thus in the years from 1897 to 1907 railway taxation per mile of line has increased from $235.36 to $353.09, or no less than 50.02 per cent.

COST OF REGULATION.

Closely akin to taxation of railway property are the additional expenses which have to be met out of railway revenues on account of public regulation. The increased and, in many cases, minute regulation imposed by the Hepburn law of 1906 and the rules and requirements established thereunder by the Interstate Commerce Commission and by various State enactments have caused the railways many new and augmented expenditures. Among the many purposes for which these expenditures have become necessary are those enumerated below:

1. Preparation, publication, filing, posting, etc., of

rate schedules.

2. Compilation and tabulation of statistics, preparation and filing of annual reports of operation and finance.

3. Litigation under regulatory statutes including cases before National and State commissions and including legal and incidental expenses thereof.

4. Appliances and special equipment required by safety appliance laws.

5. Additional employees and additional wages paid on account of laws regulating the hours of labor.

Besides these and other positive additions to the expenses of operation there have been considerable reductions in revenue brought about by the various regulative statutes. Thus there have been reductions in revenue caused by the following:

1. Orders, or suggestions having practically the force of orders, requiring changes in the classification of freight.

2. Orders, or suggestions having practically the force of orders, requiring reductions in rates.

3. Statutory reduction in the rates of compensation for carrying the mail.

4. Reduction of compensation for carrying the mail made by executive order.

A painstaking effort to secure accurate statistics concerning recent increases in these expenditures and losses has been made and data for that purpose have been supplied by many of the railways operating east of the Mississippi river. These data are necessarily incomplete and fragmentary, the accounts of many of the companies not being kept in

such form as fully to disclose the items desired. In few cases were the data which could be obtained for any line complete—some companies were able to report particular items while other companies could not give these, but could supply others. Generally speaking, it should be realized that the tabulation of these reports makes a showing which is incomplete mainly in the form of omissions. A conservative computation discloses that the costs due to increases in expenses or reductions in revenue imposed by statutes or by Commissions acting under Federal and State regulatory laws costs the railways of the United States approximately $200,000,000 in two years. That this is not an exaggerated estimate will be appreciated by reference to the principal general items of expenditures as enumerated on the preceding pages. Until these items shall have been assigned a proper classification in the accounts of the railroads the accurate results may not be ascertained, but it will at once occur to those in any measure informed that there has been an enormous increase of work and expense placed upon the carriers to conform to the innumerable requirements of State and Federal laws and the rulings of the Commissions thereunder, and that this burden has extended to all departments of the carriers. Litigation and miscellaneous expenses appear as a large part of these new costs, and in addition the carriers' revenues have been greatly depleted either directly by the laws, orders of Commissions or suggestions having practically the force of orders, resulting in reductions of freight and passenger charges.

COST OF OBTAINING NEW CAPITAL.

In the matter of interest on the capital employed the railways have apparently enjoyed an advantage

which would seem to offset the natural tendency of interest rates to rise in response to the stimulus of augmented cost, in dollars and cents, of the commodities entering into the budget of expenditures of the average recipient of interest—that is to say, the advantage growing out of the fact that a large proportion of railway capital is secured under long-time contracts and that many of the contracts now in force unquestionably run back to a time before the extensive depreciation of the American dollar began. This advantage is a real one, but its extent is easily exaggerated. For the purpose of throwing light upon the effect upon the cost of railway transportation of the rise in interest rates which has characterized recent years an analytical study of railway indebtedness (including guaranteed dividends) amounting, in the aggregate, to $9,499,099,065 has been made. This sum represents indebtedness now outstanding and includes some duplication owing to the fact that certain of the securities represented in the aggregate are themselves based upon other securities deposited as collateral or held in the treasuries of the corporations making the secondary issues; duplication which could not be eliminated without adding vastly to the difficulty of the inquiry with no corresponding gain in the accuracy of the result. These data are also subject to the qualification necessarily due to the fact that all of the issues included were not sold at par. In some cases a small premium was doubtless obtained and in other cases a slight discount was required, but, nevertheless, it is believed that the data fairly indicate the general change in interest rates on capital loaned to railways. Of the total outstanding indebtedness of $9,499,099,065 the portion incurred during the years 1897 to 1908, inclusive, amounts to

$5,466,340,252, or 57.55 per cent. The following table shows the amounts incurred at the different rates during each of the years named:

Rate of Interest and Amount Incurred During Year and Outstanding.

Year.	6½ per cent.	6 per cent.	5 per cent.	4½ per cent.
1897	—	$11,039,000	$42,126,000	$7,700,000
1898	—	487,000	7,486,700	207,000
1899	—	13,094,000	29,197,000	15,896,000
1900	—	1,133,000	15,926,351	7,979,000
1901	—	1,777,775	38,840,000	37,845,378
1902	—	—	44,949,508	19,949,600
1903	—	1,552,000	53,592,030	22,092,500
1904	—	256,000	61,191,561	30,241,729
1905	—	1,810,000	66,346,000	73,996,100
1906	$350,000	1,180,579	141,786,511	40,922,181
1907	—	30,325,000	289,458,892	177,805,962
1908(a)	—	114,504,970	47,546,385	2,850,000
Total	$350,000	$177,159,324	$838,446,938	$437,485,450

Rate of Interest and Amount Incurred During Year and Outstanding.

Year.	4 per cent.	3¾ per cent.	3½ per cent.	3 per cent.
1897	$205,882,500	—	$221,663,000	$4,998,275
1898	187,898,000	—	194,724,325	—
1899	277,784,400	—	126,734,000	43,231,272
1900	83,735,500	—	62,577,000	43,689,000
1901	382,131,250	330,000	51,635,000	—
1902	348,038,050	—	58,641,500	—
1903	317,948,000	—	22,308,000	9,866,435
1904	193,499,500	—	39,890,000	—
1905	364,507,404	—	112,645,155	16,000,000
1906	251,037,681	48,262,548	31,098,670	—
1907	210,399,075	—	423,000	—
1908(a)	101,380,000	—	—	—
Total	$2,924,181,360	$48,592,548	$922,339,650	$117,784,982

(a) January to July, only.

Even a cursory examination of the foregoing statement shows that the average rate of interest demanded by those who supply railway capital has greatly increased. In 1897 and 1898 the largest aggregate of new indebtedness was incurred at the rate of three and one-half per cent. per annum; in 1899, 1900, 1902, 1903, 1904, 1905 and 1906 the preponderating portion was at four per cent.; in 1907 the largest aggregate was at five per cent., while in the months of 1908 for which data are available the greater portion was obtained at six per cent. Loans at three and three and one-half per cent., which supplied a considerable aggregate during all of the years to and including 1906 and particularly in the earlier years of the period, had substantially disappeared before 1907 and no funds were procured at less than four per cent. during the portion of 1908 which is included. The increased volume of loans at five and six per cent. is equally marked. The following table makes this analysis clearer by showing the total borrowings of each year and the percentage at each rate:

		Rate of Interest and Proportion of Total Indebt Incurred During Year and Outstanding.						
Year.	Borrowed.	6½ per cent.	6 per cent.	5 per cent.	4½ per cent.	4 per cent.	3¾ per cent.	3½ per cent.
1897	$493,408,775	—	2.24	8.54	1.56	41.73	—	44.92
1898	390,803,025	—	.12	1.92	.05	48.08	—	49.83
1899	505,936,672	—	2.59	5.77	3.14	54.91	—	25.05
1900	215,039,851	—	.53	7.40	3.71	38.94	—	29.10
1901	512,559,403	—	.35	7.58	7.38	74.55	0.07	10.07

1902	471,578,658	—	—	9.53	4.23	73.80	—	12.44
1903	427,358,965	—	.36	12.54	5.17	74.40	—	5.22
1904	325,078,790	—	.08	18.82	9.30	59.53	—	12.27
1905	635,304,659	—	.28	10.44	11.65	57.38	—	17.73
1906	514,638,170	0.07	.23	27.55	7.95	48.78	9.38	6.04
1907	708,351,929	—	4.28	40.86	25.10	29.70	—	.06
(a)1908	266,281,355	—	43.00	17.86	1.07	38.07	—	—
Total	5,466,340,252	0.01	3.25	15.34	8.00	53.49	0.89	16.87

(a) January to July, only.

The foregoing table shows that while, in 1897, the railways borrowed 87.66 per cent. and in 1898, 97.91 per cent. of the new capital obtained in the form of loans at four per cent. or better, they were compelled, in 1907, to promise more than four per cent. on 70.24 per cent. and in the first six months of 1908 to promise six per cent. on 43.00 of their borrowings. The significance of these figures is made still more apparent by the following table, which shows opposite the aggregate borrowings of each year, the interest charges thereon and the average rate upon the portion of the capital which it represents:

Year.	Borrowed.	Aggregate interest charges.	Av. rate interest.
1897	$ 493,408,775	$ 19,258,593	3.90
1898	390,803,025	14,744,141	3.77
1899	505,936,672	19,804,814	3.91
1900	215,039,851	8,073,638	3.75
1901	512,559,403	20,856,559	4.07
1902	471,578,658	19,119,182	4.05
1903	427,358,965	17,561,577	4.11
1904	325,078,790	13,571,945	4.17
1905	635,304,659	25,758,601	4.05

1906	514,638,170	21,964,215	4.27
1907	708,351,929	32,722,081	4.62
1908(a)	266,281,355	13,431,067	5.04
Total	$5,466,340,252	$226,886,413	4.15

(a) January to July, only.

The foregoing shows an increase, in the average interest rate demanded upon new loans to railway corporations, from 3.90 per cent. in 1897 to 4.62 in 1907 and 5.04 in 1908. The increase in the rate from 1897 to 1907 was equal to 18.46 per cent. and from 1897 to 1908 it was 29.23 per cent. In other words, one dollar would pay interest on as much of the new capital secured by loans in 1897 as $1.29 would of the loans of 1908. The gross revenue of $105.00 obtained in both years from the typical shipment of fourth class freight between Chicago and New York, at the unchanged rate applicable to such a shipment in both years, would pay interest on $2,692.31 secured in the earlier year and on only $2,083.33 secured in the later year. The loss in power to purchase loaned capital therefore amounts to 22.62 per cent. In order fully to appreciate the importance of this rise in the cost of capital it is necessary to realize that very great sums of new capital are annually required for the necessary augmentation and improvement of railway facilities. This is made evident by the total yearly borrowings as shown in the foregoing tables, but it should be borne in mind that further sums, certainly not less extensive in the aggregate, have been raised through issues of stock, which promise no certain rate of interest, although these sums could not have been obtained unless the

subscribers had considered it probable that they would, in the long run, receive returns in dividends at least equal to the "going rate" of interest. It is interesting to note that the aggregate of new capital secured by loans in each year has very largely exceeded the total interest payments to all capital obtained by borrowing. This is shown by the following table, the data in which, except those as to the sums obtained by loans, are from the reports of the Interstate Commerce Commission:

Year.(a)	New capital borrowed.	Interest on funded debt.	Per ct. int. paym'ts new borrow'gs.
1898	$ 390,803,025	$ 237,578,706	60.79
1899	215,039,851	241,657,535	47.76
1900	215,039,851	242,998,285	113.00
1901	512,559,403	252,594,808	49.28
1902	471,578,658	260,295,847	55.20
1903	427,358,965	268,830,564	62.90
1904	325,078,790	282,118,438	86.78
1905	635,304,659	294,803,884	46.40
1906	514,638,170	305,337,754	59.33
1907	708,351,929	323,733,751	45.70
Total	$4,706,650,122	$2,709,949,572	57.58

(a) Accurate data for payments to capital in 1897 are not available.

FROM THE VIEWPOINT OF THE PURCHASER OF THE SERVICES.

So far the extent and significance of the changes in the value, or purchasing power, of money have been considered from the point of view of those who produce and sell railway transportation. But equally

striking changes will appear and similar conclusions are inevitable when recent history is reviewed in the aspect which it presents to those whose earnings are devoted, in part, to the purchase of the services which the railways supply. For the important consideration to the wage-earner who wishes to travel by rail or who buys commodities that have been so carried, or to the producer whose products must go to market over railway routes, is not, how much money must be paid for the railway services, but, rather, how much labor must be expended, or what quantity of his goods must be produced, in order to obtain that sum of money. If the earnings of a particular wage-earner have increased from fifty to seventy-two cents per hour, a railway service is cheaper, to him, if it costs twelve cents than it was at ten cents when his earnings were on the fifty-cent basis, for he now procures with the fruit of ten minutes' toil what formerly cost the result of twelve minutes' labor. In Bulletin No. 77, just issued by the United States Bureau of Labor, the official statistician presents data showing the relative wages per hour of many different classes of wage-earners, not including railway employees, in 1897 and 1907. While these data show that wages have almost uniformly advanced (there are ten somewhat questionable exceptions among the 342 classes) the data supplied by the Interstate Commerce Commission show that during the same period average railway freight rates have declined from 7.98 mills to 7.59 mills per ton per mile, or 4.89 per cent. A table presenting and based upon these official statistics and showing the relative wages per hour of the various classes of labor, in 1897 and 1907, the percentage increase in wages rates per hour and the increased command over railway freight services which these wage-

earners have obtained through the combined effect of higher wages and lower ton-mile rates is given in Appendix C[F]. In studying the data presented in this appendix it should be borne in mind that the wages are relative and not absolute. They mean, for example, that the average male blacksmith in the agricultural implement industry was paid, in 1907, $1.25 for the same quality and period of labor for which he was paid a little less than ninety-six cents, in 1897. This increase amounted to 30.58 per cent. of the wages rate of 1897, and, combined with a decreased cost of railway freight service of 4.89 per cent., which made 95.11 cents go as far in purchasing the latter in 1907 as one dollar would go in 1897, gave him 37.29 per cent. greater command over railway freight services.

In an earlier bulletin, No. 75, published during the current year, the Bureau of Labor continued its "index numbers," which show, in similar manner, the average relative wholesale prices of the commodities entering into the ordinary budget of family expenditures. For the purpose of presenting the changes in these prices on a uniform basis the Bureau represents the averages for the ten years from 1890 to 1899, inclusive, as one hundred per cent. and reduces the averages for each year to percentages of the averages for the basic period. The following table presents these figures for the year 1897 to 1907, inclusive:

Relative Wholesale Prices.

Year.	Farm Products.	Food.	Cloths and Clothing.	Fuel and Lighting.	Metals and Implements.

1890-1899	100.00	100.00	100.00	100.00	100.00
1897	85.2	87.7	91.1	86.4	86.6
1898	96.1	94.4	93.4	95.4	86.4
1899	100.0	98.3	96.7	105.0	114.7
1900	109.5	104.2	106.8	120.9	120.5
1901	116.9	105.9	101.0	119.5	111.9
1902	130.5	111.3	102.0	134.3	117.2
1903	118.8	107.1	106.6	149.3	117.6
1904	126.2	107.2	109.8	132.6	109.6
1905	124.2	108.7	112.0	128.8	122.5
1906	123.6	112.6	120.0	131.9	135.2
1907	137.1	117.8	126.7	135.0	143.4

Year	Lumber and Building Materials.	Drugs and Chemicals.	House Furnishing Goods.	Miscell-aneous.	All Com-modities.
1890-1899	100.00	100.00	100.00	100.00	100.00
1897	94.4	94.4	89.8	92.1	89.7
1898	95.8	106.6	92.0	92.4	93.4
1899	105.8	111.3	95.1	97.7	101.7
1900	115.7	115.7	106.1	109.8	110.5
1901	116.7	115.2	110.9	107.4	108.5
1902	118.8	114.2	112.2	114.1	112.9
1903	121.4	112.6	113.0	113.6	113.6
1904	122.7	110.0	111.7	111.7	113.0
1905	127.7	109.1	109.1	112.8	115.9
1906	140.1	101.2	111.0	121.1	122.5
1907	146.9	109.6	118.5	127.1	129.5

From the data in the foregoing table, which show advances averaging nearly forty-five per cent., the following table, indicating the present purchasing power over railway freight service of each class of articles, in a manner similar to that adopted to measure the increased power of labor to buy railway freight transportation, has been derived:

Commodities.	Relative prices.		Increased power to purchase railway freight services	
	1897.	1907.	Increase per cent.	Increase per cent.
Farm products	85.2	137.1	60.92	69.19
Food	87.7	117.8	34.32	41.22
Cloths and clothing	91.1	126.7	39.08	46.23
Fuel and lighting	96.4	135.0	40.04	47.24
Metals and implements	86.6	143.4	65.59	74.10
Lumber and building materials	90.4	146.9	62.50	70.85
Drugs and chemicals	94.4	109.6	16.10	22.07
House furnishing goods	89.8	118.5	31.96	38.74
Miscellaneous	92.1	127.1	38.00	45.00
All commodities	89.7	129.5	44.37	51.79

AGRICULTURAL PRODUCTS AND FREIGHT RATES.

The statistician to the United States Department of Agriculture obtains annually a very large number of reports from farmers as to prices obtained for their products and these are carefully tabulated. The results show the average prices, at the farms, of the principal agricultural products. The following table shows the increased prices obtained for such products, and the increased power which these producers enjoy, per unit of their products, to purchase railway freight services:

	Prices.	Increased power to purchase railway

Product.	Value of crop of 1907.	Unit.	1897.	1907.	Increase per cent.	freight services per cent.
Corn	$1,336,901,000	Bushel	$0.263	$0.516	96.20	106.28
Wheat	554,437,000	"	.808	.874	8.17	13.73
Oats	334,568,000	"	.212	.443	108.96	119.70
Barley	102,290,000	"	.377	.666	76.66	85.74
Rye	23,068,000	"	.447	.731	63.53	71.94
Buckwheat	9,975,000	"	.421	.698	65.80	74.32
Potatoes	184,184,000	"	.547	.618	12.98	18.79
Hay	773,507,000	Ton	6.62	11.68	76.44	85.51
Cotton	613,630,436	Pound	.066	.104	57.58	65.68
Total	$3,932,560,436					

Detailed tables presenting the data from which the foregoing averages for the whole country have been derived and showing prices and purchasing power over freight service are given in Appendix D[G]. These tables disclose the uniformity, throughout the United States, of the advance in agricultural prices and of the augmented command of agricultural producers over railway freight service.

FARM ANIMALS AND FREIGHT RATES.

The Department of Agriculture of the United States also collects data concerning the value of farm animals and annually publishes the average values reported for the first day of each successive year. All classes of farm animals have increased in value since 1897 and each represents a great command over railway freight services, for the sum representing the average value of each animal will now buy much more freight transportation than it would in 1897. This is shown by the following table:

		Prices.			Increased power to purchase railway freight services
	January 1, 1908.	January 1, 1897.	January 1, 1908.	Increase per cent.	per cent.
			$		
Horses	$1,867,530,000	$31.51	93.41	196.45	211.69
Mules	416,939,000	41.66	107.76	158.67	171.97
Milch cows	650,057,000	23.16	30.67	32.43	39.24
Cattle, except milch cows	845,938,000	16.65	16.89	1.44	6.65
Sheep	211,736,000	1.82	3.88	113.19	124.15
Swine	339,030,000	4.10	6.05	47.56	55.14
Total	$4,331,230,000	—	—	—	—

In considering the foregoing the fact that the prices relate solely to animals on farms should be borne in mind. They are doubtless somewhat lower than for animals elsewhere located, but prices of the latter have probably moved in the same direction and in about the same extent.[H]

RAILWAY RATES IN 1897 AND AT PRESENT MEASURED IN MONEY.

Throughout the foregoing discussion reference has frequently been made to what has been assumed to be a typical shipment, that is, a fifteen-ton carload of fourth class freight transported between Chicago and New York. The typical service rendered in moving this shipment would have brought the railways gross receipts of $105.00, in 1897 or in any of the intermediate years, and would bring the same amount now. The period in question, however, has

witnessed many thousands of changes in railway rates on particular commodities and between particular points, and, confining the discussion for the present to the mere expression of rates in terms of money, it is necessary to inquire whether the general level of all rates has been raised or lowered and how far the change, if any is discovered, has gone in either direction. Now, it is manifestly impossible to correlate all rates in a single tabulation, and, giving to each its proper weight in the determination of a final average, thus establish definitely and with complete precision the relation between the money rates of 1897 and those at the present time. The number of different articles shipped and the great number of different points at which each article may enter into the aggregate of traffic movement or to which it may be destined, as well as the elusive character of the factors which would indicate the relative weight properly to be allowed to each separate rate, wholly preclude the adoption of such a method. Fortunately, however, American railway accountants long ago adopted a measure of traffic movement, which was later officially sanctioned by its adoption for the same purpose by the Interstate Commerce Commission, and which, when compared with the gross receipts from freight service, results in an average that throws great light upon the movement or absence of movement in the general level of the rates charged. When the weight of any shipment, expressed in tons, is multiplied by the distance which it is carried, expressed in miles, the resulting product gives a measure of the service performed, in units which are designated as "ton-miles." When the ton-miles (or ton-mileage) of all shipments are aggregated the total represents the sum of all services. The result of

dividing the revenue from a particular shipment by its ton-mileage is the average rate per ton per mile for that shipment and if the sum representing the aggregate gross receipts from all railway freight services is divided by the aggregate ton-mileage of those services the quotient obtained is the average ton-mile rate for all services. During the period from 1897 to 1907 these data have been compiled annually by the Interstate Commerce Commission under the direction of Professor Henry C. Adams, its statistician. The average rates thus established are given both for the United States as a whole and for each of ten districts or groups. The following table shows these averages as they are given in the successive annual statistical reports of the Commission:

TABLE LEGEND

REGION:	
A = =	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.
B = =	New Jersey, Delaware, Maryland, New York, east of Buffalo, Pennsylvania, east of Pittsburgh, West Virginia, North of Parkersburg.
C = =	New York, west of Buffalo, Pennsylvania, west of Pittsburgh, Michigan, lower Peninsula, Ohio, Indiana.
D = =	West Virginia, south of Parkersburg, Virginia, North Carolina and South Carolina.

E == Kentucky, Tennessee, Georgia, Florida, Alabama, Mississippi, Louisiana, east of Mississippi River.

F == Illinois, Wisconsin, Minnesota, Iowa, Missouri, north of St. Louis and Kansas City, South and North Dakota, east of Missouri river, Michigan, upper Peninsula.

G == Nebraska, Wyoming, Montana, North and South Dakota, east of Missouri River, Colorado, north of Denver.

H == Arkansas, Indian Territory, Oklahoma Territory, Kansas, Colorado, south of Denver, Texas, Panhandle, New Mexico, north of Santa Fe.

I == Texas, except Panhandle, Louisiana, west of Mississippi River, New Mexico, north of Santa Fe.

J == Washington, Oregon, Idaho, California, Arizona, Nevada, Utah, New Mexico, western portion.

		Year and average rate in mills per ton per m								
Group.	Region.	1897	1898	1899	1900	1901	1902	1903	1904	1905
I.	A	12.02	11.76	11.23	11.52	11.51	11.72	11.67	11.96	11.79
II.	B	6.75	6.17	5.82	6.13	6.46	6.64	6.67	6.86	6.65
III.	C	6.05	5.78	5.29	5.46	5.68	5.76	6.07	6.20	6.07
IV.	D	6.48	5.92	5.94	5.95	6.41	6.50	7.14	7.16	6.91
V.	E	8.64	8.35	8.07	8.08	8.02	8.16	8.27	8.51	8.39
VI.	F	8.55	8.26	8.21	8.06	7.89	7.87	7.74	7.79	7.66
VII.	G	11.48	11.57	11.01	10.64	10.43	9.94	9.80	9.64	9.00
VIII.	H	10.79	9.61	9.68	9.64	9.71	9.78	9.62	9.98	9.88
IX.	I	10.40	10.42	10.65	9.38	10.18	9.84	9.74	10.00	10.96

X.	J	12.75	11.46	11.36	10.67	10.55	10.37	10.05	10.36	10.98
United States		7.98	7.53	7.24	7.29	7.50	7.57	7.63	7.80	7.66

(a) Average for 1908 added from 21st annual Report of Prof. Adams. S. T

The foregoing shows that the average rates per ton per mile, expressed in money, were lower in every group but one, as well as in the whole country, in 1907 than they were in 1897. The average for the whole country was lower in 1907 than in any other year shown except the years 1898 to 1902, inclusive, and for three of those years the difference was less than one-tenth of one mill. The decrease in the general average from 1897 to 1907 was 4.89 per cent. and the increase from 1899, the year of the lowest average, was 4.83 per cent.

So far as the quality of the ton-mile unit is affected by changes in the geographical distribution of traffic the tendency between 1897 and 1907 was toward a higher quality, for traffic movement grew more rapidly in the regions where rates are normally higher than it did in the regions of lower rates. In the following statement the groups used by the Interstate Commerce Commission are arranged with the group in which ton-mileage increased most rapidly from 1897 to 1907 at the top, the group that increased next most rapidly in the second line, and so on to the group that increased least rapidly at the bottom:

	Tons of freight carried one mile.		Increase,	Average rate per ton per mile in mills	
Group.	1897.	1907.	per cent.	In 1897.	In 1907
X	3,133,623,734	11,252,450,440	259.09	12.75	11.63
VII	2,633,860,958	9,300,234,849	253.10	11.48	9.33

VIII	6,333,591,463	17,406,430,971	174.83	10.79	9.66
III	17,587,334,609	47,994,909,002	172.89	6.05	5.98
V	6,802,119,489	17,397,321,360	155.76	8.64	8.27
VI	17,393,471,480	44,318,734,155	154.80	8.55	7.43
IX	3,165,108,561	7,546,655,555	138.43	10.40	10.51
IV	4,936,635,046	11,418,243,141	131.30	6.48	7.03
II	29,579,613,559	63,455,243,659	114.52	6.75	6.55
I	3,573,663,326	6,511,166,971	82.20	12.02	11.45
U. S.	95,139,022,225	236,601,390,103	148.69	7.98	7.59

It will be noted from the foregoing that the group in which the average rates were highest in both 1897 and 1907 shows the most rapid increase in traffic movement and that, with few exceptions, the regions of higher rates show more rapid augmentation of ton-mileage. This is exactly what might have been anticipated, for the highest average rates are usually to be found in the regions most scantily populated and, as these regions are filling up and are therefore those most rapidly growing in population and industry, they naturally show the greatest relative increases in freight tonnage. The only notable exception is furnished by New England, a region of high development, but where traffic movement is largely of a character which imposes higher average rates. In the following table the traffic increase is given for the regions that had ton-mile rate averages above and below the average for the whole country, in 1897:

	Ton mileage.		Increase.
	In 1897.	In 1907.	per cent.

Ton mile rates above the average	43,035,439,011	113,732,994,301	164.28
Ton mile rates below the average	52,103,583,214	122,868,395,802	135.82
Total	95,139,022,255	236,601,390,103	148.69

The region with rates above the average in 1897 had 45.23 per cent. of the total ton-mileage in that year, and 48.07 per cent. in the year 1907. Of the total increase in traffic movement 49.98 per cent. was in this region. The precise effect that these changes in the geographical distribution of ton-mileage would have had upon the average ton-mile rate for the whole country is shown by the computation set forth in the following table:

Group	Ton mileage of 1907.	Ton-mile rates of 1897 in mills.	Product of ton-mileage of 1907 and ton-mile rates of 1897.
I	6,511,166,971	12.02	$ 78,264,226.99
II	63,455,243,659	6.75	428,322,894.70
III	47,994,909,002	6.05	290,369,199.46
IV	11,418,243,141	6.48	73,990,215.55
V	17,397,321,360	8.64	150,312,856.55
VI	44,318,734,155	8.55	378,925,177.03
VII	9,300,234,849	11.48	106,766,696.07
VIII	17,406,430,971	10.79	187,815,390.18
IX	7,546,655,555	10.40	78,485,217.77

X	11,252,450,440	12.75	143,468,743.11
United States	236,601,390,103	—	$1,916,720,617.41

By dividing the aggregate of the products in the last column of the foregoing by the total ton-mileage shown in the second column, an average is obtained which represents the ton-mile rate that would have resulted in 1907 had the traffic of each group in that year moved in precisely the same volume in which it actually moved and had the average rates in each group been exactly the same as they were in 1897. This shows that, under the conditions assumed, the average ton-mile rate for the whole country would have been 8.10 mills or 0.12 mill higher than in 1897. This advance of 1.50 per cent. would have been wholly due to the more rapid growth of traffic in the regions of normally higher rates. The chief significance of so small a change in so long a period is, really, to indicate that the ton-mile unit, so far from being of rapidly changing character, is actually, at least as far as it might be assumed to be affected by changes in the location of traffic movement, a fairly stable unit and thus an excellent measure of the rise or fall in rates. Whether the same conclusion is to be derived from a study of the changes in the proportion of the total movement made up of commodities of different grades and naturally taking different rates is now to be made the subject of inquiry.

Publication of the classified statistics of tonnage necessary for such an inquiry was begun by the Interstate Commerce Commission with the report for the year 1899. Consequently it is not practicable to

extend the inquiry to a period prior to that year. The following statement shows the number of tons of freight of each of the classes of commodities named which were received by the railways for transportation in 1899, 1903 and 1907 and the proportion of the tonnage in each class to the total number of tons carried:

	Tons.			Percentag total tonn	
Class of commodity.	1899.	1903.	1907.	1899.	1903
Products of agriculture	50,073,963	61,056,212	77,030,071	11.33	9.5
Products of animals	13,774,964	16,802,893	20,473,486	3.12	2.6
Products of mines	227,453,154	329,335,621	476,899,638	51.47	51.5
Products of forest	48,122,447	74,559,980	101,617,724	10.89	11.6
Manufactures	54,415,205	91,980,903	137,621,443	13.45	14.3
Merchandise	19,844,735	29,949,022	34,718,487	4.49	4.6
Miscellaneous	23,197,155	35,116,027	44,824,123	5.25	5.5
Total	441,881,623	638,800,658	893,184,972	100.00	100.0

It should be observed that the foregoing statement represents tons received for shipment regardless of the distance carried and, in consequence, does not throw the light upon traffic movement that would be available if it were possible to know the ton-mileage of each class of commodities. Nevertheless, the data undoubtedly convey some information as to the character of the ton-mile unit during the different years and the nature of the changes in its quality which are in progress. This will be made more evident by the following table showing comparisons

for the years 1899 and 1907:

	Tons.			
			Increase.	
Class of commodity.	1899.	1907.	Amount.	Per cent.
Products of agriculture	50,073,963	77,030,071	26,956,108	53.83
Products of animals	13,774,964	20,473,846	6,698,522	48.63
Products of mines	227,453,154	476,899,638	249,446,484	109.67
Products of forest	48,122,447	101,617,724	53,495,277	111.16
Manufactures	59,415,205	137,621,443	78,206,238	131.63
Merchandise	19,844,735	34,718,487	14,873,752	74.95
Miscellaneous	23,197,155	44,824,123	21,626,968	93.23
Total	441,881,623	893,184,972	451,303,349	102.13

Obviously the effect of the increases shown in the foregoing upon the quality of the average ton-mile must be in proportion as they have exceeded or fallen short of the average increase shown at the foot of the last column. There is no question that, in general, products of agriculture, animals, forests and mines are low-grade commodities, or that, on the other hand, the commodities classed as manufactures, merchandise and miscellaneous are high-grade articles. An increase in excess of the general average increase in the first four classes named would tend to lower the quality of the average ton-mile while the opposite effect, that is, a raising of the quality, would result if the last three classes should increase more rapidly than the increase in all tonnage. Adopting this classification, the following shows the respective increases in high-

grade and low-grade tonnage:

	Tons.			
			Increase.	
Class of commodity.	1899.	1907.	Amount.	Per cent.
High-grade	102,457,095	217,164,053	114,706,958	111.96
Low-grade	339,424,528	676,020,919	336,596,391	99.17
Total	441,881,623	893,184,972	451,303,349	102.13

The considerably greater increase in the tonnage of high-grade articles indicated by the foregoing is scarcely within the possible margin of error in the classification, but, in any event, what the figures certainly prove is the absence of any actually far-reaching change in the typical or average unit of traffic. That this conclusion extends to traffic movement is clearly probable.

PRICES AND ACTUAL RATES.

Comparisons between actual prices of commodities shipped by rail and typical freight charges on the same articles, for 1897 and 1907, demonstrate the fact that while prices have almost uniformly advanced the greater number of rates have remained stationary while among those which have changed the reductions are as numerous as the advances and exceed the latter in extent and importance.

[Mr. McCain here presents a table compiled from reports of the Bureau of Labor of the actual prices of commodities and the rates between principal points of shipment, occupying pp. 50-58 of his pamphlet.]

Examination of prices collected and reported by

the Bureau of Labor, giving the prices in 1899 and 1907 of 229 articles, shows that among these 204 prices or 89.08 per cent. of the total were increased. The rates on forty-nine of these articles were advanced an average of 13.14 per cent. and the rates on forty-eight of them were reduced an average of 16.44 per cent. Other conclusions are shown in the following summary table:

Item.	Number.	Per cent. of total.	Aggregate percentage of changes.	Average changes, per cent.
Prices—				
Advanced	204	89.08	11,340	55.59
Reduced	13	5.68	330	25.38
Unchanged	12	5.24	—	—
Total	229	100.00	—	—
Rates advanced—				
Prices advanced	44	19.22	606	13.77
Prices reduced	3	1.31	30	10.00
Prices unchanged	2	.87	8	4.00
Total	49	21.40	644	13.14
Rates reduced—				
Prices advanced	42	18.34	708	16.86
Prices reduced	3	1.31	33	11.00
Prices unchanged	3	1.31	48	16.00
Total	48	20.96	789	16.44
Rates unchanged—				
Prices advanced	118	51.52	—	—
Prices reduced	7	3.06	—	—
Prices unchanged	7	3.06	—	—
Total	132	57.64	—	—

The foregoing shows that while prices were

advanced for 204 out of 229 articles, or 89.08 per cent. of the entire number included in the table, the freight rates on the same articles, as expressed in money, were advanced in but forty-nine instances, or 21.40 per cent. of the total, money rates were reduced in forty-eight instances, or 20.96 per cent. of the total, and remained stationary in 118 instances, or 57.64 per cent. of the total. Of the rates advanced forty-four were in cases in which the prices had also advanced, and of the rates reduced forty-two applied to articles which had advanced in price. Even as to the commodities which had advanced in price, the average advance being over fifty-five per cent., money rates were advanced in but forty-four instances out of 204 and the average advance was but 13.77 per cent. and there were forty-two reductions in money rates, such reductions averaging 16.86 per cent.

SIGNIFICANCE OF THE DEPRECIATION OF MONEY.

It has now been fully demonstrated (first) that the railways have to pay much more, probably not less on the average than twenty-five per cent. more, for everything they require in the conduct of their business, including labor, than they did ten years ago, (second) that those who make use of railway services receive much more, probably not less on the average than twenty-five per cent. more, for their labor or for the commodities which they produce than they did ten years ago, (third) that average rates per ton per mile for railway freight transportation, expressed in money, that is to say, in dollars and decimal fractions of dollars, are now somewhat lower than they were in 1897 or formerly, and (fourth) that the ton-mile unit is a highly stable one as to quality and that in consequence of this

stability the ton-mile rates accurately answer the question whether rates, expressed in money, have remained stationary, have advanced or have declined. The latter conclusion has been supplemented and re-enforced by data from the classifications and rate schedules which tend strongly to prove the same fact. Therefore, it has been made plainly apparent that there has been a decline in money rates since 1897. But railways require money only to remunerate the highly skilled labor they employ, to purchase necessary materials and supplies, to pay taxes and to compensate the capital they use. Consequently money is worth to the railway corporation, as to the wage-earner, only what it will buy for the satisfaction of wants. A dollar which will pay for less labor or buy less fuel for locomotives is worth less to the railway just as a dollar that will buy less bread or clothing is worth less to the man who works for wages or receives it as interest on his savings. It has long been realized that any effort to study the question of wages, throughout an extended period, which fails to take into consideration the purchasing power of the money received is worse than valueless, because it is deceptive and misleading. It has been generally recognized also that any effort to consider the condition of particular classes of producers by comparisons of the prices obtained for their products at different periods, as that of farmers by the prices of corn and wheat, is similarly dangerous unless these prices are turned into quantities of the commodities which such producers must purchase.

[In elucidating this obvious point Mr. McCain cites such authorities as Adam Smith, John Stuart Mill, President Hadley of Yale, Professor Frank W. Taussig of Harvard, and then continues.]

A rapid decrease in the purchasing power of the money they receive has brought about, within a single decade, a reduction in railway freight rates that cannot be less than twenty-five per cent. This reduction began almost imperceptibly at a time when American railway rates were already lower than ever before in the history of railways and lower than anywhere else in the world. It has proceeded, concurrently with the fall in the real value (that is in the purchasing power) of the American dollar, but in such subtle form that only when its consequences threaten the stability of the American railway system, the wages of railway employes and the prosperity of the great rail-manufacturing, car-building and other allied industries is its real significance and extent perceived even by those most immediately interested. That such a threat now hangs over the railway industry of America and every employe and industry dependent upon it is too plain for argument. The situation is acute and nothing but a prompt adjustment of the rates obtained for the services rendered to offset, partially, at least, the loss in the value of the money received will prevent disaster. That such an adjustment, if effected now, will, at best, be tardy and belated is evident from the facts herein presented, which show that prices in every other industry and the wages of all artisans were long ago adjusted to this fundamental condition.

APPENDIX B

Statement showing prices of railway supplies purchased in 1897 and 1907 as disclosed by the records of various Eastern railways. It should be noted that the quality of the supplies, made the basis

of this statement, may have changed somewhat between 1897 and 1907, but in few instances would the allowance for this source of variation materially affect the results.

	Prices.		
			Increase.
Class.	1897.	1907.	Per cent.
Locomotives—			
Mogul	$10,181.00	$14,111.00	38.6
10-Wheel passenger	11,026.00	15,734.00	42.7
Atlantic	not built	16,236.00	
Pacific	not built	19,580.00	
Prairie	not built	16,468.00	
8-Wheel passenger	10,243.00	13,581.00	32.5
6-Wheel switcher	9,392.00	12,098.00	28.8
Cars (1899-1907) —			
Hopper	475.00	1,185.00	
Box	783.00	1,110.00	
	490.00	844.00	
	519.00	897.00	

Note.—The prices of cars shown above are typical prices paid by different roads in the respective years and employed in the same service. As the cars purchased in 1907 are of more modern construction, better quality and larger capacity than those purchased in 1899, no accurate comparison can be made or percentage of increased cost shown.

(1902-1907)—			
100,000 lbs. Capacity Box Car with Steel Underframe and wood superstructure	$1,043.49	$1,148.88	10.09

100,000 lbs. Capacity Composite Gondola Car with Steel Underframe and wood superstructure		1,021.62	1,148.45	12.42
100,000 lbs. Capacity Composite Flat Car with Steel Underframe and wood floor		953.23	1,010.60	6.02
100,000 lbs. Capacity, all steel Hopper Cars		1,002.22	1,076.05	7.47
Angle Bars	Cwt.	1.02	1.55	52.0
Axles—				
Locomotive	Cwt.	$ 2.75	$ 2.95	7.2
	Cwt.	2.72	2.85	4.7
Tender	Cwt.	1.40	2.35	67.8
Car	Cwt.	1.60	1.95	21.9
	Cwt.	1.45	2.20	51.7
	Cwt.	1.68	2.25	34.0
Bar Iron	Cwt.	1.19	1.78	49.5
	Cwt.	1.10	1.80	63.6
	Cwt.	1.05	1.50	42.8
Brick—				
Common	M	4.50	6.00	33.3
Paving	M	8.00	11.00	37.5
Castings—				
Brass	Lb.	0.11	0.25	127.3
Brass	Lb.	0.12	0.25¾	114.6
Steel	Cwt.	3.50	6.00	71.4
M. Iron	Cwt.	2.50	4.25	70.0
	Cwt.	2.70	3.60	33.3
	Cwt.	2.35	2.85	21.2
Gray	Cwt.	1.15	2.00	74.0
	Cwt.	1.20	1.65	37.5
Coal	Ton	1.46	1.76	20.5
	Ton	1.32	1.82	38.0
	Ton	1.17	1.52	29.8
	Ton	1.83	2.07	13.1
Run of Mine	Ton	.65	1.05	61.5
¾	Ton	.75	1.15	53.3

Couplers—				
Freight	Set	14.00	15.00	7.1
Passenger	Set	20.50	27.00	31.7
Tender	Set	18.00	18.50	2.8
Fencing	M. Ft.	12.00	25.00	108.3
	M. Ft.	10.00	18.15	81.5
Flues	Ft.	0.13	0.15½	19.2
	Ft.	0.14	0.15	7.1
Forgings—				
Axles	Lb.	0.02	0.03	50.0
Crank Pins	Lb.	0.05	0.10	100.0
Piston Rods	Lb.	0.06	0.10	66.6
Main Rods	Lb.	0.08	0.10	25.0
Side Rods	Lb.	0.08	0.10	25.0
Lead—				
White	Cwt.	4.95	6.25	26.3
Lumber—				
Large Bridge Timbers	M. Ft.	$ 13.12	$ 25.62	95.3
	M. Ft.	23.00	38.00	65.2
	M. Ft.	20.00	33.00	65.0
	M. Ft.	17.00	28.00	64.7
	M. Ft.	22.50	38.00	68.9
	M. Ft.	15.00	27.00	80.0
Car Sidings	M. Ft.	17.00	35.00	105.9
	M. Ft.	18.00	33.00	83.3
Stringers	M. Ft.	18.00	28.00	55.5
	M. Ft.	16.00	34.00	112.5
	M. Ft.	18.00	26.00	44.4

	M. Ft.	17.00	28.00	64.7
	M. Ft.			
Car Flooring	M. Ft.	17.00	24.00	41.2
	M. Ft.	20.00	33.00	65.0
	M. Ft.	11.00	25.00	127.2
	M. Ft.	14.00	19.71	40.8
Piles (Soft)	Ft.	0.08	0.14	75.0
	Ft.	0.08	0.11	37.5
(Hard)	Ft.	0.12	0.17	41.7
	M. Ft.			
Heavy Planks	M. Ft.	14.00	22.00	57.1
	M. Ft.	14.00	30.00	114.3
	M. Ft.	16.00	27.00	68.8
Cross Ties				
(Hardwood)	Each	0.47	0.80	70.2
	Each	0.60	0.85	41.7
	Each	0.55	0.75	36.4
	Each	0.37	0.70	89.2
	Each	0.45	0.60	33.3
	Each	0.45	0.55	22.2
	Each	0.48	0.90	87.5
	Each	0.38	0.80	110.5
	Each	0.38	0.67	76.4
Softwood	Each	0.22	0.60	172.7
	Each	0.20	0.28	40.0
	Each	0.23	0.48	108.7
	Each	0.48	0.58	20.8
Nails—	Cwt.	1.60	2.20	37.5
	Cwt.	1.33	2.16	62.4
	Cwt.	1.10	2.15	104.5
Wire	Cwt.	1.27	1.85	45.7
	Cwt.	1.48	2.11	42.6
Oil—				
Kerosene	Gal.	$0.06	$0.09½	58.3
Signal	Gal.	0.28	0.36	28.6

	Gal.	0.20	0.36	80.0
300 degree	Gal.	0.09	0.10	11.1
Paint—				
	Gal.	0.77	1.03	33.8
	Gal.	0.50	0.65	30.0
	Cwt.	4.75	6.62	39.4
	Cwt.	5.50	6.50	18.2
Pipe—				
Cast Iron	Ton	16.00	34.00	112.5
	Ton	16.75	29.15	74.0
	Ton	13.50	21.00	55.6
	Ton	16.00	32.00	100.0
Copper	Lb.	0.31	0.34	9.7
	Lb.	0.30	0.33	10.0
	Lb.	0.30	0.35	16.7
Rails—				
Steel	Gross Ton	19.00	28.00	47.4
	Gross Ton	18.00	28.00	55.6
	Gross Ton	18.05	26.60	47.4
Rubber Hose—				
1 Inch	Ft.	0.34	0.41	20.6
1¼ inch	Ft.	0.40	0.46	15.0
Springs—				
Loco.	Cwt.	4.05	4.10	1.2
Switches—				
Comp. 80		31.90	40.77	27.8
Frogs 80		18.75	27.50	46.7
Switch Lamps	Doz.	45.00	65.00	44.4
Tile	Rod	0.40	0.60	50.0
Track Bolts	Cwt.	1.70	2.45	44.1
	Cwt.	1.65	2.60	57.6
	Cwt.	2.20	2.75	25.0
	Cwt.	1.65	2.45	48.5
	Cwt.	1.75	2.76	57.7
Track Spikes	Cwt.	1.85	2.52	36.2
	Cwt.	1.35	1.70	25.9
	Cwt.	1.50	2.60	73.3

	Cwt.	1.65	2.25	36.4
	Cwt.	1.50	1.90	26.7
	Cwt.	1.45	1.90	31.0
	Cwt.	1.75	2.00	14.3
Track Tools—				
Axes	Doz.	$8.00	$9.00	12.5
Drills	Each	0.35	0.46	31.4
Ratchets	Doz.	5.13	6.65	29.6
Shovels	Doz.	5.00	5.65	13.0
Lamp Bars	Each	0.52	0.65	25.0
Waste—				
Colored	Lb.	0.047	0.055	17.0
White	Lb.	0.06	0.08	33.3
Wheels—				
Car	Each	5.60	7.80	39.29
	Each	6.00	8.35	39.17
	Each	7.50	9.30	24.0
	Each	4.78	8.46	76.9
	Each	4.50	9.00	100.0
	Each	6.75	8.00	18.5
	Each	6.50	9.00	38.5
	Each	6.00	9.05	50.8
33-in Steel	Each	50.00	56.00	12.0
	Each	42.50	44.50	4.7
36-in. Steel	Each	42.50	50.50	18.8
	Each	54.00	60.00	11.1
Wire—				
Barbed	Cwt.	1.70	2.50	47.0
Iron	Cwt.	1.50	2.20	46.7
Copper	Lb.	.13	.26	100.0
	Lb.	.13	.18	38.5

FOOTNOTES:

[E] A partial list of the articles in each class in 1807 which are still in the same class, as shown by Official Classifications Nos. 16 and 32, is given in Appendix A to Mr. McCain's pamphlet. There were approximately 3,000 various articles bearing the same classification or rating in 1908 as in 1898.

[F] Appendix C occupies pages 89 to 95 of Mr. McCain's pamphlet.

[G] Appendix D occupies pages 96 to 101 of McCain's pamphlet.

[H] Details from which the table was derived are given in Appendix E to Mr. McCain's pamphlet, pp. 102-106.

THE RAILROADS AND PUBLIC APPROVAL

By Edward P. Ripley
, President Atchison, Topeka and Santa Fe Railway Company.

Address delivered at the annual dinner of the Railway Business Association, New York, November 10, 1909.

Circumstances over which I had no control caused

me to be born with a distinct inability to think consecutively, or talk coherently, in a standing position and before an audience.

Seated on the small of my back with my feet on the desk I sometimes think I am thinking, but when I get before an audience I am like the little steamer plying on the Sangamon River that had a 10-foot boiler and a 12-foot whistle—when she whistled she stopped. But my weakness, or rather one of my weaknesses, is susceptibility to flattery, and when one of your officers represented in honeyed phrase the importance of your organization and of this meeting, and laid particular stress upon the importance of my saying something, I weakly yielded. I know the result will be disappointment, but the responsibility is only partly mine, and you know we railroad men get so little flattery that when properly administered the result is intoxicating.

Also, let me state in extenuation of the crime I am about to commit that the subject was not my own selection, but was chosen for me. My natural disposition in discussing railroads and the public is to growl, while, if I understand your officers' wishes, I am here expected to "purr."

But while a better man might have been selected to say it, there is much to be said as to the railroads and public opinion.

In this country the people rule—and in the long run that system, that method or that personality that does not meet the approbation of the public can not succeed. True, the public is often fooled; true, it "gets on the wrong feet," as often perhaps as on the right; true, it has to be guided, controlled, and at times abruptly stopped by those authorities which it has selected for that purpose; yet the fact remains that

the government of the people, that Congress, the legislatures and even the courts are keenly alive to public sentiment and anxious not to stray far from the line of public opinion.

Our forefathers recognized the danger that the majority would not necessarily be right, but might often be wrong, and sought to provide safeguards for the rights of the minority. But these safeguards are obviously growing less efficient; obviously growing weaker; obviously more sensitive to the public clamor which for the moment stands for public opinion, and when all safeguards have been exhausted it is to public opinion that we must look at last.

There are two things about which the public is most critical—one is the management of the newspaper, the other the management of the railroad. In his heart the average citizen believes that he could operate either his daily newspaper or the railroad passing through his town much better than it is being operated; he would perhaps hesitate to announce this opinion, but his attitude is coldly critical, and it is to be remembered that the railroad is all out of doors—all out in the weather, everything about it exposed to the limelight and visible to anybody's naked eye. There is no human activity the operation of which is attended with so much publicity. All our earnings and expenses are published; all our charges and all our methods the subject of regulation, intelligent or otherwise.

Many years ago Mr. W. K. Vanderbilt, journeying to Chicago, was met on the outskirts of the city by an enterprising reporter for a daily paper, who boarded the train and forced himself into the presence of Mr. Vanderbilt and his party, and demanded news on

behalf of "the public." Probably Mr. Vanderbilt, resenting the intrusion, said something uncomplimentary to the reporter and possibly to the "public" he claimed to represent, and the next issue of that paper quoted him in scare headlines as using the phrase, "The public be damned." Mr. Vanderbilt subsequently denied having said it, but whether he did or not and whatever may have been his provocation, the phrase has for nearly forty years been used as indicative of the railway man's attitude toward his patrons.

Many years ago also the late George B. Blanchard, being on the witness stand at Albany, was asked what was the correct basis for making freight rates, and replied, "What the traffic will bear"—a most excellent answer, but a most unfortunate one—for it has passed into history as meaning "all the traffic will bear," which is a very different thing.

Such things as these, distorted as they have been, conspired to inflame public opinion, but that is not all.

It is the custom and privilege of men past middle age to be reminiscent and I ask your indulgence for a very brief history of the events that have led us to our present status. My railroad experience began about forty years ago and the railroad business was then much like any other business—it had its price list as did the merchant; but, like the merchant, it had its discounts for large shippers and for special conditions, and the discounts were irregular and various. The larger shippers demanded concessions as a right, and the principle was generally admitted. Naturally the result was favoritism, not because the railroads desired especially to favor one as against another, but because in the nature of things secret

rates could not well be given to everybody.

Nobody regarded these secret rates as criminal or objectionable. But as time passed and these discriminations became more frequent and greater there arose a demand from the less favored portion of the shipping community for legislation forbidding the discrimination and providing for like opportunity for all. This was strenuously opposed by the favored shippers and by those railroad men who believed the railroad to be purely a private institution and not amenable to law as to its charges. It was common enough to hear it seriously argued that the larger shipper was entitled to the lower rate—this view was held by many shippers and, I believe, by most railroad managers. They argued that the business was like any other business—that each interest must look out for itself, and that competition between the roads would prevent rates from ever being too high.

For myself I may say that I realized from an early period that discrimination as to rates was unjust and at no time objected to laws forbidding it.

The interstate commerce law was passed in 1887. It was crude in its provisions and was the result of compromises between radicals and conservatives; it sought both to foster competition and to abolish it, and in that respect remains still contradictory and impossible.

Upon the passage of the law, that which had been looked upon as perfectly proper and as the working of natural competitive forces became illegal and criminal. The railroads generally accepted the law and made an honest effort to observe it—the mercantile community did not—indeed, they openly defied it, soliciting rebates unblushingly and threatening with the loss of their tonnage those roads

who would not succumb. The Interstate Commission, new to its duties, contented itself with comparatively unimportant decisions and practically did nothing to help those railroads who desired honestly to carry out the provisions of the law; and, as a result, within a year of the passage of the law it was quite generally disregarded. A few railroad men were fined, a few shippers convicted—and almost immediately pardoned—and the law fell into disrepute, a condition disgraceful alike to the government, the shippers and the railroads and especially distasteful to the latter, but exactly what was to be expected.

The result was the passage of the so-called Elkins bill, and later the Hepburn bill, which, while amateurish and in many ways vicious, have effectually stopped the rebate system—a result for which we may all be thankful.

In all the controversies that have led up to this almost complete control of railroad earnings and railroad policies by governmental agencies, the railroads have, as a rule, acted in active opposition. They have not been unanimous—some of us were willing to accept it long before it became a fact, but the majority could see nothing in it but disaster—it is too early to say which was right—perhaps an earlier acceptance of control would have made the control more lenient; perhaps its earlier acceptance would, on the other hand, have bound the chains more tightly. But the fact remains that while the basic principle of absolute equality as to rates has been accepted by the railroads gladly and in all good faith, and they have also accepted the principle of government regulation, the scars of the conflict remain and a large section of the public still suspects

and misjudges us. It is true, of course, that in the rapid development of our business and in the exigencies of a most exacting profession there have been abuses and lapses, but I am here to maintain that the standards of fair dealing and commercial honesty in our business have been as high as in any other, and I appeal to you who sit around this table to say if it be not so.

But whatever sins may be laid at our door, however much we may have once believed that ours was a private business to be controlled exclusively by its owners, however much we have resented or still resent the interference of the public as manifested in the various governing bodies, it is, after all, the public that is master and we must all recognize it. It is, however, still our privilege to exercise our right as citizens and members of the body politic to use our efforts to guide it. Acknowledging as we must that the public is all-powerful, the question is, How may we satisfy our masters and thus mitigate our woes and preserve our properties?

First. We must realize, as I think we all do (after a series of very hard knocks), that the railroads are not strictly private property, but subject to regulation by the public through its regularly constituted authorities—that the Government may reduce our earnings and increase our expenses has been sufficiently proved.

Second. To meet this situation we must endeavor to get in touch with public opinion. Perhaps you will smile when I say that for years I have read every article on railroad matters in each of the papers published along our ten thousand miles of road—not an easy task for a busy man—but while I have waded through much chaff I am sure it has resulted in some

reforms.

Third. The avoidance of action seriously counter to public opinion, except for compelling reasons.

Fourth. The disposition to explain these reasons through officers and employes of all grades. Generally, the loudest criticisms come from those who are not anxious to know the truth.

Fifth. Efforts to improve service in many cases without hope of reward and for the deliberate purpose of winning public approval, such as better stations, improved heating and lighting devices, better equipment, better terminal facilities, separation of grades, etc.—all with due regard to the rights of those whose money we are spending.

As we do all these things, meet us half way. Encourage the habit of not rushing into abuse. Try to consider the facts and the difficulties—this is for the public interest as well as ours. Oppose unnecessary and restrictive legislation and give us a chance.

Most of our railroads are mere imitations of what a railroad should be, and what it must be to keep abreast of the country—yet even the poorest serves a useful purpose and can not be spared. An eminent authority has said that five thousand millions of dollars would be required to supply the transportation needs of the next decade, and I do not believe it is an over-estimate. Can private capital be found to that amount unless "public sentiment" is willing to assure it of return? A portion of the public is clamoring for facilities involving great additions to expenses; another portion for limitation of earnings; will the investor consent to accept the risks while strictly limited as to his return? Since the public may do as it will with us and since we are necessary to

the public, we may properly call attention to the fact that railway investments already pay less than any other line, and to ask what is to be done—really, it is quite as much the public's affair as ours.

Is it certain that the mixture of private ownership and public regulation which is now prevalent will succeed? Is it not contrary to all rules of political economy and to all the teachings of history? Starting as a purely private industry it has been appropriated in part and other parts are apparently to follow. Granting whatever may be claimed for the advantages of regulation by government, do not equity and ordinary commercial decency require that such close restriction and supervision should be accompanied by some guaranty of return?

I have endeavored to sketch briefly what should be the attitude of the railway man *as* a railway man toward the public. I am sure I voice the sentiment of all managing railroad officers when I say that our great desire is to please the public and to give it the best possible service for the least possible compensation consistent with reason. Discriminations have long since passed away and nobody is better pleased than the railroad man that it is so. There is no desire to escape either responsibility or regulation. We desire to accord only justice and we ask in return only justice. May I now, as a citizen, appeal to the railway employe, to the members of this Association, and to all other good citizens, to resist to the utmost of their powers the encroachment of government on private rights?

Mr. Elbert Hubbard, of East Aurora, N. Y., recently remarked that "when God sent a current of common sense through the universe most of the reformers wore rubber boots and stood on glass." Our troubles

are with this class—well-meaning men who have zeal without knowledge and enthusiasm without sanity; these we may not reach, but the great mass of the solid and substantial citizenship may perhaps be induced to stop and consider whither we are drifting and whether this greatest of all the country's industries is being fairly treated.

RAILROADS AND THE PUBLIC

BY HON. JOHN C. SPOONER.

From the address delivered at the annual dinner of the Railway Business Association, New York, November 10, 1909.

The topic which has been assigned to me is brief, but very large: "Railroads and the Public." It suggests nothing of humor, but everything of gravity and involves considerations which affect the prosperity of our whole people. The railroads, often berated in legislatures and in congresses as leechlike and piratical, are, after all, vital to the happiness of our people and to the progress of our industries and commerce. The people are apt to forget that they have been the greatest factors—I say the *greatest* factors—in the development of our resources and the enlargement of our commerce, both in times of war and in times of peace. If one would stop to think of what would have happened if, during the war for the preservation of the Union, we had been without

railroads, ready and willing to serve the government upon its demand and at prices fixed by it, how long would the war have continued? And what might not have been its result? They carried troops from the North to the places of rendezvous in the fields; they enabled the government to transfer quickly from the East to the West, or the West to the East, as emergency demanded, troops essential to successful military operations. They carried munitions of war, they carried the mail to our soldiers, they carried food and raiment to those who were fighting under our flag.

And in time of peace, what would this country have been without the railroads? The railroad has been the advance courier of progress, of settlement, of production, of commerce. It is absolutely, and has been, indispensable to the government, to the commerce and to the happiness and comfort of our people. Its mission is not performed or fulfilled. Considered solely with reference to construction, there are new fields to be penetrated by them. Today men of courage and men of means are building railways with characteristic American energy in far off Alaska, to bring the gold mines and the coal mines and the timber and the unknown resources of that distant territory into the markets of the United States. If there is one instrumentality which above another has been a factor, appreciable by all thoughtful men, in making this country what it is, it is the railroad. And the railroad has kept abreast with the demands of commerce. Every device which ingenuity or invention has presented has been promptly adopted by the railway companies of the country. They have kept abreast of invention and improvement, until today the railway system of the United States is the most luxurious, the safest, the

best managed railway system under the bending sky.

The first thing that would occur to one from this toast, the railroads being first mentioned, is what do the railroad companies owe to the public? That is easily defined. They owe it to the public to furnish safe roadbeds and equipment; they owe it to the public to furnish prompt service; they owe it to the public to treat all men, with obvious limitations, passengers and shippers under the same circumstances, equally and without unjust discrimination, and they owe to the public the duty of, as far as it is possible, so maintaining their roads and their equipment as to be able to meet in a fair way all the demands of commerce and traffic at reasonable rates. That excludes the rebate which never had any justification in logic or in fair play. I think those who hated it most were those who felt obliged to adopt it. When one railway company gave rebates it is quite manifest that the competitor was obliged to, or go out of business. And I believe that railway companies of the United States were glad, and their officers were glad, when it was made a penal offense for railway companies to give rebates. I think a railway company owes to the public to be careful in the selection of its employes; they should be capable, of course, and they should not only be capable, but they should be courteous and polite. To sum it up, you would say that what the railway in the enlarged sense—which includes details—owes to the public is just and fair treatment.

What does the public owe to the railway companies? Precisely, as I view it, the same thing, just and fair treatment. Only that and nothing more. Everybody knows that the railway companies of the United States—I won't put it that way—that the

railway system of the United States never could have been created without the utilization of corporate entities. Partnerships never could have concentrated the capital necessary to that end. Only corporations could have achieved it. That was true in the past and it always will be true. Now, why is the railway company different from other corporations, most other corporations? One trouble with the general public is that they don't seem to understand—and they are not perhaps to be chided for it—their relation to the railway company. They think, and they are told, they have been told it in Congress, and they have been told it where one would least have expected it, that railway corporations are public corporations, and they have been taught to believe that their power over public corporations was supreme, which is not far from the truth; but the railway corporation is not a public corporation. The Supreme Court has many times decided that a railway company is a private corporation, that its property is private property, under the protection and safeguards of the Constitution of the United States against the public as well as against individuals who attack it. Then, wherein lies the difference between a private corporation engaged in manufacture and a railway corporation? Right here: A railway corporation can not construct its railway without being clothed with a power which is not given to the usual private corporation, a power which inheres in the sovereignty of the state, the ultimate power of the people delegated to the railway corporations and very few others, and that is the power to take your land without your will at a price fixed not by you but by a jury. Why? Because it is for the public use, and private interest and private sentiment can not be permitted to obstruct the

interest of the state, and therefore the property of a railway company while it is private property is, as the Supreme Court of the United States has said, affected with the public interest.

A railway company serves the public, that is what it is organized to do. Those who apply for the corporate franchises do not apply for an altruistic purpose. They wish it because they think they can make profit out of it, and that is legitimate, but the state grants it for the public use. And so it comes about that the state has the power to regulate it. Mark what I say, to regulate it, to prevent it from exacting extortionate rates from the people; to prevent it from putting upon the people abuses in its management, but that does not mean that the state may take its property. That does not mean that the state may take its management out of the hands of its owners. It means simply that the state may protect the public from any abdication by it or violation by it of its duty as a common carrier, and this principle is too often forgotten.

In these days regulation has apparently achieved a wider field for operation, and is deemed to be broad enough to regulate not only the property and the management of the property, but the management of everybody connected with it. That won't do. Why, I see it is stated in the report of your Business Association that commissions which have been organized by the states and the Commission organized under the act of Congress, have come to stay. Of course they have come—we know that, and we know another thing, that whenever a governmental commission comes, it stays. The commissions in the states, most of the states—God knows I wish I could say all the states, but I can not

truthfully—have subserved a useful purpose. The state lays down the rule and the commission administers the law. There is one thing about a commission in the regulation under the law of railway carriers which places it in respect of proprietary, fairness and fitness for that function, far above Congress or any other legislative body, and that is this: That they have time to listen, to investigate, to get at the truth, which a legislative body does not have time to do in the very nature of things. I do not know, but I think nothing added more to the reputation of Governor Charles E. Hughes, of New York, than the fact that he refused to sign a bill, but vetoed it, reducing the rates which railway companies might charge, upon the ground that there had been no investigation which enabled fair judgment as to what was fair treatment to the railway corporations.

I was in public life a good many years and I am a firm believer in the sober second thought of the American people, for it represents the average judgment of every class of our people; but they get wrong, they get wrong about men, and they get wrong about policies and measures. They are subject, en masse, as men are individually, to moments of passion and excitement, and they know it. As Mr. Webster said, and as the Supreme Court of the United States has said, the fundamental object of a constitution adopted by the people is that they may protect themselves against themselves in moments of excitement and passion. And the American people will always give heed to the popular translation of the phrase, "Due process of law," that is, hear before you strike.

Now the Commission, the Interstate Commerce

Commission, was intended by the Congress which created it to be an absolutely independent body. It was to report to the Congress, it was not to be subject to the command of either House of Congress, or of the Executive of the United States. It was intended to be a quasi-judicial body. I know all of its members, and I do not depreciate to the slightest extent the services which it has rendered. The only criticism I would have of it, and that does not arise from its membership, but it is inherent in the system, is that it is never satisfied with the powers it has got. It is as insatiable as death for power. It has been proposed that they shall have the power to regulate the issue of stocks and bonds by railway corporations created by the states, that is, if the state which creates the railway company authorizes it, desiring it to utilize its privileges for the construction of a new railroad, to issue stock, or issue bonds, that it shall not be permitted to do that thing until the act of the legislature and the approval of the governor shall have been supplemented by the approval of the Interstate Commerce Commission. Now I am getting along in years, and I am a little old-fashioned, and I have not yet been able to satisfy myself that where one government creates a stock corporation, another government shall regulate the amount of its capital stock and its bonded indebtedness.

I have seen it proposed lately that the Commission should have the power to fix a rate, and that that rate should be final until a final judgment setting it aside was reached. What becomes of the constitution under such a law as that? A railway company, as I have said, owns its property. It renders a compulsory service to the public over its own property, with its own equipment, with its own employes, and at its own risk, and is entitled to a fair compensation,

based upon the fair value of the property which it devotes to the public convenience, and the Supreme Court has held that that property can not be taken—because the use of property is the property—can not be taken for the public use without just compensation, and if the state, the legislature, or the Congress may authorize a commission to fix a rate as reasonable and fair, beyond which the railway company may not charge for services it renders, and require it to observe that rate until the final adjudication as to whether the rate is reasonable or not, and after the lapse of months it is decided that it was unreasonable, how can the railway company recover the great sum in unreasonable rates which it had lost? It is a taking of a private property for a public use without just compensation, and I deny the constitutional power of Congress to do that thing. I admit the power, and the exercise of it to the fullest extent to so far regulate railway corporations as to secure to the public a faithful discharge of all their duties to the public at reasonable rates, and under fair regulations; beyond that I believe that the owners of the property ought to be permitted to manage the property.

The business of railway management has become one of the learned professions. It calls for some of the brightest intellects in the country. It calls for the exercise of powers which, if devoted to the law or to finance or to any other business, would place those who exercise it among those at the head. It is one of infinite complication, and it is not to be supposed that railway commissions can manage railway properties as well as the men who have been trained from boyhood to that business. I have never questioned that the Interstate Commerce Commission, the Commission in Wisconsin, and

other commissions, earnestly set out to do the just and fair thing, but the trouble with this whole question is, and has been through many a year, that it gets too often into politics. I do not believe myself that questions of business ever ought to find their way into the political platform of the party, any more than I believe that the relations of the employer to the employe, whatever the business may be, ought to become the football of party politics.

This Association was born out of a happy inspiration. I think these troublesome problems are approaching solution. The railway companies must obey the law. The people ought to see to it that the law which the railway corporations are obliged to obey is a just law, and that is to be ascertained only on painstaking inquiry, and not through the speeches of enthusiastic orators or on the floors of Congress. It has got to be at times that where there was no other issue upon which a political contest could be fought out, the easy, obvious and last resort was "let us go for the railroads," or, as a Governor of Minnesota once expressed it, "Let's shake the railroads over hell." The truth is that the interest of the railroads is the interest of the people. The railroad company is dependent upon the people for its life and its sustenance, and the people are no less dependent upon the railway company, and between the two there should be even-handed justice. They should be dealt with calmly, and legislation should only follow deliberation and investigation, and a law once enacted should be impersonally enforced, not enforced against some and left to fall into innocuous desuetude as to others.

RAILROAD PROBLEMS OF TODAY

By J. B. Thayer,
Vice-President Pennsylvania Railroad Company.

Address delivered before the Traffic Club of New York, Saturday Evening, February 16, 1909.

Problems—both many and varied—have always confronted the railway manager. Particular problems come to the front from time to time that tax all of our resources. They differ with different periods of our history. Today one of the most serious depends more for its solution upon our lawmaking bodies, both State and national, than upon the railroad men, and for the present, at least, we must feel like the old Arkansas darky, who said he was "in the hands of an all-wise and unscrupulous Providence."

In the early days of railroads the chief problem was that of construction and equipment; later, when more railroads had been built than there was traffic to feed, there came the traffic problem, and all the abuses which followed in its train. These, in turn, led to the legislative problem accompanied by the Interstate Commerce Law of 1887, and through the '90s all sorts of problems—including bankruptcy for many. Now, within the past few years has come the great problem of enlargement—the construction period again, but in a different shape. Not experimental, for we had learned how to build and how to equip; not the building so much into new country, but to take care of the traffic which was overflowing our rails.

Events of the past year have proved the absolute necessity for almost all the large railroads in this country to enlarge their trackage, their terminals,

and their equipment; and yet, here again, when in considering where to obtain the necessary funds for such purposes,—which must, of course, come from the public,—the railroad managers find themselves confronted with great difficulties. This, of course, is largely due to the tremendous demands for capital, in the development that is going on in all parts of the world, but it is increased, at the moment, by the natural timidity of capital to invest its funds in railroad securities, in view of the violent attacks that are being made against corporations through Congress and the State legislatures.

POPULAR HOSTILITY TO THE RAILROADS.

This brings us, then, to our greatest and most perplexing problem—that of how to restore a state of reciprocal understanding and fairness between the carriers and the public. Many railroad officials believe that so deep-seated is the apparent hostility of the people that the management of the railways will be taken practically out of the hands of their owners, and that great disasters are to follow. I do not share this view, principally for the reason that whatever may have been the faults in the past, the methods and practices of railroad management are now based upon a decent regard for their public responsibilities. Sooner or later the people will recognize this—as I believe they are already beginning to do. But by no means can we minimize the actual situation of today. It is, indeed, a time of great anxiety to all those entrusted with railroad management, and who have the interests of their country at heart as well.

With the old rebates and secret discriminations things of the past, with all kinds of business in a

most prosperous condition, we all know that within the past three years, suddenly, out of an almost cloudless sky, there has burst forth upon the railroads of this country a torrent of the most bitter and violent attacks—by political orators upon the stump; in magazines and newspapers; in Congress and State legislatures. It is fair to say, I think, that this onslaught had its origin in the agitation of 1904 for changes in the Interstate Commerce law. It was based upon a misunderstanding of existing railroad conditions and the position of the railroad in regard to the points at issue, which I shall presently explain.

Following the agitation surrounding the passage of the rate bill has come a swarm of bills in Congress and State legislatures, which, if they become laws, and are enforced, will prove disastrous to the railroads, and, equally so, to the public at large. The question is, What is to be done to prevent it? The old method of influence has been abandoned, and, I hope, forever. Has it left us unequipped to meet the issue? To answer this question let us get a perspective.

RAILROADS NOT BLAMELESS.

We must not imagine, to begin with, that we are entirely blameless. We are in some respects only realizing the wages of past sins. We have done many of "those things which we ought not to have done," and we have left undone many of "those things we ought to have done." Most of the evils date back many years and many of them might have been prevented had the government done its duty and enforced the law. Yet even in most recent years we can find some mistakes with which to concern ourselves. It is not strange that many men who have suffered loss through delays in their traffic, or in

their personal transportation, or who saw themselves deprived of profitable business because they could not secure cars, should have become exasperated and, not having time to properly analyze the difficulty, thought that the railroads were lacking in foresight and management.

But let us go back a few years. It is a great mistake to hold the railroads responsible for such practices as rebating in those days, when it would have been impossible to throw a stone in a commercial community without hitting somebody who was taking rebates and wanting more. Many men are today running for office on anti-railroad platforms who if you were to say "Rebates" would duck their heads very much as David Harum said his Newport friends would do if he called out "Low bridge!" That rebates were wrong nobody questions, but to pillory a man today for accepting rebates at that time is a farce.

Many persons believe that the so-called discriminations, resulting in the secret arrangements, were largely influenced by the desire upon the part of railroad officials to favor one man against another, but no thoughtful man who has at all studied the problem believes this. Rebates and other forms of discrimination,—whatever may have been the result in specific instances,—had their origin mainly in the competition between carriers for the traffic. Incidentally, in transacting railroad business through secret arrangements, as became the custom in that period, there were many cases of discrimination in favor of the strong and against the weak.

There was a strong feeling upon the part of many men, both in and out of railway service, that the larger shipper, under the ordinary rules of business,

was entitled to a lower rate, and they could not conceive the real principle which should govern the making of railroad rates,—which, however, has come clearly to be realized since that time. The railroad systems, generally, were not more anxious to pay rebates than they were to pay higher prices for their supplies, and simply pursued the course of their competitors because, otherwise, they saw nothing but loss and probable bankruptcy staring them in the face. The railroads were forbidden by law to meet and make formal agreements for the maintenance of rates, and by another law were required to compete. We all thought that the old plan *was* competition.

Had the Government, through its Interstate Commerce Commission, vigorously undertaken to enforce the law—passing if necessary, long before it did, the Elkins Act—I think we should have seen a correction of these abuses long before the reform came; but, as a matter of fact, neither the Government authorities nor many of those managing the railroads had yet reached a clear conception of the significance of the abuses which existed and of the proper legal method of uprooting those evils.

GETTING AWAY FROM OLD ABUSES.

Upon the resumption of business activity, in 1898 and 1899, and, later, following the passage of the Elkins Act, the opportunity was presented,—and in general accepted by the railroads,—to get away from the old methods. While since then there have been some cases of violation of the law, in the matter of secret arrangements, yet I think that, at least within the last four or five years, it is safe to say that they have been of small importance, and perhaps, in many of the cases—while a technical violation of the law—were actually not discriminations. I say this

advisedly, so far as the eastern situation is concerned, because I know that the Pennsylvania Railroad Company has not paid a rebate for years, and it is fair to believe that as that company held its traffic,—in fact, largely increased it,—without the necessity for such arrangements, its competitors must have to a large extent pursued the same policy.

But not alone in reference to freight rates was there more or less complicity in evil between the people and the railroads, but let me ask you to consider, for a moment, the question of free transportation, or passes,—whether political or business. It is only within the last year or two that the public conscience has been awakened on this subject. It is true, the railroads have been abused for several years by those who did not enjoy such favors, but is the railroad more responsible for the conditions that existed than the Government of the people, either in the National Congress or in the State legislatures, and how could it be expected that the legislators in one State could feel that they were doing very wrong in accepting passes, when the legislators of another State enjoyed them by law of the State? How could members of Congress be criticised for accepting such privileges, or the railroads for extending them, when the Presidents of the United States and member of their cabinets, and other important officers of the Government not only accepted them, but practically exacted them, and, further, expected that private cars and private trains should be furnished without charge? Upon one occasion within the past two years I called upon the Interstate Commerce Commission to ask its assistance in eliminating the pass abuse, and was very frankly told that it could make no move, nor take any interest in the subject, in view of the fact

that important public officials including Senators and the members of Congress felt that it was not improper for them to accept them. Out of this situation grew a large part of the pass abuse, because, following the national government and the legislatures, the large men of business felt that they could properly accept similar privileges.

Therefore, I repeat, that while there were great abuses—especially during the period referred to—embittering a large portion of people, yet the railroads were no more responsible than the people themselves; and yet, without doubt it was during this period that the foundation was laid for the feeling of the present day.

RAILWAYS WELCOME JUST REGULATION.

But, as I stated, we were forced to bear the brunt of our past sins—and more—in the campaign for increasing the powers of the Interstate Commerce Commission. Do not misunderstand me. Many thoughtful railroad men believed always, in the value, both to the railroads and the public, of an interstate law, and, further, considered it wise to strengthen the power of the Commission. The distinction, however, between what railroad men did and did not believe in, is very clear. We felt and we feel now that the government is perfectly justified in regulating railroad practices to the extent of preventing discriminations. Indeed, the government should act as a sort of policeman to see to it that the weak and the helpless are protected. If reasonably administered, the railroads need the law. But the government should not have the right to interfere with the proper play of the natural commercial forces of the nation. The great distinction between police and commercial powers should never be lost

sight of.

The danger does not lie in the provisions of the new national law. There is no substantial difference between its provisions and those of the old law, except in respect to the powers of the Commission. There was no necessity for the new law, so far as the prevention of the old abuse of secret rates and discrimination was concerned. The operation of this law does not involve any material change in traffic operations of the railroads; the only danger is as to how the Commission may exercise their power in influencing reductions in rates, but even in that respect the railroads have the right of appeal to the courts. It is from various other bills being presented in Congress in which the immediate danger lies, showing possible interference by the national government with the operation of railroads, with respect to the hours of labor of its employes, systems of signals, and other methods of operation, which should properly be left to the railroads themselves. This threatened interference of the federal government is having a powerful and dangerous influence upon the legislatures of the various states, who apparently are—in a slang term—"Seeing Congress and going them five or six better"—in the bills for reduction of state rates, both passenger and freight; for increase in taxation, and all sorts of measures which tend to reduce the earnings and increase the expenses, and hamper and delay the actual development necessary.

It was unfortunate that in the agitation and discussion following the President's recommendations, until the present law was finally adopted, there was a total misunderstanding upon the part of the public at large as to this attitude of

the railroads. It was most unfortunate in that campaign that the principal point of contest upon the part of the railroads was lost sight of—and that is—the objection upon their part not to reasonable amendments to the law, and not—if the people wanted it—to some increase of power to the Commission, but to the attempt to make a commission of five or seven men—in many respects a political body—the final arbiters as to the rates and fares of the railroads.

DIFFICULTIES UNDER THE PRESENT LAW.

Yet even with the new law on the statute books, our traffic problems are still with us. We are forbidden by law to make formal agreements as to rates, yet it is universally recognized that in order to secure an equitable adjustment of rates, it is absolutely necessary that the traffic managers of the railroads shall confer frequently. It is well known that such conferences are held and must be held to prevent discriminations, yet no definite agreements can be made.

The present law stipulates that there shall be no discrimination by railroads against persons or communities. Right here, however, the railroads are face to face with a problem all their own, which is a very serious one, and that is: How shall a particular railroad prevent discrimination against a community on its own line by some other railroad seeking to specially favor a community on its line? Is it not absolutely essential that there should be both an understanding and a virtual agreement on the part of the two railroads concerned for the purpose of protecting both communities?

Cases of dispute between railroads as to proper

rate adjustments have, indeed, been referred to Interstate Commerce Commissioners as arbitrators and their findings have been observed. This shows how absolutely vital to all business is the necessity for that co-operation which can only be secured by agreement and conference between all interested parties. The President of the United States recognized the necessity for this fact in his last annual message and recommended that some legislation be passed which would permit agreements between railroads as to rates.

We are thus in the presence of this ridiculous situation; that on the one hand we are being threatened with prosecution by the Government for violation of the Sherman Act in respect to methods which on the other hand the President of the United States and the Interstate Commerce Commissioners agree must be followed in order to properly discharge our responsibility to the public—in other words, we are "between the devil and the deep sea," or we are damned if we do, or we are damned if we don't.

So much for the moment, for our national problem. As to State regulation: while not believing —now that we have a national law—that it is necessary or desirable for the public to establish state commissions and special railroad laws, at the same time, if the people desire such commissions, we have no right to look upon such a demand as "anarchistic," but we feel that the working of such commissions will be unsatisfactory to the business interests.

CONFIDENCE AND JUSTICE NEEDED.

These are but a few of our problems and difficulties. While I do not wish to minimize the

dangers of the present situation, while I recognize that it is now to some extent, by adding to the timidity of investors, retarding our ability to secure funds necessary to make extensions and buy equipment required for the ever-increasing traffic of the country, and if continued will make it impossible, yet I am firmly of the opinion that the good sense of the people will prevail and the unjust attacks cease. Confidence of investors both here and abroad is needed to furnish funds, and, if this is seriously shaken, the prosperity of the railroads, which are the keystone of the arch of business, will be destroyed.

To avoid these dangers a regime of confidence and fairness on the part of the public toward the railroads must be restored, and to accomplish this we must place our case, as it were, before the legislators and the people and make clear our difficulties and the complications which beset us. Few, after all, understand the railroad problem, and we have not made it plain to the people, either because it was the fashion not to do so, or because we could not realize that things simple to us were not understood by the public. We must not stop at one statement, but discourse upon and elucidate every subject which the public misunderstands.

Let us be frank and take the public into our confidence as fully as is consistent with the proper conduct of our business. Let us approach the subject with the feeling that the railroads are not absolutely perfect, that we have to some extent brought this condition of affairs upon ourselves, and that we should govern ourselves in the future accordingly. Let us undertake to go frankly before the people and present the actual facts in connection with our

affairs.

THE PENNSYLVANIA AS AN ILLUSTRATION.

Let me illustrate: The Pennsylvania Legislature is in session. Numerous bills have been presented, of a most radical nature. It is our purpose to appear before every committee that will hear us, and tell our side of the story. I doubt very much if the average legislator—and certainly not the average citizen—understands whom he is injuring in unjust acts towards the railroads. Take our company, for example. It is not a small group of rich capitalists; it is not Mr. McCrea and myself and a few others; the Pennsylvania Railroad is owned by more than 50,000 people, 30 per cent of whom live in Pennsylvania. Forty-seven per cent of our shareholders are women; and in many cases the dividend is their only source of income. Then there are thousands of bondholders; beyond them are nearly 100,000 employes in the State of Pennsylvania dependent upon the prosperity of the Pennsylvania Railroad for their livelihood.

Therefore, by the usual computation, it is safe to say that approximately half a million people—men, women and children—are actually dependent upon the welfare of this company in the State of Pennsylvania alone.

Upon the Pennsylvania Railroad's prosperity depends the prosperity of the other lines in its system, and including the employes of these lines, there are 200,000 men, who, with their families, constitute an army of a million or more. Behind them, again, are the thousands of men, with their families, who produce the coal and other materials which the railroads use. Anything that cripples the railroads injures every one of these people.

When we make these and other facts plain, I cannot but feel that no injustice will be done. In the meantime, let us keep our minds well balanced, and not allow ourselves to believe that chaos is coming; let us meet the issue fairly and squarely and frankly. While, therefore, necessary for the present, at least, to suspend many improvements, let us keep our courage, trusting to the ultimate good sense of the lawmakers and the people for that sympathy and support to which we feel that we are entitled.

THE RELATION OF RAILROADS TO THE STATE.

By W. M. Acworth, M. A.

Delivered before the British Association at Dublin, Ireland, September 2, 1908.

I propose to treat the subject in two aspects; first, the history in outline of the relations between railroads and the state in different countries, and, second, the question of the factors which are of primary importance in any consideration of the matter.

Ever since the year 1830, when the dramatic success of the Liverpool & Manchester Railway first revealed to a generation less accustomed than our own to revolutionary advances in material efficiency the startling improvements in transport that railroads were about to effect, theorists have discussed the

question whether state or private ownership of railroads be in the abstract the more desirable. But it is safe to say that in no country has the practical question, "Shall the state own or not own the railroads?" been decided on abstract considerations. The dominant considerations have always been the historical, political and economic position of the particular country at the time when the question came up in concrete shape for decision.

BELGIUM.

The Belgian railroads have belonged to the state from the outset, because they were constructed just after Belgium separated from Holland, and (the available private capital being in Holland and not in Belgium) King Leopold and his Ministers felt that, if the railroads were in private hands, that would mean in Dutch hands, and the newly acquired independence of Belgium would be thereby jeopardized. Within the last few years this history has repeated itself, and the fact that the bulk of the Swiss railroad capital was held in France and Germany was one main reason, if not *the* main reason, which induced the Swiss people to nationalize their railroads.

GERMANY.

In Germany 70 years ago the smaller states were regarded as the personal property of their respective Sovereigns, almost as definitely as Sutherlandshire is the property of the Duke of Sutherland. And it was therefore as natural that the Dukes of Oldenburg or Mecklenburg should make railroads for the development of their estates as that the Duke of Sutherland should build a railroad in Sutherland.

AUSTRALASIA.

Take, again, Australasia. In that region the whole of the railroads, with negligible exceptions, now belong to the different state governments, and the public sentiment that railroads ought to be public property is today so strong that it is impossible to imagine any serious development of private lines. But at the outset the traditional English preference for private enterprise was just as strong there as it was at home, and it was only the fact that the whole of the available private capital was absorbed in the development of the gold fields and that, therefore, if railroads were to be built at all, public credit must be pledged and English capital must be obtained, that caused the state to go into the railroad business.

ITALY.

Take, once more, the case of Italy. In the days when Italy was only a geographical expression, the various Italian states experimented with railroad management of all sorts and kinds. When, after 1870, Italy was unified, it was necessary to adopt a national railroad policy, and the Italian government instituted an inquiry whose exhaustiveness has not since been approached. The force of circumstances has indeed already compelled the government to acquire the ownership of the railroads, but the Commission reported that it was not desirable that the government should work them. The railroads were accordingly leased for a period of 60 years, running from 1884, to three operating companies, and it was provided that the leases might be broken at the end of the 20th or the 40th year. From the very outset a condition of things developed which had not been contemplated when the leases were granted, and for which the leases made no provision.

Constant disputes took place between the government and their lessees. Capital for extensions and improvements was urgently needed; neither party was bound to find it; and agreement for finding it on terms mutually acceptable was impossible of attainment. In the end the government has been forced to cut the knot, to break the lease at the end of the first 20 years' period, and for the last two years the Italian government has operated its own railroads. But it is safe to say that an *a priori* preference for state management over private management played but scant part in the ultimate decision.

GENERAL INCREASE OF STATE CONTROL.

It is impossible to review, even in the merest outline, the railroad history of all the countries in the world, but the instances already given will serve to illustrate my proposition that the position in each country depends not on abstract considerations, but on the practical facts of the local situation. Yet one cannot look round the world and fail to recognize that the connection between the railroads and the state is everywhere becoming more intimate year by year. Whatever have been the causes, the fact remains that Italy and Switzerland have converted their railroads from private to public. In Germany the few remaining private lines are becoming still fewer. In Belgium the process is practically completed. In Austria it is moving steadily in the same direction; four-fifths of the total mileage is now operated by the state. In Russia the story would have been the same, had it not been for the war with Japan. Even in France, whose railroads have a very definite local and national history of their own, an act for the purchase of the Western Railway by the

state was passed last year by the Chamber of Deputies, and has now, after much contention, been passed by the Senate within the last few weeks. But it is not without interest to note that, though a majority both of deputies and of senators supported the bill, the representatives of the district served by the company were by a large majority opposed to it, while the commercial community of the whole of France, as represented by the Chambers of Commerce, were almost unanimously hostile.[1] So far as can be seen at present, the purchase of the Western Railway by the state is not likely to be made a precedent for the general nationalization of the French railroads. Still, the broad fact remains that a series of railroad maps of the continent of Europe, constructed at intervals of ten years, would undoubtedly show an ever-increasing proportion of state lines, and that the last of the series would exhibit the private lines as very far below the state lines both in extent and in volume of traffic.

A word ought to be said of Holland, not only because Holland is a country with free institutions like our own, but because the railroad position of Holland is unique. The railroads of that country were built partly by the state and partly by private enterprise, but the working has always been wholly in private hands. Some ten years ago, however, the Dutch government bought up the private lines and rearranged the whole system. The main lines of the country are now leased to two operating companies, so organized that each company has access to every important town, and railroad competition is now practically ubiquitous throughout Holland. So far there are no signs that the Dutch people are otherwise than satisfied with their system. Now

compare this with France. The French government, though it has hitherto, except on the comparatively unimportant state railroads in the southwest of the country, stood aloof from the actual operation, has always kept entire control of railroad construction and of the allocation of new lines between the several companies. And the French government has proceeded on a principle diametrically opposed to the Dutch principle. In France railroad competition has, as far as possible, been definitely excluded, and the various systems have been made to meet, not, as in Holland, at the great towns, but at the points where the competitive traffic was, as near as might be, a negligible quantity. Now that questions of competition and combination are to the fore in England, and seem likely to give very practical occupation to Parliament in the session of 1909, the precedents on both sides are perhaps not without interest.

AMERICA.

When we turn from the continent of Europe to the continent of America the position of affairs is startlingly dissimilar. The railroads of America far surpass in length those of the continent of Europe, while in capital expenditure they are equal. State ownership and operation of railroads on the continent of America is as much the exception as it is the rule in Europe. In Canada there is one comparatively important state railroad, the Intercolonial, about 1,500 miles in length. Though its earnings are quite considerable—about £20 per mile per week—it barely pays working expenses. I may add that in all the voluminous literature of the subject I have never seen this line cited as an example of the benefits of state management. There

is another small line, in Prince Edward Island, which is worked at a loss; and a third, the Temiskaming & Northern Ontario Railway, owned not by the Dominion but by the Provincial government, which is too new to afford any ground for conclusions.

The Federal government of the United States has never owned a railroad, though some of the individual states did own, and in some cases also work, railroads in very early days. They all burnt their fingers badly. But the story is so old a one that it would be unreasonable to found any argument on it today.

In Mexico, of which I shall have more to say directly, the state owns no railroads. As for Central America, Costa Rica and Honduras have some petty lines, which are worked at a loss. Guatemala had a railroad till 1904, when it was transferred to a private company. Nicaragua has also leased its lines. Colombia owns and works at a profit, all of which is said to be devoted to betterment, 24 miles of line.

In South America, Peru and Argentina own, as far as I am aware, no railroads. The Chilian government owns about 1,600 miles out of the 3,000 miles in the country. Needless to say private capital has secured the most profitable lines. The government railroad receipts hardly cover the working expenses. The Brazilian government formerly owned a considerable proportion of its railroad network of nearly 11,000 miles. Financial straits forced it some years ago to dispose of a large part to private companies, to the apparent advantage at once of the taxpayer, the shareholder and the railroad customer. About 1,800 miles of line are still operated by the government, the receipts of which, roughly speaking, do a little more than balance working expenses. But it may be

broadly said that the present Brazilian policy is adverse to state ownership and in favor of the development of the railroad system by private enterprise.

THE UNITED STATES SITUATION.

The question of public ownership and operation was, however, raised very definitely in the United States only two years ago, when Mr. Bryan made a speech stating that his European experience had convinced him that it was desirable to nationalize the railroads of the United States. For many weeks after, Mr. Bryan's pronouncement was discussed in every newspaper and on every platform, from Maine to California. Practically, Mr. Bryan found no followers, and today, though he is the accepted candidate of the Democratic party for the Presidency, the subject has been tacitly shelved. To some extent this may have been due to the ludicrous impossibility, if I may say so with all respect for a possible President, of Mr. Bryan's proposals. In order, presumably, not to offend his own Democratic party, the traditional upholders of the rights of the several states, he seriously suggested that the Federal government should work the trunk lines, and the respective state governments the branches. Even if anybody knew in every case what is a trunk line and what is a branch, the result would be to create an organism about as useful for practical purposes as would be a human body in which the spinal cord was severed from the brain. Mr. Bryan's proposal was never discussed in detail: public sentiment throughout the Union was unexpectedly unanimous against it, and it is safe to say that the nationalization of the railroads of the United States is not in sight at present.

But though nationalization is nowhere in America a practical issue, everywhere in America the relations between the railroads and the state have become much closer within the last few years. Canada a few years ago consolidated its railroad laws and established a Railway Commission, to which was given very wide powers of control both over railroad construction and operation and over rates and fares for goods and passengers. Argentina has also moved in the same direction. In the United States, not only has there been the passage by the Federal Congress at Washington of the law amending the original Act to Regulate Commerce and giving much increased powers to the Interstate Commerce Commission, besides various other Acts dealing with subsidiary points, such as hours of railroad employes, but scores, if not hundreds, of Acts have been passed by the various state legislatures. With these it is quite impossible to deal in detail; many of them impose new pecuniary burdens upon the railroad companies, as, for instance, the obligation to carry passengers at the maximum rate of a penny per mile. All of them, speaking broadly, impose new obligations and new restrictions upon the railroad companies. Not a few have already been declared unconstitutional, and therefore invalid, by the law courts. And when the mills of American legal procedure shall at length have finished their exceedingly slow grinding, it is safe to prophesy that a good many more will have ceased to operate. But for all that, the net result of state and Federal legislation in the sessions of 1906 and 1907 will unquestionably be that even after the reaction and repeal, which, thanks to the Wall street panic of last year, is now in progress, the railroads of the United States will in the future be subject to much more rigid and detailed control by public

authority than there has been in the past. The reign of railroad despotism, more or less benevolent, is definitely at an end; the reign of law has begun. It is only to be regretted that the quantity of the law errs as much on the side of excess as its quality on the side of deficiency.

THE MEXICAN SITUATION.

Apart from its interest as a quite startling example of how not to do it, the recent railroad legislation of the United States is only valuable as an indication of the tendency, universal in all countries, however governed, for the state to take a closer control over its railroads. Much more interesting as containing a definite political ideal, worked out in detail in a statesmanlike manner, is the recent railroad legislation of Mexico. One may be thought to be verging on paradox in suggesting that England, with seven centuries of parliamentary history, can learn something from the Republic of Mexico. But for all that I would say, with all seriousness, that I believe the relation between the state and the national railroads is one of the most difficult and important questions of modern politics, and that the one valuable and original contribution to the solution of that question which has been made in the present generation is due to the President of the Mexican Republic and his Finance Minister, Señor Limantour.

Broadly, the Mexican situation is this: The Mexican railroads were in the hands of foreign capitalists, English mainly so far as the older lines were concerned, American in respect to the newer railroads, more especially those which constituted continuations southwards of the great American railroad systems. The foreign companies, whether English or American, naturally regarded Mexico as a

field for earning dividends for their shareholders. The American companies further, equally naturally, tended to regard Mexico as an annexe and *dépendance* of the United States. If they thought at all of the interest of Mexico in developing as an independent self-contained state, they were bound to regard it with hostility rather than with favor, and such a point of view could hardly commend itself to the statesmen at the head of the Mexican government. Yet Mexico is a poor and undeveloped country, quite unable to dispense with foreign capital; and, further, it was at least questionable whether Mexican political virtue was sufficiently firm-rooted to withstand the manifold temptations inherent in the direct management of railroads under a parliamentary *régime*. Under these circumstances the Mexicans have adopted the following scheme: For a comparatively small expenditure in actual cash, coupled with a not very serious obligation to guarantee the interest on necessary bond issues, the Mexican government have acquired such a holding of deferred ordinary stock in the National Railroad Company of Mexico as gives them, not, indeed, any immediate dividend on their investment, but a present control in all essentials of the policy of the company, and also prospects of considerable profit when the country shall have further developed. The organization of the company as a private commercial undertaking subsists as before. A board of directors, elected in the ordinary manner by the votes of shareholders, remains as a barrier against political or local pressure in the direction of uncommercial concessions, whether of new lines or of extended facilities or reduced rates on the old lines; but—and here is the fundamental difference between the new system and the old—whereas under the old system

the final appeal was to a body of shareholders with no interest beyond their own dividend, the majority shareholder is now the Government of Mexico, with every inducement to regard the interests, both present and prospective, of the country as a whole.

IRREFRAGABLE THEORY OF PUBLIC OWNERSHIP.

Public ownership of railroads is in theory irrefragable. Railroads are a public service; it is right that they should be operated by public servants in the public interest. Unfortunately, especially in democratically organized communities, the facts have not infrequently refused to fit the theories, and the public servants have allowed, or been constrained to allow, the railroads to be run, not in the permanent interest of the community as a whole, but in the temporary interest of that portion of the community which at the moment could exert the most strenuous pressure. The Mexican system, if it succeeds in establishing itself permanently—for as yet it is only on its trial—may perhaps have avoided both Scylla and Charybdis. Faced with a powerful but local and temporary demand, the government may be able to reply that this is a matter to be dealt with on commercial lines by the board of directors. If, on the other hand, permanent national interests are involved, the government can exercise its reserve power as a shareholder, can vote the directors out of office, and so prevent the continuance of a policy which would in its judgment be prejudicial to those interests, however much it might be to the advantage of the railroad as a mere commercial concern.

STATE CONTROL OR OWNERSHIP.

The history whose outline I have now very briefly sketched shows, I think, that whereas there is

everywhere a tendency towards further state control, the tendency towards absolute state-ownership and state-operation is far from being equally universal. I shall have a word to say presently as to the reasons why America shows no signs of intention to follow the example of continental Europe. Meanwhile it is well to notice that American experience proves also the extreme difficulty of finding satisfactory methods of control. Sir Henry Tyler said some five-and-thirty years ago in England, in words that have often been quoted since, "If the state can't control the railroads, the railroads will control the state"; and President Roosevelt has again and again in the last few years insisted on the same point. "The American people," he said in effect, "must work out a satisfactory method of controlling these great organizations. If left uncontrolled, there will be such abuses and such consequent popular indignation that state-ownership will become inevitable, and state-ownership is alien to American ideas, and might cause very serious political dangers."

Perhaps some of my hearers may remember Macaulay's graphic description of the passion that was aroused by Charles James Fox's proposed India Bill; it was described as a Bill for giving in perpetuity to the Whigs, whether in or out of office, the whole patronage of the Indian government. The objection felt by American statesmen to handing over their railroads to the National government—for I think it may be taken for granted that if they were nationalized it would have to be wholly under Federal management, and that the separate states could take no part in the matter—is in principle the same. There are something like a million and a half men employed on the railroads of the United States, say roughly 7 or 8 per cent. of the voters. Americans

feel that rival political parties might bid against each other for the support of so vast and homogeneous a body of voters; that the amount of patronage placed at the disposal of the executive government for the time being would be enormous; and that the general interests of the nation might be sacrificed by politicians anxious to placate—to use their own term—particular local and sectional interests. How far this fear, which is undoubtedly very prevalent in the states, is justified by the history of state railroads in other countries is a question exceedingly difficult to answer. Dealing with state railroads in the lump, it is easy to point to some against which the charge would be conspicuously untrue. To take the most important state railroad organization in the world, the Prussian system, no one, I think, can fairly deny that it has been operated—in intention at least, if not always in result—for the greatest good of the greatest number. But then Prussia is Prussia, with a government in effect autocratic, with a civil service with strong *esprit de corps* and permeated with old traditions, leading them to regard themselves as the servants of the king rather than as candidates for popular favor. An American statesman, Charles Francis Adams, wrote as follows more than 30 years ago: "In applying results drawn from the experience of one country to problems which present themselves in another, the difference of social and political habit and education should ever be borne in mind. Because in the countries of continental Europe the state can and does hold close relations, amounting even to ownership, with the railroads, it does not follow that the same course could be successfully pursued in England or in America. The former nations are by political habit administrative, the latter are parliamentary. In other words, France and Germany

are essentially executive in their governmental systems, while England and America are legislative. Now the executive may design, construct or operate a railroad; the legislative never can. A country therefore with a weak or unstable executive, or a crude and imperfect civil service, should accept with caution results achieved under a government of bureaus. Nevertheless, though conclusions cannot be adopted in the gross, there may be in them much good food for reflection."

CONTROL BY DEMOCRACY, OR OWNERSHIP BY AUTOCRACY.

I am inclined to think that the effect of the evidence is that the further a government departs from autocracy and develops in the direction of democracy, the less successful it is likely to be in the direct management of railroads. Belgium is far from being a pure democracy; but compared with Prussia it is democratic, and compared with Prussia its railroad management is certainly inferior. Popular opinion in Belgium seems at present to be exceedingly hostile to the railroad administration; official documents assert that, while the service to the public is bad, the staff are scandalously underpaid, and yet that the railroads are actually not paying their way. There was, it is true, till recently an accumulated surplus of profits carried in the railroad accounts, but the official figures have been recently revised, and the surplus is shown to be non-existent.

The Swiss experiment is too new to justify any very positive conclusions being drawn from it; but this much is clear: the state has had to pay for the acquisition of the private lines sums very much larger than were put forward in the original estimate; the surplus profits that were counted on have not

been obtained in practice; the economies that were expected to result from unification have not been realized; the expenditure for salaries and wages has increased very largely; and so far from there being a profit to the Federal government, the official statement of the railroad administration is that, unless the utmost care is exercised in the future, the railroad receipts will not cover the railroad expenditure.

The Italian experiment is still newer. It would not be fair to say that it proves anything against state management; but I do not think that the most fervid *Etatist* would claim that, either on the ground of efficiency or on the ground of economy, it has so far furnished any argument in favor of that policy.

If we wish to study the state management of railroads by pure democracies of Anglo-Saxon type, we must go to our own Colonies. My own impressions, formed after considerable study of the subject and having had the advantage of talking with not a few of the men who have made the history, I hesitate to give. It is easy to find partisan statements on both sides; for example, in a recent article in the *Nineteenth Century*, entitled "The Pure Politics Campaign in Canada," I find the following quotation from the *Montreal Gazette*—a paper of high standing —dated May 27, 1907: "Every job alleged against the Russian autocracy has been paralleled in kind in Canada. First, there is the awful example of the Intercolonial Railway, probably as to construction the most costly single-track system in North America, serving a good traffic-bearing country, with little or no competition during much of the year, and in connection with much of its length no competition at all, but so mishandled that one of its managers,

giving up his job in disgust, said it was run like a comic opera. Some years it does not earn enough to pay the cost of operation and maintenance (I may interpolate that its gross earnings per mile are equal to those of an average United States railroad), and every year it needs a grant of one, two, three or four million dollars out of the Treasury to keep it in condition to do at a loss the business that comes to it. When land is to be bought for the road, somebody who knows what is intended obtains possession of it, and turns it over to the government at 40, 50 and 100 per cent advance. This is established by the records of Parliament and of the courts of the land."

AFRICAN CAPE GOVERNMENT RAILROADS.

Probably no one outside the somewhat heated air of Canadian politics is likely to believe this damning accusation quite implicitly; but even if there were not a word of truth in it—and that the management of the Intercolonial Railway is, for whatever cause, bad, appears, I think, clearly from the public figures—it is bad enough that such charges should be publicly made and apparently believed. Let me quote now from a document of a very different type referring to a colony very far distant from Canada: "A memorandum relative to Railroad Organization, prepared at the request of the Railroad Commissioners of the Cape Government Railways, by Sir Thomas R. Price, formerly general manager of those railroads, and now general manager of the Central South Africa (*i. e.*, Transvaal and Orange River) Railways, dated Johannesburg, February 22, 1907."

> "The drawbacks in the management of the railroads in the Cape that call for removal arise from the extent to which, and the manner in which, the

authority of Parliament is exercised. They are twofold in their character, viz.:

"(1) The practice of public authorities, influential persons, and others bent on securing concessions or other advantages which the general manager has either refused in the conscientious exercise of his functions, or is not likely to grant, making representation to the Commissioner (as the ministerial head of the Government), supplemented by such pressure, political influence, or other means as are considered perfectly legitimate in their way, and are best calculated to attain the end applicants have in view.

"(Many members of Parliament act similarly in the interests of the districts, constituents, or railroad employes in whom they happen to be interested. It is by no means unknown for the requests in both classes of cases to coincide somewhat with a critical division in Parliament—present or in prospect—or otherwise something has occurred which is regarded as irritating to the public or embarrassing to the Government, and the desire to minimize the effect by some conciliatory act is not unnatural.)

"(2) The extent to which the fictitious, and often transitory, importance which a community or district manages to acquire obscures (under the guise of the Colony's welfare) the consideration of the railroad and general interest in the Colony as a whole."

(During the earlier period of my railroad service in the Cape Colony few things impressed me more, coming as I had from a railroad conducted on strictly business lines, than the extent to which the conduct of railroad affairs was influenced by certain conditions. Nor was this impression lessened afterwards when, in the course of a conversation on the matter, Sir Charles Elliott mentioned to me that he had more than once told a late railway commissioner, "The Government is powerful, but [mentioning the town and authority] is more

powerful still.")

"I do not regard it as open to doubt that the Colony as a whole has suffered severely in consequence, the inland portions of the Colony particularly so; and that the need for a remedy is pressing if the railroads are to be conducted as a business concern for the benefit of the Colony.

"The necessity for the railroads and their administration being removed from such an atmosphere, and treated as a most valuable means of benefiting the Colony as a whole, while not neglecting the interests of a district (but not subordinating the welfare of the whole Colony thereto), is pressing. That there should be an authority to refer to in case of real necessity, where the decision or action of the general manager is not regarded as being in the public interests, is also clear. But it is equally manifest that the Commissioner or the Government of the day, with political or party consideration always in view, is not the proper court of reference.

"There can be little doubt that in the Cape Colony political considerations have influenced the adoption of new lines and their construction—many, if not most of them of an unprofitable character—without sufficient inquiry or information, often with scanty particulars, and possibly contrary to the advice of the officer afterwards entrusted with the construction and working of the line.

"A material change is imperatively necessary in this respect, if only to insure the solvency of the Colony."

VICTORIAN (AUSTRALIA) RAILROADS.

It is sometimes conceded that improper exercise of political influence may be a real danger where railroads are managed under a parliamentary *régime* by a Minister directly responsible to Parliament; but

that difficulty, it is said, can be got over by the appointment of an independent Commission entirely outside the political arena. History does not altogether justify the contention. The last report of the Victorian State Railways gives a list of seven branches, with an aggregate length of 46 miles, constructed under the Commissioner *régime* at a cost of £387,000, which are now closed for traffic and abandoned because the gross receipts failed even to cover the out-of-pocket working expenses. It is not alleged, nor is it a fact, that those lines were constructed in consequence of any error of judgment on the part of the Commissioners. But in truth it is inherently impossible to use a Commission to protect a community against itself. In theory a Commission might be a despot perfectly benevolent and perfectly intelligent; in that case, however, it can hardly be said that the nation manages its own railroads. But of course any such idea is practically impossible, because despots, however benevolent and intelligent, cannot be made to fit into the framework of an Anglo-Saxon constitution. In practical life the Railway Commission must be responsible to someone, and that someone can only be a member of the political government of the day.

COMPETITION HAS CEASED TO REGULATE.

I have indicated what in America, where the subject is much more carefully considered than here, is regarded as a great obstacle to a state-railroad system; but I have pointed out also that it is quite possible that statesmen fully alive to the dangers may yet find themselves constrained to risk them unless some satisfactory method of controlling private railroad enterprise can be found. I do not think it can be considered that this has been done in

England at the present time. In the main we have relied on the force of competition to secure for us reasonable service at not unreasonable rates; and as I still cherish a long-formed belief that English railroads are on the whole among the best, if not actually the best, in the world, I am far from saying that competition has not done its work well. But competition is an instrument that is at this moment breaking in our hands. Within quite a few years the South Eastern Railway was united with the Chatham; the Great Southern has obtained a monopoly over a large part of Ireland; in Scotland the Caledonian and the North British, the Highland and the Great North have in very great measure ceased to compete. If the present proposals for the working union of the Great Eastern, the Great Northern and the Great Central go through, competition in the East of England will be absolutely non-existent from the Channel to the Tweed. And one can hardly suppose that matters will stop there. In fact, since this address was in type a comprehensive scheme of arrangement for a long term of years between the London & North Western and the Midland has been announced. We must, I think, assume that competition, which has done good work for the public in its day, is practically ceasing to have any real operation in regulating English railroads.

HOW SHALL GOVERNMENT REGULATE?

For regulation, therefore, we must fall back on government; but how shall a government exercise its functions? Regulation may be legislative, judicial, executive, or, as usually happens in practice, a combination of all three. But we may notice that, as Mr. Adams points out, in Anglo-Saxon countries it is the Legislature and the Judicature that are

predominant; whereas in a country like France, which though a democracy is bureaucratically organized, it is executive regulation that is most important. Now, the capacity of the Legislature to regulate is strictly limited; it can lay down general rules; it can, so to speak, provide a framework, but it cannot decide *ad hoc* how to fit into that framework the innumerable questions that come up for practical decision day by day.

The capacity of the law courts to regulate is even more strictly limited. For not only is it confined within the precise limits of the jurisdiction expressly conferred upon it by the Legislature, but further, by the necessity of the case, a court of law can only decide the particular case brought before it; a hundred other cases, equally important in principle, and perhaps more important in practice, may never be brought before it at all. Even if the court had decided all the principles, it has no machinery to secure their application to any other case than the one particular case on which judgment was given. There was a case decided 30 years ago by our Railroad Commission, the principle of which, had it been generally applied throughout the country, would have revolutionized the whole carrying business of Great Britain. It has not been so applied, to the great advantage, in my judgment, of English trade. Further, the great bulk of the cases which make up the practical work of a railroad: "What is a reasonable rate, having regard to all the circumstances, present and prospective, of the case? Would it be reasonable to run a new train or to take off an old one? Would it be reasonable to open a new station, to extend the area of free cartage, and the like?"—all these are questions of discretion, of commercial instinct. They can only be answered with

a "Probably on the whole," not with a categorical "Yes" or "No," and they are absolutely unsuitable for determination by the positive methods of the law court with its precisely defined issues, its sworn evidence, and its rigorous exclusion of what, while the lawyer describes it as irrelevant, is often precisely the class of consideration which would determine one way or other the decision of the practical man of business.

It seems to me, therefore, that both in England and in America we must expect to see in the near future a considerable development of executive government control over railroads.

This is not the place to discuss in detail the form that control should take, but one or two general observations seem worth making. The leading example of executive control is France; in that country the system is worked out with all the French neatness and all the French logic. But it is impossible to imagine the French principle being transplanted here. For one thing, the whole French railroad finance rests upon the guarantee of the government. The French government pays, or at least is liable to pay, the piper, and has, therefore, the right to call the tune. The English government has not paid and does not propose to pay, and its claim to call the tune is therefore much less. Morally the French government has a right—so far at least as the railroad shareholders are concerned—to call on a French company to carry workmen at a loss; morally, in my judgment at least, the English government has no such right. But there is a further objection to the French system; the officers of the French companies have on their own responsibility to form their own decisions, and then the officers of the French

government have, also on their own responsibility, to decide whether the decision of the company's officer shall be allowed to take effect or not. The company's officer has the most knowledge and the most interest in deciding rightly, but the government official has the supreme power. The system has worked—largely, I think, because the principal officers of the companies have been trained as government servants in one or other of the great Engineering Corps, des Mines or des Ponts et Chaussées. But it is vicious in principle, and in any case would not bear transplanting.

What we need is a system under which the responsibility rests, as at present, with a single man (let us call him the general manager), and he does what he on the whole decides to be best, subject however to this: that if he does what no reasonable man could do, or refuses to do what any reasonable man would do, there shall be a power behind to restrain, or, as the case may be, to compel him. And that power may, I think, safely be simply the Minister—let us call him the President of the Board of Trade. For, be it observed, the question for him is not the exceedingly difficult and complicated question, "What is best to be done?" but the quite simple question, "Is the decision come to which I am asked to reverse so obviously wrong that no reasonable man could honestly make it?"

And even this comparatively simple question the President would not be expected to decide unaided. He will need competent advisory bodies. Railroad history shows two such bodies that have been eminently successful—the Prussian State Railway Councils and the Massachusetts Railroad Commission. Wholly unlike in most respects, they

are yet alike in this: their proceedings are public, their conclusions are published, and those conclusions have no mandatory force whatever. And it is to these causes that, in my judgment, their success, which is undeniable, is mainly due. Let me describe both bodies a little more at length.

There are in Prussia a number (about ten I think) of District Railway Councils, and there is also one National Council; they consist of a certain number of representative traders, manufacturers, agriculturists, and the like, together with a certain number of government nominees; and the railroad officials concerned take part in their proceedings, but without votes. The Councils meet three or four times a year, their agenda paper is prepared and circulated in advance, and all proposed changes of general interest, whether in rates or in service, are brought before them, from the railroad side or the public side, as the case may be. The decision of the Council is then available for information of the Minister and his subordinates, but as has been said, it binds nobody.

The Massachusetts Railroad Commission is a body of three persons, usually one lawyer, one engineer and one man of business, appointed for a term of years by the Governor of the state. Originally the powers of this Commission were confined to the expression of opinion. If a trade, or a locality, or indeed a single individual, thought he was being treated badly by a Massachusetts railroad, he could complain to the Commission; his complaint was heard in public; the answer of the railroad company was made there and then; and thereupon the Commissioners expressed their reasoned opinion. The system has existed now for more than 30 years,

and it is safe to say that, with negligible exceptions, if the Commission expresses the opinion that the railroad is in the right, the applicant accepts it; if the Commission says that the applicant has a real grievance, the railroad promptly redresses it on the lines which the Commission's opinion has indicated. The success of the Commission in gaining the confidence of both sides has been so great that of late years its powers have been extended, and it has been given, for example, authority to control the issue of new capital and the construction of new lines. But on the question with which we are specially concerned here, the conduct of existing railroad companies as public servants, it can still do nothing but express an opinion; and it may be added that the Commission itself has more than once objected to any extension of that power.

Mr. Adams, from whom I have already quoted, was the first Chairman of the Commission. He has described their position as resting "on the one great social feature which distinguishes modern civilization from any other of which we have a record, the eventual supremacy of an enlightened public opinion." That public opinion is supreme in this country, few would be found to deny; that public opinion in railroad matters is enlightened, few would care to assert. But given the enlightened public opinion, one can hardly doubt that it will secure not merely eventual but immediate supremacy. In truth, as Bagehot once pointed out, a great company is of necessity timorous in confronting public opinion. It is so large that it must have many enemies, and its business is so extended that it offers innumerable marks to shoot at. It is much more likely to make, for the sake of peace, concessions that ought not to be made than it is to resist a demand that reasonable

men with no personal interest in the matter publicly declare to be such as ought rightly to be conceded.

To sum up in a sentence the lesson which I think the history we have been considering conveys, it is this: Closer connection than has hitherto existed between the state and its railroads has got to come, both in this country and in the United States. Hitherto in Anglo-Saxon democracies neither state ownership nor state control has been over-successful. The best success has been obtained by relying for control, not on the constable, but on the eventual supremacy of an enlightened public opinion. Nearly 20 years ago, in the pages of the *Economic Journal*, I appealed to English economists to give us a serious study of what the Americans call the transportation problem in its broad economic and political aspects. Since then half-a-dozen partisan works have appeared on the subject, not one of them in my judgment worth the paper on which it is printed; but not a single serious work by a trained economist. And yet such a work is today needed more than ever. Let me once more appeal to some of our younger men to come forward, stop the gap, and enlighten public opinion.

FOOTNOTE:

[I] Further, it is common knowledge that the Senate only passed the bill (and that by a majority of no more than three) because M. Clemenceau insisted that he would resign if it was not passed, and, though they disliked nationalization much, they disliked M. Clemenceau's resignation more.

RAILWAY NATIONALIZATION

BY SIR GEORGE S. GIBB.

A paper read at a meeting of the Royal Economic Society, on 10th November, 1908.

Railway nationalization has for many years occupied the minds of economic and political students and the practical activities of statesmen in many countries and in English colonies. It has been regarded here as a remote possibility which might some day or other come to the front for practical discussion. But quite recently it would have been thought to be as incredible that any responsible politicians should be considering proposals for purchasing our railways for the State as that any substantial number of persons could be found who would advocate an abandonment of the fundamental principle that there should be no taxation of imports into England except for revenue purposes. In these days, however, public opinion moves suddenly and rapidly. The despised fallacy of yesterday rises as the creed of to-day. There are already many indications that, before long, there will be a numerous and influential, though perhaps a somewhat heterogeneous party, who will urge that immediate steps should be taken to nationalize our railways.

The test, and the only test, to be applied to proposals for railway nationalization is whether railways owned by the State and worked directly by Government officials would be better and more efficient than railways owned and worked by private

corporations, and whether, after taking account of all the effects of the change, upon each class, each district, each interest, the net result would increase the wealth and well-being of the community, and be a permanent benefit to the public.

We may, I think, start from the assumption that railway proprietors as such have no interest in opposing nationalization. The value of their property, whether measured in terms of capital value or in terms of future income, estimated on a fair basis, would, it is assumed, be fully provided for in the gigantic financial operation which railway purchase would involve. There is no legal flaw in the title of railway proprietors. They enjoy the fundamental rights attached by our law to absolute property, subject only to the performance of obligations definitely prescribed by Acts of Parliament. I think, therefore, that we may discuss this subject of railway nationalization without apprehension that the change, if it were adopted by the deliberate judgment of the community, would be accompanied by anything in the nature of confiscation of existing rights.

This might not be the intention or the wish of all who think that our railways should be nationalized. Probably some extreme Socialists would like to transfer railways to the State without giving what, in our judgment, would be adequate compensation to existing owners. Their aim is the substitution of a new social polity for that which exists, in which antiquated ideas of private property would have no place. But that is only a phase of their creed which condemns it to sterility. It is not the small band of Socialist zealots, but the majority of the nation that we have to consider in estimating the risk of

anything being done in the nature of confiscation.

Those who join the party for nationalizing will, no doubt, find themselves in strange company. There can be little doubt that the movement up to the present has been mainly Socialistic. A trader, who advocates nationalization because he hopes that he might be able to transfer to somebody else, perhaps he does not very much care whom, some part of the burden of the charges which he has to pay for railway carriage, will find that his next neighbor at a meeting of the party is a man who has joined for quite other reasons, with the object, indeed, of ultimately seizing for the State some part of his neighbor, the trader's, property, which the latter was reckoning to increase at the expense of, amongst others, his neighbor the Socialist, through the plan of railway nationalization. But the homogeneity of the party need not concern us, nor the question whether each and every member of it would be actuated by a single-minded desire for the public good. The forces making for honesty and equity in the treatment of existing interests would, I think, so overwhelmingly outweigh the influences tending in a contrary direction that we need not complicate the question by importing into it a discussion as to whether adequate compensation should or would be paid to existing owners in the event of the State deciding to acquire their property. Fair and adequate compensation for existing interests may be taken for granted.

But although compensation can be paid for property, it cannot be paid to the general community who would suffer in the event of the administration and operation of railways under State management being less efficient than under private management.

If a mistake be made, all would suffer, and their sufferings would not, and could not, be mitigated by compensation in any form.

It may be useful at the outset to consider what has led to the question of railway nationalization in this country being discussed.

The origin and the causes of those movements in public opinion which bring about great constitutional and social changes are frequently most difficult to trace, especially by contemporary observers. For a full understanding of such movements, it is necessary to wait for the historian's point of view, and to survey a wider field than is possible whilst the events are occurring, when much of the material for final judgment as to the causes in operation is concealed in an undisclosed future.

That there is a movement in progress tending to the nationalization of railways in England is apparent to every thoughtful observer of the times. But whence does this movement come, and what are its principal causes? We are able to identify some of them, less able to weigh the relative importance of each, still less able to foretell the ultimate share which each will have on the future course of development, which will depend on the direction taken by other movements in public opinion which, at the moment, may seem to be entirely independent of all connection with the particular movement we are considering.

I will refer to a few of the causes which seem to me to be most prominently at work, but I will not attempt to state them in the order of their importance. I will merely enumerate those which are plainly discernible as existing in some shape or other.

The first I will name, though it may not be the most influential, is the existence of a certain amount of dissatisfaction with the present state of railway administration. I suppose that if railway services were as good as possible, charges as cheap as possible, profits as high as possible, and the management as perfect as it is possible for railway management to be, and these conditions were generally admitted to exist, the natural instinct to leave well alone would prevent any proposal for nationalization from obtaining a hearing.

It must be conceded that there is a certain feeling of dissatisfaction, superficial and indefinite though it be, to which advocates of nationalization, whose schemes originate in considerations which have no relation either to the excellence or to the imperfections of railway arrangements, are able to appeal in the pursuit of their aims. It is not that many people really think that our railways do not, as a whole, serve the public well, whatever individuals may say in moments of haste. Hut complaints are sufficiently numerous to have a real importance as an influence on public opinion. And, unfortunately, their influence is to a large extent independent of their justice. The existence of criticism, which, after all, is only another name for difference of opinion, is inevitable, and probably would be inevitable under the most perfect system of railway management which the world has seen or ever can see. State railways would not be immaculate. The nature of railway business lays it open, to an exceptional extent, to the unpopularity which unavoidably gathers round every institution on which there is universal dependence. Providence itself does not wholly escape unpopularity. No other industry is

comparable with the railway industry in the close dependence upon it of the vast majority of the people. The necessity for transport services penetrates more frequently and more deeply into the lives and habits of the people than any of the other prime necessities of civilization. The need for transport is a tyranny. All tyrants are unpopular. And the tyranny of a need is apt to beget, by an illogical transposition of ideas, a dislike of those who are responsible for supplying the need. People are conscious of grievances, or, let us say, unsupplied wants. They cannot measure the range of possibility which limits the supply of those wants or remedies for those grievances. They constantly wish for the impossible, but have not sufficient knowledge to distinguish between the possible and the impossible. Defects which cannot be remedied are generally condemned with more emphasis than those which are due to mismanagement. It is irrelevant to consider whether the dissatisfaction to which I have referred is justified or not. Whether well or ill founded, it must be set down as one of the causes of the movement for nationalization.

The second cause I would mention is a belief, growing from a suspicion into a conviction under the stimulus of repeated failures in control experiments, that it is impossible for any Government, by any legislative or executive action in any form, to exercise useful and effective control over railways. People turn in despair from ideas of regulation and control to ideas of ownership.

The third cause is the prevalence of that feeling which, for want of a better name, I will call district jealousy. The competition of privately-owned railways undoubtedly does create inequalities. It

would be mere affectation to pretend that the railway accommodation and facilities afforded to all places and all districts are equal in merit and value. The less favored districts see other districts enjoying superior facilities. They do not allow for differences in conditions which, in some cases, explain and justify the differences of service. I say in some cases, because it would be impossible to deny that in other cases the comparative inferiority of railway facilities cannot be explained away by inevitable determining conditions. Hence district jealousy arises and a desire for uniformity, such uniformity as it is hoped a State system of railways would give.

The fourth cause I would name is the example of other countries. This is affecting men's judgments with great force. We are slow to be moved by foreign example. But there is an increasing tendency to submit to international influences, and foreign example in this matter does, on the whole, point to national railways becoming the generally accepted system.

The fifth cause is the one which, I think, has more to do with the initiation of the discussion of nationalization schemes than any other cause. This is the general tendency of the time to Socialistic experiments. If there were no Socialists, and no Socialism in the thought of the age, there would, we may safely conclude, be no talk of nationalization of railways. It is the Socialistic propaganda, and the influence which that propaganda has had on many minds, which more than anything else has brought the question of the nationalization of railways within the range of practical discussion.

The sixth cause is the anxious search for more revenue for the State. National expenditure has

grown to such enormous and alarming dimensions that the provision of revenue to meet it has become a serious and urgent difficulty. A Chancellor of the Exchequer on the lookout for cash has not been able to resist the attraction of railways as a source of revenue for the State. He has noted the various influences at work which are tending to bring the question of railway nationalization to the front, has looked with envy at the large revenue which Prussian railways yield to the State, and has at least gone the length of asking himself the question, within the hearing of reporters, whether he ought not to encourage and to take advantage of a state of opinion which might conceivably be worked upon so as to create a majority prepared to approve the principle of State ownership of what might be a highly lucrative State monopoly.

The mileage of railways open for traffic in the United Kingdom at the end of each of the last four decades up to 1907 is shown in the following table:

Year.	Mileage open for traffic.	Increase in ten years.	Average increase per annum.
1877	17,077	—	—
1887	19,578	2,501	250.1
1897	21,433	1,855	185.5
1907	23,108	1,675	167.5

The growth has been slow and decreases with each decade. It is probably true that the period of construction has nearly come to an end. Future additions to the mileage are not likely to be either large or of substantial importance. This rather indicates the present as a suitable time for

considering a change of system. The considerations which are applicable to what I may call the age of construction are very different from those which become most important in the age of operation.

It would probably be accepted as indisputable that in a country like England, where capital is plentiful and enterprise active, the system of leaving the construction of railways to private enterprise is the best system.

Whatever may be thought as to the respective merits of private and public ownership, it cannot be denied that private enterprise does take more risk than any Government is likely to do, except under pressure of military necessities. The hope of gain is the strongest motive for enterprise, and this desire operates more strongly on the private citizen than it does on the State.

The growth of railway mileage during the age of construction in any country is promoted by the constant influence and moving force of those incentives which act on capitalists. The spur of competition is always in active operation. Then there are the very powerful professional influences which are constantly at work to induce capitalists to spend their money on works and enterprises which afford professional work, even if they do not subsequently provide dividends.

Theoretically; no doubt, railways promoted by private enterprise tend to the favoring of particular localities at the expense of other localities. Perhaps it is right that the stronger should grow at the expense of the weaker, but, at all events, it is inevitable. You cannot expect private competitors to think of anything but their own interests. And if this be so, you cannot expect from a system in which private

interests predominate the same consideration of general design, from the point of view of the interests of the whole country, as from a system which places public in front of private interests.

It is difficult to deny that the miscellaneous and unequal activities of private enterprise fail in the absence of some central guidance to produce the best results so far as harmony and completeness of design are concerned. In England railway construction has not been, as in America, almost entirely free from any public control. We have had the control, I think the most salutary and useful control of Parliament, so far as it has gone, both over location and capitalization. But it has not gone far. Although there has been a certain amount of control, there has been practically no guidance. The control, under the system of private bill legislation, has been very ineffectual except as regards capitalization. It has been mainly negative; never constructive. All that Parliament could practically do was to prohibit the making of particular railways which aroused opposition from some landowning or railway interests powerful enough to oppose and wealthy enough to pay the heavy costs of opposition. Private interests have been protected, but the general interest has, in the main, been ignored.

But whilst conceding that it would have been a great advantage if the vagaries of private enterprise had been more restrained by some prudent, general guidance, I think that the chief public requirement during the age of construction is that as much mileage as possible should be constructed; and I submit, as a true conclusion on the point I am discussing, that, as regards the age of construction, at all events, England has derived incalculable benefit

from the fact that the railway system has been made by private enterprise. But the problem of working the railway system after it has been constructed is, I admit, essentially different from the problem of securing its construction.

My subject is not one which admits of discussion except on very general lines. Our views on it must necessarily be formed under the influence of the opinions we hold as to the legitimate functions of the State. It has been truly said that no country has ever adopted State ownership of railways from theoretical considerations. In each and every instance there were some practical reasons, based on military necessities or concrete and pressing economic conditions to meet which State ownership was accepted, not as a system desirable in itself, but as an expedient which, in the circumstances, was considered to be the best practical solution of difficulties which stood in the way of the satisfactory development of railways. But whilst agreeing with this as a true historical statement, I doubt whether theory can be entirely excluded from a statement of the genesis of national railway systems. In a country where Individualist opinions prevail, as I think at the present time they do in England, no temptations, no pressure of circumstances short of extreme national emergency, would induce people to face the evils which the Individualist knows must result from the intrusion of State action into matters of trade. This is theory, although those who are influenced by it may think that it is founded on practical experience. On the other hand, those persons who wish to secure trading profits for the State even at the cost of taking commercial risks, or who, when difficulties and obstacles arise in commercial development, resort to

the powers of the State to overcome them, either by the imposition of taxes on the general community in the interests of a class, or by handing over to State officials the direction of an industry, instead of relying on the skill, self-reliance, enterprise, energy, and character of the people, are Socialists at heart, whether they know it or not, and are actuated by the radical theory of a creed which, perhaps, most of them would disavow.

But, after all, the question is not whether State purchase would be a step in the Socialist direction, but whether it would be a step in the right direction. Why should we change? Are we suffering from intolerable evils from which there is no other way of escape, or is there some great national benefit to be derived from the change?

The general case for nationalization, as put forward by its advocates, rests on very few arguments, and it is not, I think, unfair to describe these as being mainly assumptions, the accuracy of which it is impossible to verify. I may summarize a few of these:—

(1) Government management would be more efficient and less costly than private management.

(2) Government management would primarily regard the interests of the community and of the country as a whole, and the substitution of that condition for the existing system under which the interests of private trading concerns take first place in the thoughts and efforts of those responsible for management would have the effect of securing a more equal and more satisfactory development of the resources of the country, and, as one writer expresses it with more than the usual proportion of assumption in his statement, trade would be stimulated under

equitable, reasonable, and uniform systems of rates.

(3) The change would result in the removal of most of the serious complaints made against the existing administration of railways.

(4) Those who refuse to look upon the matter as mainly a commercial problem think and hope that new means would be found for the satisfaction of the social needs of the nation if the railways were at the disposal of the Government.

(5) Experience of the economy resulting from large combinations in other industries is invoked in support of the proposal to get rid of the separate administrations of private railways. It is said that the advantage of production on the largest scale by a single corporation in place of production by a number of smaller units is being verified by the experience of nearly every important trade and industry. The principle has been recognized in the history of railway development in this country by the amalgamation of large numbers of small railways into the great railway systems which we now see, and it is argued that a further step should now be taken in the same direction. But a step involving the creation of so great a monopoly as further large amalgamations would involve can only, it is thought, be taken by the State. In this country the largest railway system under one management is no greater than about 2,000 miles in length, whereas in the United States of America railway systems covering about 15,000 miles are now under the control of a single President and a Board of Directors. It is said, therefore, that modern methods of administration have made it feasible to direct the 23,000 miles of railway in the United Kingdom efficiently and successfully by means of one comprehensive

organization, and probably if there is to be one organization there would be no difference of opinion that the single organization to own, control, and manage the railways must be the State.

Most of the principal objections are, I think, covered by the following list:—

(1) State management would be less efficient than management under private enterprise.

(2) The extension of Government patronage, by placing at the disposal of Government such a vast number of appointments to lucrative offices.

(3) The risk of political corruption, not only in connection with the exercise of patronage, but also in ordinary administration in the settlement of questions relating to charges, wages, and services.

(4) The danger that interested parties would, by political pressure, compel the State to expend public money on unremunerative lines and unremunerative services.

(5) The contraction of the available field for private enterprise, and hence the weakening of the foundation of all individual and national progress.

(6) The introduction of serious dangers in connection with labor disputes between the Government and the large body of railway servants.

The subject has not been sufficiently long under public discussion to make it easy to state fully the hopes of its supporters and the fears of its opponents. Probably both are exaggerated. If one examines the complaints made against the existing railway system, it is obvious that many of these must exist under any system, whilst some are the necessary accompaniments of every system into which

competition enters. But if competition is discarded in favor of monopoly it does not need argument to show that this merely means a change from the evils of competition to the evils of monopoly. No one would deny that each system contains inherent and characteristic evils. The evil of competition is waste; the evils of monopoly are stagnation and the restriction of freedom.

Hitherto, for the regulation of railways, reliance has been placed on two factors—competition and control. Parliamentary action and public opinion have veered about from one to the other, and the absence of clear principle in the policy of the Legislature has introduced evils which a more logical and consistent adherence either to the policy of free competition on the one hand, or to the policy of strict control on the other, would have avoided. That some regulation is necessary all would admit. Railways sell transportation as a commodity, but the nature of the business makes it impossible to secure the conditions of absolutely free competition as in the case of other industries. Hence the necessity for control, but every plan of control that has been tried has proved practically inoperative and ineffective mainly because it has endeavored to leave competition in operation, and it is the evils which necessarily arise from competition which lead to most of the complaints against railways. The inevitable weakness of the dual system of competition and control is that control checks competition just where it would be useful in the public interest, and competition nullifies control just where it could be advantageously applied.

Under no system could we expect railways to be free from complaints. They arise equally from the

nature of the business and the nature of the customers. But with a view to seeing whether State ownership would remedy the complaints that exist, let us try to understand as clearly as possible what the complaints are. The Chancellor of the Exchequer (Mr. Lloyd-George), speaking to a deputation of traders in 1906, when he was President of the Board of Trade, said that he was impressed with the "great and growing discontent with the whole system."

Now what are the causes of the present discontent? Is it great? Is it growing? These are questions very difficult to answer. But there are some useful data available for the answer. The way has been made plain and easy for complainants against railways. Every encouragement and every facility has been afforded to them. A special Court has been created—the Railway and Canal Commission—the constitution of which was carefully framed so as to encourage anyone with a grievance against railways to hope that he would get a sympathetic hearing of his case. The applications to that Court were so few that those people who cannot bring themselves to believe that the number of real, as distinct from imaginary, grievances against railways are remarkably few, said that the public were deterred from bringing complaints forward by the expense of litigation before the Railway Commissioners. So, to render the path of the complainant still easier, a procedure was introduced which is unique for simplicity and cheapness. All, without distinction, who had any complaint or grievance of any sort or kind against any railway or canal company, were invited to come and lay the same before a Department of Government, the Board of Trade, who practically promised to use their influence to secure an amicable adjustment of any differences. This

procedure is so simple, so sweeping, so all-embracing, so encouraging to complainants, and has, on the whole, been exercised by the Board of Trade with so much tact and success, that its records should supply the information we are seeking.

In view of these efforts to get every aggrieved or discontented person to come forward and disclose his complaint, is it possible to imagine that there are now any concealed complaints? It is often said that traders will not complain, that they are afraid of rousing the hostility of those terrible tyrants, the railways, whose power in England, at any rate, whatever it may be in America, is ludicrously exaggerated. It is true that a sensible trader who has a fair case does not fly with it to the Board of Trade. He submits it to the railway officers in the ordinary daily course of business, and almost invariably gets the matter adjusted. But I do not believe that there is any trader who would be deterred from submitting a complaint to the Board of Trade by any feeling of fear. On the contrary, traders in these days suffer from an excess of boldness. If a trader is dissatisfied with any railway charge, he simply refuses to pay, and only those who have experience of the daily conduct of railway business can know how common, and unfortunately how effective, this remedy is.

The Board of Trade make an annual report to Parliament of all complaints made to them under their conciliation jurisdiction, and I think the contents of these reports may fairly be relied on as presenting a complete view of the kind of complaints that exist against railways. A useful table is given in the tenth report of the Board of Trade, issued in July last, showing the total number of complaints for ten years, classified according to their nature as follows:

		Total.	No. per annum.
1.	Rates unreasonable or excessive in themselves or which were unreasonably increased	715	71.5
2.	Undue preference	352	35.2
3.	Sundry complaints	510	51
		1,577	157.7

Of the total number forty-eight were complaints against canal companies, but these are not separated in the classification.

Surely the above is a remarkable table, considering the vast aggregate of business and the facilities offered for complaints. Only 1,529 complaints against railways, or an average of about 153 per annum, have been found to exist.

Then look at the results of these complaints. These are given in another table, and only 573 complaints, or an average of 57 per annum, are entered as resulting in the complainants finally expressing themselves as dissatisfied.

Services for which the aggregate payment amounts to 120 millions sterling per annum are rendered, and yet there are only an average of fifty-seven cases per annum of dissatisfied complainants to the most open, most favorable, and least costly tribunal in the world for hearing complaints against railways.

Now let us look at the nature of the complaints made. Would State ownership remedy any of these complaints? I set aside the 510 cases of miscellaneous complaints about delay in transit and other minor matters, because it is obvious that complaints about such matters would not disappear

under any conceivable system of railway management.

Practically all other complaints group themselves under two heads:

1. Excessive rates.
2. Undue preference.

The complaint that railway rates are excessive generally takes the shape of a comparison of the charges on some foreign railway. Now, I confess that it is very difficult to meet such allegations, because of the difficulty of presenting all the conditions of which account must be taken in order to make a fair and sound comparison, and also owing to the absence of adequate data or materials in the published statistics of English railways.

A general allegation that English rates are higher than those charged in some countries cannot even be discussed, because the factors needed for the comparison are not available. Are they in fact higher is a question the answer to which must precede discussion as to reasons and explanations. The facts in regard to the average length of haul, the average rate per ton mile for different kinds of traffic, or the average charge per passenger mile, and general information as to the nature of commodities carried, speed of transit, and services rendered for the rates charged must be ascertained before any comparison is possible, and these facts are not ascertainable for English railways.

My belief is that having regard to the capital expended on construction of railways, English railway rates are not excessive for the services rendered, and I greatly doubt whether, after making proper allowances for differences in capital cost of

railway accommodation, and for other essentially different conditions, rates in any country are lower, comparing like with like, than railway rates in England. This is an issue of fact. It lies at the threshold of any inquiry into the subject of railway rates, and I confess I do not see how much progress can be made with any discussion which turns on assertions as to the relative dearness of English railway rates until adequate materials are available for a sound comparison.

It is true beyond question that English railways have cost more to construct than the railways of any other country. The capital expenditure of all railways in England is represented by the figure of about £56,000 per mile as compared with about £21,000, which is the corresponding figure for German railways, and about £12,000 per mile for American railways. Railway proprietors in England are not responsible for the high capital cost. They were forced by law, and by custom powerful as law, to pay monstrously inflated values for their lands. Burden upon burden has been heaped upon them by the action of the Legislature, by the requirements of Government departments, and by the exactions of public opinion. They have borne heavy losses in being compelled to spend capital without regard to their ability to secure adequate return upon it, and assuredly no reckoning is due from them to the public in this matter. The reverse would be more true.

The total capitalization of railways in the United Kingdom in the year 1907, as given in the Board of Trade Returns, was 1,294 millions sterling, of which 196 millions represents nominal additions. The net earnings (some of which, however, arose from

miscellaneous sources independent of the operation of the railways) amounted to £44,940,000, or 3.47 per cent on the nominal capital. Out of a total of 1,294 millions sterling, 136 millions of loan and preferential capital received interest or dividends in excess of 4 per cent. This presumably arose from the insecurity of capital, involving the payment of a high rate of interest or dividend. One hundred and eighty-one millions of ordinary capital received dividends in excess of 4 per cent. per annum. The capital receiving interest or dividends in excess of 4 per cent. per annum is, therefore, 317 millions, or 24.5 per cent. of the total. It cannot be said on these figures that the interest received by those who provided the capital for the railways is excessive.

But would it be possible for State railways to reduce the amount included in railway rates for interest and dividends? It cannot be denied that our present system does involve the needless duplication of railway accommodation—the inevitable waste of competition. There is the constant endeavor to divert traffic, the corresponding effort to keep it. Capital is wasted, but public facilities are increased. The public could certainly secure by monopoly the saving of waste, but only at the cost of losing the advantages, such as they are, of getting more than they pay for. I suspect that on a broad and comprehensive view these advantages are not worth to the community the waste of capital involved in providing them. But it is rather late in the day to adopt this view. Enormous waste has already been incurred, and it must be remembered that this drain on the resources of the nation is not likely to be so serious in the future as it has been in the past, even if the system of leaving railways to private enterprise is not abandoned.

The private ownership of railways provides for the absorption of the wastage of capital in a manner which would be impossible under State ownership. Eighty-eight millions of the capital expenditure on railways goes without dividend, and 151 millions has to be content with a return less than 2 per cent per annum. Although this undoubtedly represents a loss to the community, the loss is distributed. It falls on those who voluntarily spent their money in the hope of gain, and lost it. The State cannot lose capital in this way. All expenditure incurred by the State would be represented by money borrowed on the public credit, and the interest would have to be paid in full, whether the expenditure proved remunerative or the reverse.

That there would be savings, and large savings, under State management I would not deny, but that is because the railways would be worked as a monopoly, and not because they would be worked by the State. The same and still larger economies in working could be effected under private enterprise if competition were abandoned in favor of universal combination or monopoly. The whole question depends on the waste of competition. Each railway company works for its own route. The result is that unnecessary train mileage is run, and train loads are lessened. The secret of success, the foundation of all economy in railway working, lies in securing the largest possible train loads. This is a simple rule, but it embodies a universal truth. If those responsible for the handling and carriage of railway traffic could work with a single eye to economical results, and in all cases forward traffic by the routes which yielded the best working results, great economies could undoubtedly be effected. This consideration does indicate that a source of improvements in railway

results would be open to a railway system under Government management which is not available for privately owned railways competing with one another. And in fairness one must admit that this source of economy obtainable only under the conditions of monopoly must be set down as a point to the credit of State ownership.

Many of the complaints against railway rates as excessive are really, when analyzed, complaints of undue preference. They are based on comparisons with other rates, and, in nearly every case, it is the factor of competition which lies at the root of the difficulty. This is the natural result of our mixed system of competition and control. In principle all would admit that there should be equal treatment on railways. But what is and what ought to be equality are questions in regard to which there is much room for difference of opinion.

To what extent does the law really require equality? The Railway and Canal Traffic Act, 1888, enacts in substance that a railway company shall not make any difference in the treatment of traders which shall amount to an undue preference. It permits the grouping of places situated at various places from any point of destination or departure of merchandise, provided that the distances shall not be unreasonable, and that the rates charged and the places grouped together shall not be so grouped as to create an undue preference. Now, in this legislation there is no definite or tangible principle. The Legislature has not really made up its mind how traders should be treated. It simply says that any preference given to one trader over another shall not be undue, but the interpretation of the word undue is left open. The prohibition of undue preference only

applies to the actions of one company on its own railway, and, therefore, covers but a small part of the matter. A trader desiring to have his goods sent to some market which is prejudiced by the competition of goods carried to the same market from some other place by some other railway which, for some reason or other, good or bad, gives better treatment to its customers—a prejudice far more likely to happen, in fact, than one arising from differences in treatment on the same railway—is not protected or assisted by any legislation.

The question may be asked whether national railways would or could cure this somewhat indefinite position?

If railways were nationalized, would it not be necessary, and would it be practicable to settle the principles to be applied in treating different districts in competition with one another? At present there are no principles if the districts are served by different railways. If one railway serves two districts, the law provides that such railway shall not mete out unequal treatment so as to constitute undue preference, whatever that may mean, but if these two competing districts are served by different railways, the law shrinks from any interference.

Now, in practically every case the favorable treatment complained of, due or undue, as the case may be, is forced upon the railway company by competition in some shape or other. It may be competition of other carriers by sea or by land, or it may be the necessity for enabling one district to compete with another less favorably situated. Such consideration for the commercial needs of districts in relatively advantageous positions is permitted and encouraged when it is afforded by different railways,

though rendered difficult when one railway serves the competing districts. What would State railways do? If the law of undue preference now operative within the limits of particular railway systems became, by reason of State ownership, applicable to all railways, there would be a stupendous disturbance of existing trading conditions. Instead of State purchase diminishing the complaints of undue preference, it would be the signal for the commencement of fierce conflicts between districts. It would be necessary to face the question whether and to what extent geographical advantage of position should be recognized in fixing railway rates. The centers of production and consumption in England have been fixed away back in commercial history, and from a railway point of view these have largely to be taken as facts beyond control. Facilities for reaching the populous centers of consumption are of vital importance to producers and importers. Would State railways be compelled by the pressure of interested landowners and others to fix rates for agricultural produce and manufactured articles and for import and export trade rigidly in proportion to distance?

It is probable that a bitter controversy would arise on the question, and discontent with the railway arrangements which have gradually, and with very general approval, been established in England, instead of being lessened, would be greatly extended if we embarked on the experiment of State ownership.

Would the management of railways by Government officials be, on the whole, better than management by the officers of private corporations working for profit?

That is the question which lies at the root of the subject which we are discussing. So far as I am concerned, I have no inclination to jibe at the management of those enterprises which are conducted by the State and municipal bodies. I do not think that the postal services would be better managed if they were under private control, probably not so well. Municipal tramways show the weakness of public management, chiefly in the tendency towards fixing charges at figures which sacrifice the interests of ratepayers to the interests of the working classes who possess votes, but who generally occupy houses in respect of which they do not directly pay rates. That there would be very grave risks in substituting State management for commercial management of railways must, I think, be generally admitted.

But some of the principal arguments against municipal trading do not seem to me to apply to the working of railways by the State. Of course, the objection of those who think that no public authority should become directly responsible for the management of any commercial undertaking is as valid against State working of railways as against municipal working of tramways, or municipal supply of electricity for light and power. In both cases there is a restriction of the field of private enterprise, and that is enough for the out-and-out Individualist. He is convinced, on general grounds, that all commercial undertakings should be left exclusively to private enterprise. But those who are not prepared to settle such matters on any general theory, and who prefer to weigh the advantages and disadvantages in each case, see that many of the reasons against municipal trading cannot fairly be urged against the national ownership of railways. Municipal trading is

indefensible because it unfairly competes with private traders. Competition in commerce must be fair competition on equal terms, otherwise it fails to secure any of the economic advantages which do undoubtedly flow from the free competition of private traders. A commercial undertaking must be worked for a commercial profit. A municipality raises money on public credit, and thus gains an advantage over every private competitor. It also fixes scales of charges and rates of wages without reference, or, at all events, without exclusive reference, to considerations of profit, and thus makes it impossible for any competing trader to earn a legitimate commercial profit. And to make it possible to do this it uses the power of taxation, and levies rates on the competing traders themselves, so that the municipal business can be carried on without the commercial profit which the private trader must earn in order to live. No one can say that this is fair competition.

Then municipal bodies are, from their composition, unsuitable for carrying on commercial business. Their organization cannot be adapted to commercial management. The individuals who serve on these bodies have neither the time nor, as a collective body, the capacity for managing the business on which they embark with efficiency and success. The difference in results due to the difference between good and bad management is paid for out of the rates.

These considerations do not, however, apply with equal force to the State management of railways. The State would have a complete and universal monopoly. There would be no private competition left, except, of course, competition by sea or by

tramway or any other mode of conveyance which can compete with railways.

Then there would not be, it may be assumed, any body like a municipal council who would practically interfere with the management. There might be Advisory Councils, like the Prussian State Railway Councils, and, of course, there would be a Minister of State responsible to Parliament for the railway administration, and Parliament itself, already, one may remark in passing, clogged and overburdened with work. But it is certain that whatever the details of the organization adopted might be, the whole of the management would practically be left to the expert permanent officials of the railways. There is no reason to doubt that railway officers would serve the State with as much loyalty and with as great a measure of success as they now serve the proprietors. Instead of being responsible to boards of directors and shareholders, they would be responsible to a certain number of officers of State, probably, indeed necessarily, to a large extent recruited from their own ranks, and I do not think that the change would result in much practical difference so far as the work of those who really carry out the duties of management are concerned. The only difference would be that these officers would have in view that they were working for the State instead of for shareholders.

There can be little doubt that if railways were nationalized they would be used as a field for many kinds of social experiments. The combination of philanthropy with business is generally regarded with suspicion, but the conversion of the railway manager into a social reformer would, I think, arouse serious and legitimate alarm. The certainty which we

now possess that the action of any railway company, whether it be wise or foolish in itself, is wholly commercial in its motives and its aims, is a valuable safeguard. But if railway policy were to become the medium for the promotion of social or even economic theories under the guidance of politicians, would not this be a most alarming peril to trading and industrial interests? One group might insist, by political pressure, that the standard of wages should be maintained at a higher level than could be commercially justified. Another group, or many groups, might devote their efforts to securing the construction of railways in districts which could not support them with sufficient traffic, with the result of burdening the railway system with many unremunerative branches for which either traders, passengers, or the taxpayers throughout the country would have to pay. The policy of others would be to make suburban railways at enormous cost, and run cheap trains to serve the population resident in large cities, regardless whether such railways or trains were self-supporting or not. In this policy they would have the ardent and influential support of the owners of suburban land, who would rejoice in the increase of their rents, brought about by the expenditure of public money in creating railway facilities on uncommercial terms. These are not fanciful dangers. They are the results which we may feel sure would inevitably follow the nationalization of our railways, and the advantages to be gained from State management would need to be very great to compensate for these burdens.

Another aspect of the question which requires the gravest consideration is that which concerns the position of the State as an employer of labor. There are upwards of 620,000 railway officers and

servants. The State would become the direct employer of that huge army, and would have to settle all questions relating to hours, wages, and other conditions of service. If a railway company is unable to settle differences with its men the ultimate resort of the men is the withdrawal of their labor, whilst the company are free to employ other men who are willing to accept their conditions of employment. Any railway strike on a large scale is a dire calamity to trade and to the public, but if one were compelled to consider the possibility of a general strike on a national railway system, even the deplorable results which accompany strikes on privately-owned railways would seem comparatively insignificant. Probably a railway department of Government would not urge the adoption of compulsory arbitration, if they were themselves concerned, with as much equanimity as they do in the case of strikes on private railways. It is true that in this matter the advocates of State railways can point to the comparative absence of labor conflicts in connection with the services now under Government control, but municipal undertakings have not been so successful in avoiding labor disputes, and in many cases have secured even the degree of immunity from such conflicts which they enjoy by the concession of terms of employment which constitute heavy burdens on the ratepayers. It seems to me that the danger of serious labor disputes cannot be put aside, and I confess that I am unable to see any safe way of meeting the objection to State ownership on the ground that the State ought to limit, as far as possible, its liability to become directly concerned in such disputes.

In conclusion, I would say that I have felt unable

to take up a partisan attitude on the question. For many years past both my studies on railway subjects and my practical experience have led me to a convinced belief in the advantages of well-regulated monopoly, and I am unable wholly to disapprove of a scheme which would secure for the country the advantages of a system of well-regulated monopoly in which I believe, even although it should come in the guise of State ownership.

Competition, in my judgment, creates more evils than it cures, especially the half-hearted and imperfect competition which exists in England so far as railways are concerned, which cannot be regarded as free competition on a commercial basis.

I recognize that it is impracticable to secure unification or any very extensive or far-reaching combinations of railways under our system of private ownership. The public would not tolerate uncontrolled railways under private management, and I doubt whether any form of control which has yet been devised, or is likely to be devised, combined with partial competition, can give entirely satisfactory results. That there are grave dangers and risks in the public ownership of railways I fully admit; indeed, so grave are they, that I think he would be a very bold minister who would venture to bring forward, under Government sanction, a proposal for the nationalization of our railways. The existence of such a huge amount of Government patronage would open the door to political corruption. The existence of such an enormous body of Government servants possessing the franchise—and I confess it seems to me impracticable to hope that any measure could be carried subject to disfranchisement of Government servants—would

imperil the financial stability of the railway system, and introduce new and very serious sources of weakness and danger into the body politic.

The risk of loss from the charging of unduly low rates under pressure from the influential body of traders seeking to enrich themselves at the expense of the general community seems to me a risk which no thoughtful man can ignore. No expedients for checking and restraining political influence so that it could not reach or sway the decision of the officers of State responsible for railway management seem to me practicable under our democratic constitution.

If the nation owns the railways, the nation must take all the risks of State ownership, and we could only trust that the existing purity of our politics and the common sense, honorable character, and long experience in self-government of the English people would suffice to protect the commonwealth from these perils resulting in serious harm. But whatever may be the issue of the consideration of the question of State purchase of railways, I am prepared to believe that English railways will continue, whether under State management or under private management, to deserve the praise which Mr. W. M. Acworth expressed in his recent address as President of the Economic Section of the British Association in Dublin, by saying that in his judgment—after, I may remind you, a fuller study of railway conditions in all countries of the world than has been given to the subject of many men in England—that "English railways are, on the whole, among the best, if not actually the best, in the world."

CONCERNING ADVANCES IN RAILWAY RATES

FEBRUARY 8, 1909.—Ordered to be printed.

Mr. ELKINS, from the Committee on Interstate Commerce, submitted the following

ADVERSE REPORT.

[To accompany S. 423.]

The Committee on Interstate Commerce, to which was referred Senate bill 423 "To amend section 6 of an act entitled 'An act to regulate commerce,' approved February fourth, eighteen hundred and eighty-seven, and acts amendatory thereof," respectfully reports said bill adversely, and recommends its indefinite postponement.

The amendment proposed to section 6 will be found on page 4, commencing on line 10, and ending on page 5, on line 8, of the bill, as follows:

> *Provided further*, That at any time prior to the expiration of the notice herein required to be given of a proposed increase of rates, fares, or charges, or of joint rates, fares, or charges, any shipper or any number of shippers, jointly or severally, may file with the commission a protest, in writing, against the proposed increase in whole or in part, stating succinctly the grounds of his or their objections to the proposed change. The filing of such protest shall operate to continue in force the then existing rate or rates, fare or fares, charge or charges, proposed to be changed and protested against as aforesaid, until the reasonableness of the rate or rates, fare or fares, charge or charges, proposed to be substituted shall have been determined by the commission. Upon the filing of such protest, a copy thereof shall be mailed by the Secretary of the commission to the carrier or carriers proposing the change and thereafter the commission shall proceed to hear and determine the matter in all respects as it is required to do by sections thirteen and fifteen of this act, in case of a complaint made because of anything done or omitted to be done by any common carrier, as provided in said section thirteen; but throughout the proceeding, the burden of proof shall be on the carrier proposing the change to show that the rate, fare or charge proposed to be substituted is just and reasonable.

An amendment was offered in the committee which would modify the original proposition of the amendment, by leaving it to the discretion of the Interstate Commerce Commission, upon the filing of a protest against the proposed increase of rates, to determine whether the schedule filed should go into effect at the end of thirty days or should be suspended by order of the commission until after final hearing, upon the question as to whether the advance was reasonable.

This proposed amendment to the amendment of the 6th section, although somewhat modifying its effect, did not alter the principle upon which the original amendment rested, or remove the objections that influenced the committee in reporting the bill adversely. The reasons which control the action of the committee may be briefly stated as follows:

REVIEW OF QUESTION BEFORE COMMITTEE.

1. From 1887 Congress, by the act then passed "to regulate commerce" through all of its amendments to that act, including the act of June 29, 1906 (which was passed after the most elaborate investigation of the entire subject and the fullest debate), has adhered to a fixed policy in its legislation upon this subject. It has declared its constitutional right to regulate the transportation of persons and property in interstate and foreign commerce, while, at the same time, it has recognized the right of the owners of the instrumentalities of commerce to control and manage their properties subject to the supervision and limitation imposed by the regulating statute, that the charges, fares and rates must be fair, just, and reasonable; that neither discrimination as to person or place must be found in the schedules; and that no device of any character should result in unlawful preference between shippers.

It has in all these acts recognized the right of the responsible managers of the transportation interests of the country to fix the rates for transportation, as upon its revenue must rest the efficiency of its service to the public and the value of its property to its holders, subject only to those wise limitations which prohibit the exercise of these property rights to the injury of the public. Congress has appreciated the magnitude of the vast interest affected by such

legislation. With 230,000 miles of track, with millions of rates published in accordance with the statute, with changes of rates numbering between 600 and 700 a day, and reaching the enormous sum of 225,000 a year, it has, with the practical experience of twenty-two years, refused to take the initiation of rates from the carrier and impose it upon its administrative tribunal. Congress and the Supreme Court have adopted the construction of the act to regulate commerce, announced by Judge Jackson (Interstate Commerce Commission *v.* B. & O. R. R. Co., 43 Fed. Rep., 37, and affirmed, 145 U. S., 263):

> Subject to the two leading prohibitions that their charges shall not be unjust or unreasonable, and that they shall not unjustly discriminate, so as to give undue preference or disadvantage to persons or traffic similarly circumstanced, the act to regulate commerce leaves common carriers as they were at the common law, free to make special contracts looking to the increase of their business, to classify their traffic, to adjust and apportion their rates so as to meet the necessities of commerce, same principles, which are regarded as sound, and adopted in other trades and pursuits.

This policy, we believe, has been approved by the country during that period. Pending the elaborate investigation of this subject prior to the passage of the act of June 29, 1906, no crystallized sentiment was manifested, either in the press or during the hearings, that indicated a public sentiment that this policy should be departed from. Since this bill has been before your committee no such public sentiment has been shown to exist by those who appeared before it.

The conferring upon the commission the power to

suspend a rate advanced, either upon the filing of a protest by a shipper or in the discretion of the commission, taken in connection with the provision of the statute which gives to the commission the power to fix a rate and to designate the time, not longer than two years, that it should remain in force, would ultimately turn over to that administrative body the function of initiating the rates of the entire country. It would offer a premium to every shipper to enter a protest to the advance of rates, whether they were reasonable or unreasonable, even if discretion was vested in the commission. The protest, prepared by skilled attorneys, presenting a prima facie case of unreasonable advance of the rate, with no opportunity for an investigation before it must be acted upon, an official body, on which was imposed the responsibility to act would be constrained to suspend the rate until a final determination of the complaint.

The existing law permits any shipper to protest any rate that has gone into effect, the hearing on the protest is made without formal pleadings, and the commission is authorized then to determine the question whether the rate put in effect by the carrier was a reasonable rate or not, and, if not, to make the rate reasonable. So far, in the practical operation of the act of June 29, 1906, this provision of law has worked satisfactorily, and but comparatively few of the decisions of the commission have been contested by the carriers. Under existing law both parties are protected. If the decision is that the rate is unreasonable a judgment may be rendered in favor of the protestant for the difference between what the commissioners determine is a reasonable rate and the rate fixed by the carrier, with 6 per cent interest from the date of the overcharge. If, on the other

hand, this amendment should receive the approval of Congress and the rate filed by the carrier should be protested and then suspended by the commission (in the multiplicity of duties imposed upon that tribunal), considerable time would elapse before a final determination of the question could be reached. During that period the carrier would be receiving only the old rate, and if the commission finally decided that the advance was reasonable no reparation in any way could be awarded.

It was alleged before the committee that this last result would not be very injurious to the carrier, for the reason that it would be receiving the rate which it had fixed as a fair compensation for the service performed prior to the change. The answer to this seems reasonable, which was, that conditions had so changed that it required an advance of the rate to meet those new conditions. Otherwise the advanced rate would have no justification. That traffic officials fully appreciate the fact that, with the watchful eyes of every shipper affected by an advanced rate and the authority of the commission to determine and fix a just and reasonable rate (as a general rule), rates would not be advanced by such officials without a belief upon their part that there were sufficient reasons to sustain them, if protested.

The attention of the committee has been called to the attitude of the commission in its rulings upon the advance of rates, even where the facts have shown that the rates have been lowered with a view of developing a particular industry. In the case of the New Albany Furniture Company against Mobile, Jackson and Kansas City Railroad Company, etc., decided June 2, 1908, the commission held:

"The rates were low before the increase, but

> having been established, after prolonged negotiations, especially for the purpose of permitting complainant to reach a particular market, and in preference to making a readjustment in some other direction or territory, and complainant having adjusted its business thereto, defendants may not by an arbitrary advance in those rates destroy complainant's business, there being no evidence that the rates advanced were less than the cost of service."

A similar decision was rendered on the 1st of June in the case of Western Oregon Lumber Manufacturers' Association against the Southern Pacific Company.

Knowledge of the views held by the commission by the traffic officials and shippers will serve as the most effective check upon the part of the carrier in advancing rates over those which have been in existence for any considerable period of time, unless they can support the advance by the most satisfactory reasons.

WOULD THE AMENDMENT PROPOSED BE IN CONFLICT WITH THE FIFTH AMENDMENT TO THE CONSTITUTION?

2. An objection urged to the approval of this amendment, even though modified as suggested in committee, was that it conflicted with the fifth amendment in depriving the carrier of its property without due process of law.

The existing law authorizes carriers to make reasonable rates. Congress recognizing the right of control by the carrier has provided reasonable regulations to safeguard the interests of the public in the exercise of that right. It authorizes a protest after the rate had gone into effect; it provides for a full hearing after notice by the commission; it has further

extended the time when the rate shall be made effective to thirty days from the filing of the schedule with the commission. These were held to be reasonable regulations, but it is claimed that under the amendment proposed to the sixth section, that if the rate is suspended from going into effect at the end of the thirty days by a protest, there is no limitation in the act fixing the time when the commission shall determine the question of the reasonableness of the advance; that the period is therefore indefinite, depending upon numerous considerations which might extend the time when the rate would be effective, if it was finally held to be reasonable, to six months or a year.

That the act of suspension either by the operation of the statute or by the commission is without notice or hearing to the carrier; that Congress has no greater right to authorize an administrative tribunal to suspend indefinitely the taking effect of a reasonable rate without notice or hearing than it has the right to provide that an administrative tribunal may authorize a rate which would yield less than the cost of the service.

It was decided in the case of Chicago, M. & St. P. R. R. Co. against Minnesota, 134 U. S., 418, that the right to make a reasonable rate was a property right. In the case of Interstate Commerce Commission *v.* Chicago Great Western Ry., 209 U. S., 118, the Supreme Court said:

> "It must be remembered that railroads are the private property of their owners; that while from the public character of the work in which they are engaged the public has the power to prescribe rules for securing faithful and efficient service and equality between shippers and communities, yet in

no proper sense is the public a general manager."

Justice Brewer, in the above case, page 108, speaking for the court said:

> "It must also be remembered that there is no presumption of wrong arising from a change of rate by a carrier. The presumption of honest intent and right conduct attends the action of carriers as well as it does the action of other corporations or individuals in their transactions in life. Undoubtedly when rates are changed the carrier making the change must, when properly called upon, be able to give a good reason therefor, but the mere fact that a rate has been raised carries with it no presumption that it was not rightfully done. Those presumptions of good faith and integrity which have been recognized for ages as attending human action have not been overthrown by any legislation in respect to common carriers."

It is claimed that the indefinite suspension of the rate until final hearing is to deprive the carrier, if the rate advanced is reasonable, of its right of property during the period of suspension, without having given it any opportunity to be heard prior to the act of suspension. Due process of law must precede, and should not follow, the suspension. To set aside the carrier's act in fixing the rate pending the investigation required by due process of law is to deprive the carrier, pro tanto, of its property right to charge a reasonable rate. The fact that the statute requires an investigation after the suspension of the rate does not avoid the constitutional inhibition, as that provision can only be satisfied when the investigation precedes any disturbance of property rights. The carrier is entitled to the investigation before it is restrained in the *exercise* of its property rights; the theory of the amendment suggested is that the shipper is entitled to an investigation before the

carrier can *exercise* its property rights.

Those contending for this objection to the amendment assumed that the indefinite suspension without hearing of the act of the carrier which deprived it, beyond a reasonable time, of the benefit of the advanced rate, was in effect the same as that which was condemned by the Supreme Court in the case of the Chicago, M. & St. P. R. R. Co. against Minnesota. Under the statute of that State, a carrier had the right to initiate the rate, and to put it in effect, and, under the law, the commission was authorized to make such changes as it deemed proper in the schedule so filed, and to direct the carrier to modify or change the schedule in accordance with the decision of the tribunal. In the one case the going into effect of the rate is suspended indefinitely without notice or hearing; in the other, the rate is changed or modified without hearing. On page 418 the court condemns this in the following language:

> "No hearing is provided for, no summons or notice to the company before the commission has found what it is to find and declared what it is to declare, no opportunity provided for the company to introduce witnesses before the commission, in fact, nothing which has the semblance of the process of law."

On page 458 the court said:

> "If the company is deprived of the power of charging reasonable rates for the use of its property, and such deprivation takes place in the absence of an investigation by judicial machinery, it is deprived of the lawful use of its property, and thus, in substance and effect of the property itself without due process of law and in violation of the Constitution of the United States."

This view of the law as announced in 134 U. S. was affirmed by the Supreme Court in the case of Louisville and Nashville Co. against Kentucky, 183 U. S., 510.

It was further suggested that if this amendment was incorporated in the sixth section, that it was so fundamental in its character, that if the court should hold that it was an unconstitutional exercise of power by Congress, that it might have the effect of destroying the entire value of this remedial legislation, as it would be impossible to separate the clause from those provisions of the law directly controlling the subject of rates.

The committee, without expressing any opinion upon the constitutional questions suggested, feels that it is of sufficient importance and gravity to cause it to hesitate to incorporate such amendment into the sixth section, especially in view of the other objections to such legislation.

COULD THE COMMISSION, UNDER THE AMENDMENT, FIX A REASONABLE RATE, IF IT HELD THE PROPOSED ADVANCE RATE UNREASONABLE?

3. One of the most serious objections to this measure, if the contentions of those who oppose it are well founded, is the assertion that the adoption of this amendment would, in reference to advanced rates that were protested, deprive the commission of the power conferred upon it by the fifteenth section of the act of June 29, 1906, empowering it, if on protest and hearing it found a rate to be unreasonable, to fix a reasonable rate.

The authority to the commission proposed in the amendment "to hear and determine the matter in all respects as it was required to do by sections 13 and

15 of this act," can only be construed to refer to the procedure as provided in the thirteenth and fifteenth sections of the interstate commerce law. There is no attempt to amend the provisions of section 15, which confers upon the commission the right to declare a rate unreasonable, and when so declared to fix a reasonable rate. There are no provisions found in the amendment suggested to the sixth section conferring upon the commission the power, when it finds a rate proposed to be advanced unreasonable, that it may then proceed to fix a reasonable rate.

An examination of section 15 in reference to the power of the commission to fix a rate depends upon a condition precedent that is clearly set forth in said section. It is, that before the commission has the authority to fix a rate it must first reach the opinion that—

> "The rates, or charges whatsoever, demanded, charged, or collected by any common carrier or carriers, * * * or that any regulation or practice whatsoever of such carrier or carriers affecting such rates, are unreasonable, or unjustly discriminatory, or are unduly preferential or prejudicial, or otherwise in violation of the provisions of this act."

When this conclusion has been reached as to existing rates the section then authorizes the commission—

> "to determine and prescribe what will be the just and reasonable rate or rates, charge or charges, to be thereafter observed in such cases as the maximum to be charged; and what regulations or practice in respect to such transportation is just, fair and reasonable to be thereafter followed."

To leave no doubt of the true construction of this section, an examination of the order required to be

entered by the commission is conclusive of the meaning and intention of Congress in the enactment of this portion of the fifteenth section. It provides:

> "And to make an order that the carrier shall cease and desist from such violation to the extent to which the commission finds the same to exist, and shall not thereafter publish, demand, or collect any rate or charge for such transportation in excess of the maximum rate or charge so prescribed."

An analysis of this order of the commission which requires it to provide "that the carrier shall cease and desist from such violation, to the extent to which the commission finds the same to exist," recognizes the fact that the rate is an existing rate, is an effective rate, is a rate in full operation, and cannot, therefore, be applied under the provisions of the amendment suggested to the sixth section, as no rate has gone into effect and become operative.

The subject we are considering as affected by the proposed amendment and the provisions of the fifteenth section, do not rest upon any principle of the common law, but are purely statutory enactments to carry out a policy in reference to interstate commerce deemed wise by Congress. The construction, therefore, of the statute in this respect cannot be aided by any principles of the common law, and the conclusion as to its meaning must rest entirely upon the intention of the legislature as expressed by the language of the act.

If this view of the fifteenth section is correct, the adoption of the amendment to the sixth section would change one of the most effective provisions of the act of June 29, 1906, and which was contended for with such earnestness in its passage through Congress.

Under the amendment to the sixth section, if adopted, and a protest was made to the advanced rate, or the commission under a protest was authorized in its discretion to suspend the advanced rate, until hearing as to its reasonableness, the only decision that could be made under that amendment would be, that the rate proposed to be advanced was either reasonable or unreasonable, but there would exist no power in the commission, if they found the rate unreasonable, to fix what in its judgment would be a reasonable rate. The committee does not believe that it is the desire of Congress, in view of the sentiment of the country as expressed in the press and before it, to pass additional legislation which would invite and suggest such confusion and legal difficulties in the construction of an act which has not yet been put in full operation by the tribunal charged with that duty.

COULD THE DECISION OF THE COMMISSION, CONDEMNING AN ADVANCE OF RATES, BE REVIEWED BY THE COURTS?

4. It was suggested to the committee that the incorporation of this amendment to the sixth section of the act of June 29, 1906, would deprive the carrier of the right to review by a bill in equity a decision of the commission which denied to the carrier the right to advance a rate. This contention is based upon the ruling of the courts, that the making of a future rate is a legislative act, and not a question for judicial review, and that until the rate is fixed and becomes effective it is purely one within the legislative function, and presents no subject cognizable by the court.

Under the amendment proposed a carrier would file a schedule of advanced rates; a shipper enters a protest to the rate taking effect; either by operation

of the statute or the exercise of discretion by the commission, the rate is suspended until final hearing; subsequently there is a notice of the hearing and a decision rendered adverse to the contention of the carrier seeking an advance of the rate. Under these circumstances there is no remedy of review of that act of the commission provided for by existing law or under the principles of equity.

Existing law, providing for a review of a decision of the commission, does not by its terms enlarge the subject of equitable jurisdiction. The provision of the statute confers upon the court the right to take jurisdiction of a case against the commission and to review its decision when based upon an existing rate. There is no provision of the statute that contemplates the exercise of a jurisdiction by the courts in a case arising under a provision of law similar to the amendment sought to the sixth section of the act of June 29, 1906. In the decision rendered by the commission denying the right to advance the rate, the question of the reasonableness of the former rate or of any existing rate is not involved in the order to be entered by the commission. Under this proposed amendment the carrier submits a proposition to advance the rate, which has never become effective. The order of the commission would simply approve the proposition or deny the advance of the rate. This, under the proposed amendment, would be the extent of the authority and act of the commission.

In the case of McChord *v.* L. & N. R. R. Co. (183 U. S., 483), followed by the case of L. & N. R. R. Co. *v.* Ky. (183 U. S., 503), the court sustains the doctrine announced, and held that before a court of equity can intervene, the administrative body must do some act that advances beyond the legislative function.

(Reagan *v.* Farmers' Loan & Trust Co., 154 U. S., 362; Interstate Commerce Commission *v.* Railway Co., 167 U. S., 479.)

It is contended that the decision of the commission prohibiting the advance is a legislative act, and that under the decisions of the courts the order simply prohibiting the taking effect of a proposed advance could not be the subject of equitable cognizance. If this view is not correct, it is contended that the courts by overruling the order of the commission would in effect be putting in force a future rate. Under existing law, however, if the rate has taken effect its reasonableness is a matter of judicial review, and should the commission after protest and hearing declare it to be an unreasonable rate and set the same aside in its order, that decision is reviewable by the courts, as it presents a judicial question. The statute conferring upon the commission the power to determine whether an existing rate is reasonable or unreasonable has fixed the standard which must determine the jurisdiction of the administrative tribunal, and the courts have a right to review the act of the commission, with a view of ascertaining whether it has acted within the limitations of the power conferred upon it.

In the case of the State Corporation Commission of Virginia against Railways, decided by Mr. Justice Holmes November 30, 1908, speaking of the power of the commission to fix a rate and the appeal from its decision to the court of appeals of Virginia, the court said:

> "A judicial inquiry investigates, declares, and enforces liabilities as they stand on present or past facts and under laws supposed already to exist. That is its purpose and end. Legislation, on the other

> hand, looks to the future and changes existing conditions by making a new rule to be applied thereafter to all or some parts of those subject to its power. The establishment of a rate is the making of a rule for the future, and therefore is an act legislative, not judicial, in kind. * * *
>
> "Proceedings legislative in nature are not proceedings in a court within the meaning of the Revised Statutes, section 720, no matter what may be the general or dominant character of the body in which they may take place. * * * That question depends not upon the character of the body, but upon the character of the proceedings. (Ex parte Va., 100; U. S., 339-348.) They are not a suit in which a writ of error would lie under Revised Statutes, section 709, and act of February 18, 1875. (C. 80 Stat., 318.) * * * Litigation can not arise until the moment of legislation is passed. * * * We may add that when the rate is fixed a bill against the commission to restrain the members from enforcing it will not be bad as an attempt to enjoin legislation or as a suit against a State, and will be the proper form of remedy."

The recent decision of the Supreme Court in the case of Public Service Commission *v.* Consolidated Gas Co. of New York, in which the opinion was delivered by Mr. Justice Peckham, in deciding what is known as the Eighty-Cent Gas Case from the southern district of New York, is instructive upon the question discussed in this objection.

In that case, the parties had gone to issue upon the question as to whether the rate of 80 cents enjoined by the court from taking effect was confiscatory. After deciding the case upon the merits in favor of the commission, the court was unwilling, upon the supposed effect of a rate which had never been in operation, to bar the parties of their right when the

same became effective from asking the protection of the court against its practical results. The memorandum announcing the position of the court upon that question is as follows:

> "As it may possibly be that a practical experience of the effect of the acts by actual operation under them might prevent the complainant from obtaining a fair and just return upon its property used in its business of supplying gas, the complainant, in that event, ought to have the opportunity of again presenting its case to the court. Therefore, the decree is reversed, with direction to dismiss the bill without prejudice."

This case simply illustrates the fact that the court was unwilling to decide the question finally until the rate contested had become effective. This was a suit involving a schedule of rates, and the question made by the record was that these rates would result in the confiscation of the property of the complainant in violation of the Federal Constitution. Where that question can be properly made, the courts have intervened upon clear proof and sustained their jurisdiction to prevent such a violation of the constitutional protection. In this case, although the court held that the evidence developed the fact that this allegation of the bill was not sustained, it was so reluctant to give effect to testimony as to what might be the effect of the rates before they were made operative that it preserved the rights of the parties by authorizing a new suit after the rate should become effective. Under the act to regulate commerce, such a constitutional question could hardly be practically raised, and the rights of the court to intervene must depend upon the limit placed upon the power of the commission by Congress in the enactment of the law, in fixing the standard

which should guide the commission in its action.

BURDEN IMPOSED ON THE COMMISSION.—CONFLICT OF JURISDICTION.—HOW RATES ARE MADE.

5. Your committee has deemed it proper that it should report to the Senate the legal objections to the incorporation of this amendment in the sixth section of the act of the 29th of June, 1906, but although giving due weight to these objections, the committee has been more strongly influenced in its adverse report upon this bill because of the strong and forcible practical objections which have been urged to the adoption of this amendment as a part of the interstate commerce law.

Should this amendment become a part of the law, it would be in the power of any shipper, whether interested or not in the result, to file a protest against the advance of the rate which under the proposed amendment would at once suspend its going into effect, and under the amendment offered in committee would place it in the power of the commission to order its suspension, if a prima facie case was presented in the protest. The shipper in filing a protest assumes no responsibility, either as to the effect of his action upon the carrier or liability in any way for cost accruing during the proceeding. Considering the thousands of articles transported by the carriers of the country, the hundreds of thousands of rates published for the transportation of these articles, and the thousands of shippers interested in their movement, some idea of the number of protests that probably would be filed on the advance of rates can be imagined. The burden that would be thrown upon the commission in its effort to meet this responsibility would, as Judge Cooley well remarked, require "superhuman" efforts

on its part. He said:

> "Moreover, an adjudication upon a petition for relief would in many cases be far from concluding the labors of the commission in respect to the equities involved, for questions of rates assume new forms, and may require to be met differently from day to day; and in those sections of the country in which the reasons or supposed reasons for exceptional rates are most prevalent the commission would, in effect, be required to act as rate makers for all the roads and compelled to adjust the tariffs so as to meet the exigencies of business while at the same time endeavoring to protect relative rights and equities of rival carriers and rival localities. This in any considerable State would be an enormous task. In a country so large as ours, and with so vast a mileage of roads, it would be superhuman. A construction of the statute which should require its performance would render the due administration of the law altogether impracticable, and that fact tends strongly to show that such a construction could not have been intended."

If the advance of rates was ultimately decided to be reasonable, the carrier would have been deprived during the period of suspension of the additional earnings to which it was entitled, and under such a provision of law would be required to maintain, at enormous expense, a large force of attorneys to answer and defend these protests. It would confer upon the commission the powers now exercised by the courts, and the jurisdictions over the same subject by both the courts and the commission would necessarily produce conflict and confusion.

The Supreme Court in the case of Texas Pacific R. R. Co. *v.* Abilene Cotton Oil Co. (204 U. S., 426), construing the ninth and twenty-second sections on the right of a shipper to apply to the courts for

pecuniary redress for an alleged unreasonable rate held that, until the protested rate was condemned by the commission, there was no relief in the courts. This decision avoided a conflict of jurisdiction between the courts and the commission. It would lessen very greatly the value of the amendment of the act of June 29, 1906, which requires thirty days' notice in a change of rate, which was adopted, with a view of investing rate conditions with a greater degree of stability than formerly. Under existing law, the shipper is assured of that degree of stability, and can predicate his sales and purchases accordingly. Under the amendment, shippers would never know whether or not a rate is to become effective on schedule time, or at any future time. The effect of the amendment would, therefore, be to a considerable degree to nullify the permanency which this amendment to the act to regulate commerce sought to impress upon the law.

We must remember in considering this question that the majority of advances have resulted from the practice of the roads in the reduction of rates to meet certain commercial and economic conditions at the time, which have usually been the result of appeals from shippers and suggestions from commercial organizations.

We desire to direct attention to the statement filed before the Committee on Interstate and Foreign Commerce upon a similar bill to this by the chairman of the committee of the Southwestern Traffic Association, which is as follows:

> "A very small percentage of the changes in freight rates, either reductions or advances, is evolved by railroad officials. Practically every change in rates is the result of suggestion from one or more shippers,

who find that by some modification in the existing schedules their business in a certain territory can be increased by enabling them to meet competition which they encounter from other sources of supply, which are in most cases served by rival railroads. Their representation is that by the proposed change their profit or business will be increased, and consequently the railroad serving them will share in an augmented traffic which, at the time of the suggestion, is being handled by the rival shipper and carrier.

"Ninety or more per cent. of these suggestions are for reductions in rates or for changes in rules and regulations beneficial to shippers and classed as reductions. The railroad company is anxious at all times to increase its traffic and gives a keen ear to such pleas of the shipper. The railroad official to whom such requests are made carefully investigates the conditions recited by the shipper and, by correspondence with such railroad's representatives at the points of origin and destination, confirms, if possible, the views of the shipper and the effect of the proposed change on the tonnage and revenue of the company. The traffic official of the railroad thus being daily engaged in investigations of this kind becomes very proficient in his knowledge of the factors surrounding the movement of the principal articles of commerce and becomes, after experience, a ready judge of the merit of such propositions. When thus convinced, he becomes the agent of the shipper in securing the proposed adjustment. This may take the form of suggesting to a rival railroad that the advantage which its shippers have enjoyed is unjust and that he should be permitted, without any corresponding reduction on the part of such rival railroad, to reduce his rate that the complaining shipper may profitably secure an increased share of the competitive traffic in question. Being unable to thus persuade the competing railroad of the merits of such a contention he is forced to proceed by reducing

his own rate without regard to the possible change which may follow on the part of other railroads as a consequence of his reduction.

"It will, therefore, naturally be seen that the railroad official and the shipper are constantly planning to increase the business in which they are jointly interested, to the disadvantage of the rival railroad and shipper. Sometimes these efforts result in serious rate wars until the point in controversy has been adjusted and the competitive rates placed on a basis which is more nearly equitable to all concerned. In many instances these disputes result in arbitration either by the Interstate Commerce Commission or by individuals who may be agreed upon by the contending interests.

"Bearing in mind, therefore, that practically all rate reductions are the result of the effort of the railroad company to serve the shipper, it can easily be seen what the result will be if no advances in rates can be made without practically the approval of the Interstate Commerce Commission. Where it is difficult to restore rates to normal figures, the carrier will be loath to reduce them in order that the shipper dependent upon such carrier may increase, for the time being, his share in the competitive traffic in which he is interested."

ADJUSTMENT OF RATES.—INTERRELATION OF RATES.—PRACTICAL OPERATION OF AMENDMENT.

6. The subject of rate adjustment, even upon a single system of transportation, is one involving great difficulty and perplexity. When this adjustment is considered in its relation to the entire country, to the diversified commercial conditions, as affected by commercial competition, and as controlled by the interrelation of rates, it stands forth as one of the most difficult of all the problems which must be mastered that the transportation agencies may not be

injuriously crippled in the performance of their quasi public functions, or the prosperity and development of the commercial interests be retarded by the failure to enact proper, reasonable, and just governmental regulations.

Rates which can be considered alone are comparatively few in number. In the large majority of cases they are interrelated with other rates, and frequently this interrelation exists as between areas widely separated. The rates upon iron and steel from mills within 50 to 100 miles of New York, Philadelphia and Baltimore, whose relations to each other are established by long custom and usage, are based primarily upon the necessity of preserving a fair comparative charge between the different shipping points and destinations. Rates upon coal from central Pennsylvania to tide water have close relations with the rates upon coal from West Virginia to tide water, competing as such coal does, in the same markets. The rates upon lumber from the Michigan markets must bear some relation to the rates on lumber from Louisiana and Georgia to the same market of distribution, although separated by hundreds of miles.

The rates upon grain from western farms to eastern points bear a relation to the other, and upon export grain the rates to the Atlantic seaboard bear a close relation to the rates to the Gulf. The rates upon fruit and vegetable traffic from the various shipping districts, as California on the West and Florida on the South, must be considered in the making of rates. The structure of rates between the territory east of the Mississippi and north of the Ohio River, and the territory east of Pittsburg and Buffalo, including New England, is closely interrelated; as an example, the

rates between Chicago and New York take a percentage of the Chicago rate from all points west of Pittsburg and Buffalo. The principle of the interrelation of rates has frequently been recognized in the decisions of the Interstate Commerce Commission.

In the interest of the manufacturer there is a very important relationship between rates upon different products entering into the manufacture of a given article. In the great steel-producing districts of the Shenango and Mahoning valleys and Pittsburg for many years the rates upon raw material to the furnaces for the production of pig iron have been adjusted upon a basis, so far as possible, of making the freight cost of assembling the raw materials that enter into this product the same to each furnace. In the one case the rate upon coke may be higher and the rate upon ore or limestone lower; in other cases the reverse. The adjustment of rates upon these different raw materials is so made that when assembled at the different furnaces the aggregate cost is relatively the same. This illustrates the contention that such rates cannot be considered separately, but must be taken as a whole.

Bearing these facts in mind it is manifest that if an advance in rates is made and the protest of one shipper shall operate as a stay to the advance of a particular rate in which he may be interested the result would be to burden thousands of other shippers who have made no objection. The protesting shipper would thus secure an advantage, enjoying for a time, at least, a rate relatively lower than that to which he was entitled. It might be urged that it would be open to all other shippers to file similar protests, but under the provisions of the bill, or of

the amendments suggested in committee, the protesting shipper might wait until the last day of the thirty-day period, thus giving no opportunity to other shippers, who would be ignorant of his purpose, to file their protest. It would be possible if this amendment became a law that many individual shippers would take advantage of their competitors by making contracts upon the basis of a lower rate and at the last moment file the protest, suspend the advance rate, and deliver their product under such contracts within the period of the suspension of the advanced rates and thus profit at the expense of their competitors.

The effect of this amendment becomes more serious where the relation of rates is between wide areas, and these relative rate adjustments cannot be made simultaneously. The rates upon grain for export, from the West to the Gulf, as compared with the Atlantic seaboard, will illustrate this statement. The protest of one shipper between two specific points would not only result in throwing out of relation the rates from all points in that section, but would also affect the competitive rates from other sections. Such a result would necessarily render the rate situation in reference to the grain rates "confusion worse confounded."

Rates in a country like the United States, which is comparatively young, and the development of which attracts the attention of the world, must, necessarily, be elastic, not only in the interest of the carrier, but of the shipping public. The principle is sound and has received the approval of the Interstate Commerce Commission, that rates must be fixed with regard to their relations one with the other, and not entirely upon the cost of service. This relation is because of

the competition between shippers, between sections of shippers, and between localities, and as (because of the rapid development of our country in the production of new sources of supply, in the opening up of new grain fields, flour mills, mines, and factories, etc.) this competition is constantly changing. It is manifest that rates must constantly fluctuate, so as to be adjusted to the new condition; it is essential in the development of the country, even in the older sections, that rates must be elastic, which means constant reductions and advances.

This is in the interest of communities and the individual shipper. There must be elasticity for other reasons, in the interest of communities as of the railroads; in meeting changes in commercial conditions that necessitates reductions in rates for shorter or longer periods, as an illustration, to enable our grain and other products of the farm to reach foreign markets, which would be impossible in one period unless rates were lowered, whereas in other periods higher rates could be charged without injurious results. Understanding the conditions that surround this complex subject, it is manifest that if a single shipper, or even the Interstate Commerce Commission, is to have the power to prevent at any time that elasticity which involves an advance in rates, the natural result will be that reductions will not be made by the carrier, and the elasticity will be lost. The fear would be ever presented to the mind of the traffic official that the rate once reduced could not—at least, until after exhaustive and long-drawn-out hearings before the commission—be advanced.

The necessary fluctuation in rates to meet the changing conditions of commerce, when examined in the light of the reports of the Interstate Commerce

Commission, is startling to one not familiar with the rapid change of commercial conditions in this country. There were 225,982 tariff publications filed with the commission in one year, all containing changes of rates, either reductions or increases, and rules governing transportation. These publications—many of them—contained a great number of different tariffs. The Pennsylvania lines, east of Pittsburg, issued 2,200 tariffs and 3,600 supplements. About 33-1/3 per cent of these covered advances, and 66-2/3 per cent were reductions. As the law exists today, there was no special inducement to the shipper to file protests against the advances. Suppose, however, that this amendment had been a part of the act to regulate commerce, how many protests would have been filed, and what length of time would it have taken the commission to have disposed of them? What uncertainty would have resulted to the commercial interests while waiting for the adjudication of these questions?

OPPORTUNITY FOR FRAUD AND DISCRIMINATION UNDER THE AMENDMENT.

7. One of the most serious objections urged to the passage of this amendment is the opportunity which such a law would present for the perpetration of frauds under it, and in the case of even honest protest to the advance of rates, where rates rest on a differential basis, in producing thousands of instances of unfair discrimination.

An example under the first proposition may be stated briefly, as follows: There are two men engaged in the same line of trade; they are both called upon to bid on a contract involving a large amount of a given commodity in which both deal. The carrier has given notice of an advance in rate, effective thirty

days from the filing and publication of the schedule; the commodity is not to move for some days; one of the bidders files his bid, based upon the advanced rate, assuming that the notice of the carrier will be made effective; the other shipper and bidder waits until two or three days before the date the rate is to be made effective, files a protest, confident that it will take three or four months to have the matter adjudicated, files his bid against his competitor, based on the current rate, and being the lowest, secures the contract. An example under the second proposition would be in case of a rate published from St. Louis to be followed differentially from Chicago by a number of competing roads. A shipper on one of the lines, just prior to the taking effect of the rate, would file his protest as to the rate east of Chicago. The differential adjustment that has been made by all these roads will at once be destroyed, and the shipper on the road against which the protest was filed would have the advantage over all of his competitors on the other lines in shipping east.

These discriminations between shippers would be the direct result of the power placed by Congress in the hands of shippers and would have received the sanction of legislative approval, and, therefore, be lawful. The statute has taken it out of the power of the carrier to meet such a condition and to prevent the discrimination. It cannot change its rate under thirty days without a special order of the commission, and that order, it must be assumed, cannot be granted without a reasonable hearing. Congress since 1887 has sought by the most stringent measures of legislation to prevent discrimination and preserve equality among shippers. The original act was demanded more to accomplish that purpose than for any other. The Elkins Act was confined almost

entirely to the subject, and the act of June 29, 1906, increased the penalties for the violation of these provisions. Should this policy, which has been followed for more than twenty years, be modified and an act passed, the tendency of which is to tempt the cupidity of the shipper to accomplish results which it has earnestly and vigorously fought to stamp out?

WOULD PREVENT REDUCTIONS, AS WELL AS ADVANCES, IN RATES, AND DESTROY THEIR FLEXIBILITY.

8. On the face of this amendment, it seems only to give to the commission the authority to prevent an increase in rates, but the practical result of such a law would be far more reaching. Such a law would mean a rigid freight tariff in place of the present flexible and elastic system of rates which exists alone in this country. Stability of freight rates is important, but not to the extent that the carrier shall not feel warranted in promptly applying remedies for the relief or assistance of shippers who find themselves no longer able to compete, due to advantages which other shippers have secured, or changes which have occurred in the conditions surrounding the marketing of their products.

A law which tends to minimize the commercial or competitive conditions existing at the present time will necessarily result to the disadvantage of shippers, to the carrier, and to the communities they serve. It is not necessary here to again refer to the presentation of the importance of the flexibility of rates, which is so clearly shown in the discussion of the influences which control in making reductions, as well as advances of rates by the chairman of the Southwestern Traffic Committee, as quoted under section 5 of this report. The more the committee has

reflected upon the probable tendency of the principle announced by this amendment, if incorporated into the law, the more definite has become its conviction that it would ultimately result in destroying that important factor in American railroad management, "the flexibility of their tariffs—their adaptability to the changing commercial and economic conditions."

One of the most distinguished and skilled traffic officials in the country, Mr. Henry Fink, in considering this amendment uses the following language:

> "Railroad officials are constantly engaged in the work of adjusting rates so as to meet as far as practicable the requirement of their patrons. In times of depression of business they make reduction in rates in order to enable shippers to send their commodities to certain markets, and keep industrial establishments from being closed. These reduced rates are often so low as to barely cover the cost of transportation. But they are meant to be temporary in their operation, and to be advanced when business conditions have become more favorable.
>
> "It must be obvious that when the restoration of such rates is obstructed, so that railroad officials are not permitted to advance rates except by permission of a government bureau after an investigation which must consume considerable time, railroad officials will naturally hesitate, and often decline, to make reductions in rates which involve considerable loss of revenue without any compensating benefits to their companies, either in the present or future.
>
> "It is easy to see the effect of this. Railroads would no longer be able to afford the desired assistance to shippers, however anxious they might be to do so. The rates would in a large measure lose their elasticity, and become rigid, and a condition similar to that existing in France would be created, where

state controlled rates prevent railroads from building up the territory."

In considering this question, we must not forget that when we destroy elasticity and flexibility in our rates, we prevent reductions of rates, as well as the raising of rates. Its tendency is not only to prevent the reduction in particular instances that has resulted in great advantage to the shippers and the country in the past, but it prevents the lowering of the general average of rates. There have been comparatively few complaints, as to the unreasonableness of the rates of this country per se. The vast majority of complaints, against the reasonableness of rates, is the claim that they are relatively unreasonable. Under the American system of rate adjustment, with its freedom to meet commercial and economic conditions, the general average of rates per ton per mile has voluntarily been reduced by the carriers of the country from 1870; not so strikingly since 1896 as previously, but substantial reduction as follows:[J]

1896	802		1902	757
1897	789		1903	763
1898	753		1904	780
1899	724		1905	766
1900	729		1906	748
1901	750		1907	759

The leaders of railroad management and the ablest experts on railroad economics in foreign countries have approved in the most enthusiastic language, the wisdom which has preserved to the American railway system its freedom of management and its flexibility of rates, subject only to the limitations of

reasonable rates, equality among shippers, and the avoiding of all devices that might result in discrimination among those who use these public means of transportation.

The view of M. Emile Heurteau, president of the Orleans Railroad, speaking of the American system of roads, said:

> "We would be only too glad to adopt the American system of fixing the lowest rates proper, and making up the loss of profit on each shipment out of the increased volume of business they make the railways available to, which is the only economically and commercially right and sensible way of doing. We would be glad to build up our territory as the American railways do, by encouraging its industries, by opening its markets, by enabling it to compete with other territory contributing to the same markets.
>
> "But we can not do that; the state-controlled rates prevent it, however strong our desire or the people's may be.

> "Railroads under government supervision must set their rates close to the maxima then, and maintain them there, for their own salvation. There are many times when, if it were possible, we would like to lower freight charges to meet some special emergency, such as the necessities of a district suffering from a crop failure, for example.
>
> "That is not philanthropy, but commercial sense, to help the man who creates business for you, when he is hard pressed, and to increase the volume of traffic that is falling because people have not the money to pay the price they have been accustomed to pay easily. But if we should once lower our rates—possibly to the point of loss, as American railways

have done frequently in crises—we would not be allowed to restore them later, when they could be fairly restored.

"The wonderful growth and development of the United States is the admiration of the whole world. I have no doubt it is to be attributed largely to the freedom you have always enjoyed in your commercial and industrial life.

"Opportunity is given here for railways and communities to be mutually helpful, and splendid use has been made and is being made of it. The few cases of complaints against your railways, the expansion of trade through the opening of European markets to the producers of your Central and Western States, who are enabled to deliver their products abroad, the low cost of transportation that enables them to compete there with the foreign producer near at hand, whose railways are in no position to help him—all these things seem to me sufficient evidence of the success and desirability of the American practice in the management and regulation of railway matters.

"Any economist, any business man, any transportation manager will tell you that the present American method of fixing freight rates is the only logical and rational one."

In the investigation of railways by the Senate committee in 1905, Mr. W. M. Acworth, who is regarded as one of the leading experts in England on railroad transportation and railroad economics, was invited to appear before the committee, with the request to give a review of the historical facts bearing on the control and management of the railways of England. After complying with the request of the committee, certain questions were

asked him that were of great importance at that time in the consideration of the questions then being investigated by the committee. One of these questions involved the effect of the provision of the new canal and traffic act of Parliament, which for the first time embodied the provision that "railway companies must make no increase except for good cause, if anybody objects," and which, as construed by the courts, prevented any increase of a rate where objection was made, until after hearing by the board of trade.

His examination will be found in the third volume of the hearings of that investigation, pages 1848, 1852, 1853 and 1854, and was as follows:

> "Since it has been decided that no rate can be put up once it has been put down, without appeal to the law courts, the railway companies have practically arrived at the conclusion that they will not put them down because they do not know whether they will have an opportunity to put them up again.
>
> "Senator CULLOM: Do you think it works to the advantage of the people that the railways will not put the rates down for fear they will not get a chance to put them up again?
>
> "Mr. ACWORTH: Personally, I have no doubt it does not. It is fair to remember always that it may protect the weaker in commercial strife. It is rather hard on the weaker man to be crowded to the wall by a wholesale concern in any walk of life. But if it be true in ordinary business that, on the whole, the public gains by the wholesaling method, it is probably true in railway business also. I think that, so to speak, the heart has been taken out of the railway man. The railway men understand this business; they know how to manage it in their own way. The railway men think 'the responsibility has ceased to be ours; we must maintain the status quo,'

and that is what they do.

"The CHAIRMAN: You think that dividing responsibility impairs the administrative power of the officials of the roads as well as the service they render to the public?

"Mr. ACWORTH: From the operating point of view, I do not think our railways have been sufficiently interfered with to prevent them developing the goodness of the service. But as to rate making, I have no doubt that the interference of Parliament, the courts, and the Executive has all tended to stereotype and keep rates at an unnecessarily high level.

"The CHAIRMAN: Would you say that, on the whole, the power to make rates generally and primarily should be left to the railroads and to the free play of the forces of the business world?

"Mr. ACWORTH: Speaking as an individual student, I have no doubt that that is the process that will arrive at the best results for the community, with this exception: That I fully think it is necessary that the community in some way should interfere to protect all customers from unfair treatment.

"The CHAIRMAN: You think that the power should reside somewhere to correct excessive and extortionate rates by summary and proper proceedings?

"Mr. ACWORTH: I am not sure that I should go so far as to say excessive rates regarded as excessive in themselves. I am myself inclined to think that excessive rates will correct themselves. The wise men will discover that it does not pay to charge excessive rates. But I think the law should interfere to prevent unfair rates to A as compared with the rates given to B. It seems to me that the State is bound to insist that the rates shall be public, and that practically will settle it, for if they are public they have got to be fair; I am inclined to think the law should confine

itself to securing that, where there is a difference made as between A and B, the difference should be a difference for a commercial reason, and not for any reason of personal favoritism.

"Senator FORAKER: And I understand you to say that the effect of fixing maximum rates is to lessen the tendency to reduce rates, which railroads had practiced before this legislation was enacted?

"Mr. ACWORTH: I am not quite sure that the maxima have really had very much effect at all. It has been a tendency, but I do not think an important tendency. But the interpretation by the courts of the undue preference law, and the recent limitation that having once reduced you can not subsequently increase, have had that effect markedly, I believe.

"Senator FORAKER: So that the rates for the transportation of freight on railroads in England have not been declining, I take it from your statement, in recent years, but have remained practically stationary?

"Mr. ACWORTH: I do not know what the average rate is, because there are no statistics in England; but my own impression would be that it had probably not declined to an appreciable extent, whereas in an earlier period it certainly did decline pretty fast."

The effect of a similar law, passed in England, as shown by the testimony of Mr. Acworth, confirms the views of the committee which have been expressed in this report, that with such a provision embodied in the present interstate commerce law, there would be few reductions or advances in American rates. If it had the effect in England of destroying the flexibility of the rates of the carrier and interfered with the development of England's commerce, as well as her railroads, how much more serious would be the result in this country, that is in the process of rapid

development, both as to its commerce and territory? It has been credibly stated that the Board of Trade of England is now seriously considering a recommendation for the repeal of that provision of the statute.

AN ANALYSIS OF THE COMMUNICATION TO THE COMMISSION —MANY OF ITS OBJECTIONS APPLY TO THE AMENDMENT OFFERED IN COMMITTEE.

9. When this bill was referred to your committee for its consideration the chairman addressed a letter to the Interstate Commerce Commission, inclosing the bill, and requested the opinion of the commission as to the wisdom of incorporating the amendment into the interstate commerce law.

The chairman replied in the following communication:

"INTERSTATE COMMERCE COMMISSION,

"*Washington, January 29, 1908.*

"HON. STEPHEN B. ELKINS,
"*Chairman Committee on Interstate Commerce*,
"*United States Senate, Washington, D. C.*

"DEAR SIR: The Interstate Commerce Commission has the honor to submit the following in response to your communication of 24th instant, transmitting a bill (S. 423) to amend section 6 of the act to regulate commerce, introduced by Senator Fulton December 4, 1907, and requesting the commission to 'advise the committee before its next meeting, January 31, their opinion of said bill and what action they would suggest thereon.'

"Whilst the views of the entire commission can not be definitely ascertained within the time named, because of absences on official business, a majority of the commissioners and probably all of them would

not be disposed to favor the enactment of this measure.

"To give to the protest of a single shipper the effect of preventing the advance of any rate until the reasonableness of that advance was affirmatively determined by the commission would establish a hard and fast rule of doubtful fairness to the railroads and questionable advantage to the public. Under existing conditions we are of the opinion that it would be unwise to adopt the arbitrary limitation which this bill proposes, whatever may be found desirable or necessary in this regard in the future.

"It is further to be observed that the passage of such a bill at this time would impose a burden upon the commission which it ought not to be asked to undertake. If every proposed advance had to be investigated by the commission and officially sanctioned before it could take effect, the number of cases to be considered would presumably be so great as to render their prompt disposition almost impossible. In instances of justifiable increase the necessary delay resulting from the probable volume of cases would work injustice to the carriers. Until conditions become more stable and the substantive provisions of the act are more completely observed in railway tariffs and practices we entertain the belief that a wider latitude of discretion on the part of carriers than this measure allows should be permitted.

"It is also suggested that the practical effect of the proposed amendment might be to prevent voluntary reductions of rates by the carriers. If no rate could be increased without the approval of the commission after affirmative showing by the carrier it might happen that many reductions now voluntarily accorded would not be made.

"This subject of rate advances was discussed in our recent annual report to the Congress, and that portion of the report is transmitted herewith for the

information of your committee. It concludes with a recommendation relating to the matter in question in which the entire commission concurred, and that recommendation is now respectfully renewed.

"Very respectfully,

"MARTIN A. KNAPP,

"*Chairman*."

It will be observed by an examination of this communication from the commission that it deemed it unwise to recommend the adoption of the amendment to the sixth section as offered in Senate bill 423, but the letter refers to its former report as expressive of its views upon this subject, which recommended a somewhat similar provision, but differing in this respect. In Senate bill 423 the filing of a protest would suspend the taking effect of the rate until after full hearing as to the merits of the advance. The recommendation of the commission in its former report, referred to in the communication, recommended the adoption of a provision that would confer upon the commission, upon the filing of a complaint, the discretion to suspend the rate until final hearing. The amendment to the bill before your committee offered during its consideration, and which has been fully discussed in this report, was in substance the recommendation of the commission.

An analysis of the letter of the chairman of the commission, stating the objections to the enactments of the proposed amendment into law, sustains many of the reasons which have been urged in this report against the approval of the principle announced by that amendment. The committee quotes from the letter, as follows:

"(a) To give to the protest of a single shipper the effect of preventing the advance of any rate until the reasonableness of that advance was affirmatively

determined by the commission, would establish a hard and fast rule of doubtful fairness to the railroads and questionable advantage to the public.

"(b) Under existing conditions we are of the opinion that it would be unwise to adopt the arbitrary limitation which this bill proposes.

"(c) If every proposed advance had to be investigated by the commission and officially sanctioned before it could take effect the number of cases to be considered would presumably be so great as to render this prompt disposition almost impossible.

"(d) It is further to be observed that the passage of such a bill at this time would impose a burden upon the commission, which it should not be asked to undertake.

"(e) In instances of justifiable increase all necessary delay resulting from probable volume of cases would work injustice to the carriers.

"(f) Until conditions become more stable and the substantive operations of the act are more completely observed in railway tariffs and practices, we entertain the belief that a wider latitude of discretion on the part of carriers than this measure allows would be permitted.

"(g) It is also suggested that the practical effect of a proposed amendment might be to prevent voluntary reductions of rates by the carriers.

"(h) If no rate could be increased without the approval of the commission after affirmative showing by the carrier, it might happen that many reductions now voluntarily accorded would not be made."

The nine reasons suggested by the commission why the original amendment offered to section 6 should not be adopted, fully sustain the committee in reporting the bill adversely, and to a great extent,

fully justify the views which it has expressed in this report as influencing the actions of the committee in its adverse report upon the amendment proposed in the committee.

The committee is unable to appreciate the force of the suggestion of the modification proposed to the original amendment, as in any way changing the principle embodied in it, or the practical results which would flow from its adoption. If the power was conferred upon the commission, when a rate was advanced, upon complaint to suspend the going into effect of that rate until a final hearing, every objection urged by the commission to the adoption of the bill, but the first two, would be applicable to the modification proposed by the commission to the original amendment.

Under the modification suggested by the commission the burden imposed upon it would be greater, if possible, than under the original amendment. Under the original amendment, by force of the statute, the filing of the protest would suspend the advanced rate, and the hearing upon the merits would take place after the thirty days had expired. Under the suggestion of the commission conferring upon it the discretionary authority upon complaint to determine whether the rate should go into effect at the time prescribed by law or be suspended, there is imposed an official quasi judicial duty upon the commission, which it should not perform except upon proof that probably the rate sought to be advanced would ultimately be determined to be unreasonable. Remembering the large number of changes of rates daily, and the fact that under the law the complaint could be filed at any time within the thirty days, would it not be an impossible

undertaking for the commission to hope to perform this official act with justice to the public or to the carrier? In the multiplicity of duties now demanding its most earnest attention, would not the practical operation of such a law compel it to enter a pro forma order of suspension until the final hearing, when the commission, upon an examination of the complaint, is satisfied that it presented a prima facie case of unreasonable advance?

An official tribunal charged with the duty of preventing an unreasonable advance in rates would be constrained, on the presentation of such a complaint, to issue the order of suspension. If the slightest doubt was raised in its mind as to the reasonableness of the advance, its official obligation would require it to enter the order of suspension. Is there any question that such a prima facie case could be made where the consideration of the protest would, of necessity, be ex parte?

The committee is not, therefore, able to draw a distinction between the original amendment and that proposed in committee. In the opinion of the committee the reasons stated in the letter of the chairman of the commission, and the reasons given in this report, not only justify it but compel an adverse report.

CONDITIONS CONFRONTING CONGRESS.

10. The act of June 29, 1906, took effect August 28, 1906. It has been operative only about twenty-eight months. During half of that period of time the country has experienced the effects of a severe commercial panic; business has been prostrated; transportation paralyzed; thousands of cars have been stored on the sidings, and hundreds of engines

have been placed in the shops, awaiting the revival of business. From conditions existing today, we have a right to assume that before many months we shall be approaching normal conditions. The commission has not had sufficient time to interpret and construe the recent law and to promulgate its orders in reference to the action of the carriers under it. Many of the traffic questions involved, under the provisions of that law, are yet to be construed and put in force by orders of the commission. Is it wise, under these conditions, to begin amending that statute by introducing provisions inconsistent with the basis of the act? It has been shown that under the power conferred by that recent enactment, the commission is vested with the power to change an existing unreasonable rate and to fix for the future a reasonable rate. It has also the authority conferred upon it to award reparation to the extent of any injury resulting to a shipper, by reason of the existence of an unreasonable rate.

Attention has been called to the opinion of the commission, as expressed in its decisions, narrowing very greatly the right of the carrier to advance a rate that would meet with its approval upon hearing. The committee must assume, in considering this question, that both the shippers and traffic officials, with knowledge of the views entertained by the commission upon the question of an advance of rates, will in the one case be prompt to avail themselves of that attitude of the commission, and in the other that they will seek to so adjust their rates as to bring their schedules within the rulings of that tribunal. The committee believes the highest duty of the commission is to bring together shippers and carriers, to the end that each may see that neither can be permanently prosperous at the expense of the

other. It further believes that in many instances this effort has been made by the commission, and successfully made. It cannot be accomplished by statutes causing rigidity of rates. The most sensitive spot in the great business dealings of the country is the railroad rate. This rate must be raised or lowered, not in obedience to a rigid statutory law, but in obedience to the varying conditions of trade and commerce.

The National Board of Trade, one of the most important commercial organizations in the country and one of the most influential, met in Washington on Tuesday, January 19, 1909. Two proposed resolutions were submitted to that convention. First, by the Philadelphia Press League, urging an amendment to the interstate commerce law, to permit railroads engaged in interstate traffic to enter into the making of agreements under the supervision and control of the Interstate Commerce Commission. The second proposition was submitted by the Scranton Board of Trade, embodying the provisions of the amendment offered in the committee upon the consideration of Senate bill 423, and approved in the report of the Interstate Commerce Commission as to the advance of rates.

These resolutions were referred to the committee on resolutions having charge of interstate commerce matters. That committee, through its chairman, made the following report, which was unanimously indorsed by the convention of the National Board of Trade:

> "The committee on interstate commerce law respectfully reports that, in its judgment, the National Board of Trade ought not at this time to recommend any change in the laws relating to

interstate commerce."

The convention was not satisfied with the passage of this resolution, but the chairmen of the several committees of that association were subsequently authorized and directed by resolution to urge the conclusions of the board in its name whenever possible.

The country is now demanding repose in its industrial upbuilding. It is not a time to experiment and to change the basis upon which the former acts to regulate commerce have been predicated. The recent law passed by Congress so greatly enlarging the authority of the commission should, before changes are sought, have the opportunity of at least a fair trial as to the value of its provisions in the regulation of interstate commerce. When trial has been given and normal conditions have been restored, any defect in the regulating statute can then, in the light of experience, be promptly remedied.

FOOTNOTE:

[J] The average rate per ton mile in 1908 was 7.54 mills.

STATISTICS OF AMERICAN RAILWAYS

FOR THE YEAR ENDING JUNE 30

1909

PREPARED BY

SLASON THOMPSON
MANAGER OF THE BUREAU OF RAILWAY NEWS AND STATISTICS

INTRODUCTION

"The function of accounts is to record facts. True accounting is nothing more, nor nothing less, than the correct statement of what in fact has taken place, and the measurement of that fact in an appropriate figure."—Prof Henry C. Adams.

To be of the highest value, statistics must be accurate, uniform and continuous.

Nothing in the nature of statistics under official authority more confusing and misleading has ever been issued from the government printing office than those portions of the Twenty-third Annual Report of the Interstate Commerce Commission for the year ending June 30, 1909, purporting to deal with the financial results of the railways of the United States for the fiscal years 1908 and 1909.

On the first page of the Report the financial results of the last two fiscal years are set down thus:

	Operating Revenues	Operating Expenses	Taxes	Operatir Income
1908	$2,461,521,345	$1,721,327,155	$83,775,869	$655,418,
1909	2,494,115,589	1,662,102,172	89,026,226	742,987,1

The mileage operated in 1908 is stated as 228,164.80 and in 1909 as 233,002.67 miles.

On page 54 of the report the summary compiled

from the monthly reports gives the following comparative figures for the same years:

	Total Operating Revenues	Total Operating Expenses	Net Revenue	Taxes
1908	$2,421,542,004	$1,687,144,975	$734,397,029	$83,775,
1909	2,443,312,232	1,615,497,233	827,814,998	89,026,2

The mileage is the same as above, with the added information that the mileage operated at the end of the fiscal year 1908 was 229,952.36; and at the end of 1909, 234,182.70.

It will be observed that the taxes in both summaries are identical, but in one they are subtracted from net revenues and in the other they are not.

An insert facing page 54, giving the details of the monthly reports from which the table on that page is compiled, reveals the common source of both sets of returns and gives the key to the discrepancy between them. This is no less than the inclusion in the former of the revenues and expenses from "outside operations," which are excluded from the summary on page 54, in which the "net revenue" only from such outside source is mentioned and added to the net revenue from rail operations.

The impropriety and inaccuracy of such accounting becomes manifest when its effect is seen to vary the ratio of operating expenses to earnings from 69.67% to 69.93% in 1908, and from 66.12% to 66.64% in 1909.

On pages 64 and 65 appears another set of income

figures for the year ending June 30, 1908. This is compiled from the annual reports of the carriers operating 230,494 miles of line, from which *the mileage of switching and terminal companies is excluded*. It supplies the following summary:

YEAR ENDING JUNE 30, 1908.

Rail operations:	
Operating revenues	$2,393,805,989
Operating expenses	1,669,547,876
Net operating revenue	724,258,113
Taxes	78,673,794
Net revenue from outside operations	5,977,268
Operating income	651,561,587
Ratio of operating expenses to earnings	69.72

As these figures are compiled from the only returns which furnish data respecting all the various phases of railway operation in the United States, they will be accepted in subsequent pages as the official returns for 1908.

The above figures are exclusive of returns from switching and terminal companies, whose earnings, according to the monthly reports in 1908, were $23,028,773; expenses, $16,383,481, and taxes, $1,245,261.

GROSSLY EXAGGERATED DIVIDENDS.

But these are venial variations compared to the deliberate misrepresentation as to dividends on page 62 of the report, where it is stated:

"The amount of dividends declared during the year was $386,879,362, being equivalent to 7.99 per cent

on dividend-paying stock. For the year ending June 30, 1907, the amount of dividends declared was $308,088,627."

This statement is the more reprehensible because the inaccuracy of the reference to dividends in 1907 was exposed a year ago, and $115,550,909 of the 1908 total is proved to be fictitious by the line in the condensed income statement of the report (page 65) reading: "Dividends declared from current income, $271,388,453." It takes dividends from surplus, dividends by leased companies, and dividends from surplus of leased companies to make up that gross deception as to the dividends declared in 1908. And all these "several dividends" are only made statistically possible by including in current income $274,450,192 "other income" NOT derived from transportation.

It is impossible to overestimate the harmful popular effect of exaggerating the dividends paid by the railways by $80,693,665 in 1907 and $115,550,909 in 1908. The public mind does not stop to distinguish between dividends "declared," dividends paid out of "income" and net dividends actually paid out of net earnings of railway traffic.

This whole statistical structure of fictitious dividends has been built up in successive reports upon the false premise of including intercorporate payments on both sides of the income account. What the public is entitled to know is the disposition of the gross sum paid by it for transportation services—those services which the Act to Regulate Commerce was passed to regulate.

Bewildering Changes in Nomenclature.

Scattered through the official reports for 1908 the student is confronted with numerous changes in terminology, many of which are for the better, but nearly all impair that continuity of names and phrases which is so desirable in comparative statistics. For instance, the public has been taught, by official practice, to speak of the revenues of the railways derived from the transportation of passengers, freight, mail and express, as "Gross earnings from operation." The phrase is descriptive, definite and clear. For this the Commission has substituted "Rail operations, operating revenues." Former reports spoke of "Income from operation," which now gives place to "Net operating revenue." To this is added the "net revenue from outside operations," making a "Total net revenue," from which "Taxes accrued" are deducted, the remainder being "Operating income."

It will be perceived that this last phrase, which covers revenues from which operating expenses and taxes have been deducted and to which the net revenues from outside operations (sometimes they involve a deficit) have been added, comes perilously near the "Income from operation" of preceding reports.

The exclusion of the reports from switching and terminal companies in some instances, while they are included in others, introduces an element of perplexing uncertainty at every turn and really vitiates all comparisons with former reports.

The Commission itself seems to realize the bog into which the official statistician has plunged its accounts, when it says:

"The changes in the income account submitted in the report under consideration *are so far reaching in*

their results, in a number of instances, as to impair direct or close comparison with figures for similar items in previous statistical reports."

And now it is proposed to throw all the accumulated statistics of twenty-two years out of consecutive gear by substituting the calendar for the fiscal year.

The writer has deemed the foregoing comments necessary to clear the atmosphere before proceeding to the introductory summary showing the salient features of the railway industry in 1909 compared with similar items in 1899 and 1889. The data for 1909 is compiled from the annual reports to this Bureau covering 221,132 miles of operated line, together with the monthly reports to the Commission of earnings and expenses of all classes of roads for that year, covering an average operated mileage of 233,002.

SUMMARY OF RAILWAY RESULTS IN 1909, 1899 AND 1889, WITH PERCENTAGES OF INCREASE FOR EACH ITEM BY DECADES.

(m = 1,000; d = decrease.)

Item	1889	1899	1909	Increase over 1889 %
Miles of line	153,385	187,534	234,182	52.7
Miles of all track	195,958	250,784	340,000	73.5
Net capitalization (m)	$7,366,745	$9,432,041	$13,508,711	83.3

Net capitalization per mile of line	48,021	51,764	57,962	20.7
Net capitalization per mile of track	37,593	38,527	39,730	5.6
Gross earnings from operation (m)	964,816	1,313,610	2,443,312	153.2
Gross earnings per mile of line	6,290	7,005	10,486	66.7
Expenses of operation (m)	644,706	856,968	1,615,497	150.5
Expenses of operation per mile of line	4,204	4,570	6,933	64.9
Net earnings from operation (m)	320,101	456,642	827,814	157.9
Net earnings per mile of line (m)	2,086	2,435	3,552	70.2
Ratio of expenses to earnings	66.81	65.24	66.12	d 2.3
Receipts from passengers (m)	$254,041	$291,113	$564,302	122.1
Receipts from freight (m)	642,662	913,737	1,682,919	161.8
Receipts from mail (m)	21,901	35,999	50,935	132.6
Receipts from express (m)	19,778	26,756	63,669	221.9

Passengers carried (m)	472,171	523,176	880,764	86.5
Passengers carried one mile (m)	11,553,820	14,591,327	29,452,000	154.8
Receipts per passenger per mile (cents)	2.165	1.978	1.916	d 11.5
Freight tons carried (m)	539,639	959,763	1,486,000	175.3
Freight tons carried one mile (m)	68,727,223	123,667,257	222,900,000	224.3
Receipts per ton per mile (mills)	9.22	7.24	7.55	d 17.0
Locomotives, number	29,036	36,703	57,220	97.0
Locomotives, weight (tons)	1,161,440	1,945,259	4,158,000	258.0
Passenger cars (number)	24,586	33,850	46,026	87.2
Freight cars, number	829,885	1,295,510	2,113,450	154.6
Freight cars, capacity (tons)	16,597,700	34,978,770	73,126,370	340.5
Average tons in train	179	243	388	116.9
Employes, number	704,743	928,924	1,524,000	116.2
Employes, compensation	$389,785,664	$522,967,896	$1,003,270,000	157.4
Proportion of gross earnings	40.40	39.80	41.00	1.4

Proportion of operating expenses	60.46	61.02	62.10	2.7
Taxes	$27,590,394	$46,337,632	$91,280,000	230.8
Per mile of line	180	247	390	116.6
Proportion of gross earnings	2.86	3.53	3.73	30.4

There is not a line or figure of this table, with its percentages of increase, that does not testify at once to the amazing growth of American railways and to the equally amazing economical basis upon which they render incalculable services to the American people on terms that challenge the admiration of less favored peoples.

REVIEW OF THE LAST THREE CALENDAR YEARS.

Where the Twenty-second Annual Report of the Interstate Commerce Commission minimized the loss inflicted on the railways by the business depression of 1908, the Twenty-third Annual Report naturally, and by reason of the same cause, minimizes the substantial recovery of 1909. Where the former showed a loss in gross earnings of only $164,464,941 below the preceding year, when the actual result of the depression was nearly $300,000,000 ($298,457,576), the latter shows a recovery of only $21,770,228, when it was approximately $282,000,000 ($281,934,932).

The explanation of this discrepancy is, of course, the Commission's adherence to its own fiscal periods of statistics, which do not happen, in this instance, to coincide with the ebb and flow of adversity and prosperity. The true movement of railway traffic

before, during and after the recent business depression is more nearly reflected in the following figures for the calendar years 1907, 1908 and 1909, compiled from the monthly returns to the Interstate Commerce Commission, divided into periods of six months:

SUMMARY OF GROSS EARNINGS OF THE RAILWAYS DURING THE CALENDAR YEARS 1907, 1908 AND 1909, BY MONTHS AND HALF-YEARLY DIVISIONS.

	1907	1908	1909
January	$199,000,000	$173,611,809	$183,139,419
February	178,300,000	161,085,493	174,425,832
March	211,700,000	183,509,935	205,700,012
April	214,800,000	175,071,604	196,993,104
May	224,800,000	174,527,138	201,572,072
June	223,000,000	184,047,216	210,356,965
Half year	$1,251,600,000	$1,051,853,195	$1,172,185,404
July	$228,672,250	$195,245,655	$219,964,739
August	241,303,469	206,877,014	236,559,877
September	234,386,899	219,013,703	246,065,955
October	250,575,757	233,105,042	260,613,053
November	220,445,465	211,281,504	247,370,954
December	194,304,969	205,455,170	222,006,183
Half year	$1,369,688,809	$1,270,978,038	$1,432,580,761
Total	2,621,288,809	2,322,831,233	2,604,766,165
Average mileage	227,000	231,584	234,950
Earnings per mile	$11,548	$10,030	$11,086

SUMMARY OF OPERATING EXPENSES OF THE RAILWAYS DURING THE CALENDAR YEARS 1907, 1908 AND 1909, BY MONTHS AND HALF-YEARLY PERIODS, WITH RATIOS TO GROSS EARNINGS.

	1907	1908	1909
January	$134,225,000	$132,502,830	$132,659,037
February	121,500,000	123,773,906	125,229,071
March	142,425,000	128,200,065	136,086,299
April	144,990,000	124,284,164	134,612,576
May	151,740,000	123,932,568	135,846,301
June	150,525,000	124,208,561	136,160,775
Half year	$845,405,000	$756,902,094	$800,594,059
Ratio	67.7%	72%	68.3%
July	$152,992,445	$127,978,304	$141,613,967
August	156,837,914	131,557,475	146,175,338
September	156,631,780	137,155,143	150,621,999
October	166,999,266	144,195,330	156,628,513
November	154,150,468	136,809,421	153,043,599
December	142,631,008	136,867,622	153,699,578
Half year	$930,242,881	$814,563,295	$901,782,994
Ratio	68%	64.1%	62.9%
Total	$1,775,647,881	$1,571,465,389	$1,702,377,053
Ratio	67.8%	67.7%	65.4%
Net operating revenue	$845,640,928	$751,365,844	$902,389,113
Taxes	83,156,188	86,872,885	92,964,510
Net operating income	$762,484,740	$664,492,959	$809,424,603

Through these tables the reader is able to trace the upward course of railway receipts in 1907 to their culmination in October of that year; their rapid drop to February, 1908; through the hard summer following to the gradual recovery of 1909, until in October last they reached the highest monthly total on record.

Concurrently with this story of the depression of 1908, the tale of railway distress and of the drastic measures adopted to meet the emergency can be

read in the half-yearly ratios. The ratio for the fiscal year 1906-'07 was 67.53%, and the shadow of approaching trouble was shown in an increase of this ratio to 67.7% for the first six months in the table. By December this ratio had risen to 73.40%. The enormous receipts of the autumn months held the ratio for the six months down to 68%. In February, 1908, it marked the high and ruinous figure of 76.84, and from that point the trend, due to severe retrenchments, was steadily downward until it touched 60.10% in October, 1909.

The ratio of 64.1% for the second half of 1908 is the true measure of the ability of the railways to cut their expenditures to fit the times. But they were on bed rock, as the succeeding months of small receipts proved, when the ratio went up to 72.43% in January, and averaged the high figure of 68.3% for the first six months of 1909. The heavy receipts of October and November without a corresponding expansion of expenditures resulted in the phenomenally low ratios of these months. But the severity and necessities of operating conditions in December, 1909, ran the ratio of expenses up to 69.23%.

The net earnings for the three years under consideration are apt to lead to erroneous conclusions as to the effect of the depression. Neither the loss in 1908 nor the recovery in 1909 reflects the true swing of the pendulum. The one minimizes the loss, because it conceals the cessation of all constructive work, the curtailment of betterments and improvements, and the postponement of all purchases for replacements except of the most immediate and imperative nature; the other exaggerates the recovery because of heavy receipts

without the resumption of the concurrent expenditures that should attend them. The railways in the fall of 1909 were simply doing business on the margin of facilities provided during the fat months of 1907 in anticipation of a continuation of prosperous times. Some idea of the extent of this margin may be gained from the parking of 400,000 freight cars in the yards with 200,000 in the shops in April, 1908. At no time since has this margin been wholly exhausted.

But a continuation of traffic on the scale of the past six months will necessitate an immediate expenditure of $100,000,000 to $150,000,000 for the replacement of freight cars alone.

Income Account for the Calendar Year 1909.

The monthly summaries issued by the Interstate Commerce Commission from time to time afford the details for the construction of the following statement of the transportation revenues and expenses of the railways for the calendar year 1909, from which the averages per mile and the ratios have been computed on the basis of 234,950 miles of operated line.

Statement of Operating Receipts and Expenses of the Railways of the United States for the Calendar Year Ending December 31, 1909, with Amounts per Mile and Ratios.

(Average miles of line operated, 234,950.)(a)

	Amount	Per Mile	Ratio to Gross Earnings
Receipts from:			

Freight	$1,796,258,314	$ 7,645	68.96
Passengers	601,722,959	2,561	23.10
Other transportation revenues	182,706,090	777	7.01
Non-transportation sources	24,080,802	103	.93
Total revenues	$2,604,766,165	$11,086	100.00
Expenses:			
Maintenance of way and structures	$ 339,167,666	$ 1,448	13.06
Maintenance of equipment	387,155,080	1,644	14.83
Traffic expenses	53,257,408	223	2.01
Transportation	857,339,037	3,650	32.92
General expenses	65,441,053	280	2.52
Unclassified	16,809	—	—
Total expenses	$1,702,377,052	$ 7,245	65.35
Net operating revenues	902,389,112	3,841	34.65
Profit from outside operations	3,367,713	14	—
Net revenues	$ 905,756,825	—	—
Taxes	92,964,510	395	3.56
Net income	$ 812,792,315	$ 3,460	

(a) At the close of the year the reports covered 236,166 miles of operated line.

Unfortunately there are no similar figures for the calendar year 1907 with which comparisons may be made, but the official returns for the year ending June 30, 1907, when railway earnings reached their maximum before the panic of that year, afford the following instructive comparisons:

	Year to June 30, 1907	Year to Dec. 31, 1909
Gross earnings	$2,589,105,578	$2,604,766,165
Per mile	11,383	11,086

Operating expenses	1,748,515,814	1,702,377,053
Per mile	7,687	7,245
Ratio	67.53	65.35
Net revenues	840,589,764	902,389,112
Per mile	3,696	3,841
Taxes	80,108,006	92,964,510
Per mile	367	395

It will be perceived that while the earnings in 1909 exceeded those of 1907 by over 15½ millions they were almost $300 less per mile, while the operating expenses were actually $442 less per mile. The decreased operating ratio in 1909 bears unmistakable testimony as to where the increase in net revenues came from.

With an increase of nearly 9,000 miles of line only $339,167,665 was spent on maintenance of way and structures in 1909 against $343,544,907 in 1907, and the urgent demands of returning activity made the expenditures on this account liberal in comparison with those for the year ending June 30, 1909, i. e. $311,368,083, or $1,336 per mile. It will be years before the railways recover from the economies forced on them by the loss of $300,000,000 in revenues in 1908.

Unregulated Regulation of American Railways.

Today the railways of the United States are "cribb'd, cabin'd and confined" in their services to the American people, not so much by the laws for their regulation as by the spirit in which those laws are administered. To the general tenor and purposes of statutory regulation the railways have become

largely reconciled; but from the spirit in which the laws are sought to be enforced, there has to be continuous appeal to the courts and to the public sense of justice.

Regulation of railways has been persistently interpreted by political Commissions to spell reduction of rates and exacting conditions that would drain the purse of Fortunatus. Between 1889, when the Interstate Commerce Commission's statistics first became a valuable index of railway operation, and 1909, the average rate per ton mile has fallen from 9.22 to 7.55 mills. On the freight tonnage of 1909 this meant a reduction of over $372,000,000 in the yearly revenues of the railways. The railways suffered that loss from their income when they needed every cent of it to maintain the people's highway in a condition to transport the people's ever-growing traffic.

The railways lost it, but who got it? The people? Search the market reports of the land, from Eastport to San Diego, and you will find incontestable proof that not one cent of these millions reached the pockets of the people, in whose name all regulation of railways is demanded and for whose benefit all reductions are claimed. The average rate on all commodities has gone down, the price of every commodity transported by the railways has gone up. Who has pocketed the difference?

There can be only one answer—the producers, the shippers and the traders. Today nine-tenths of the increased cost of living in the United States is chargeable to this ever vigilant and aggressive coalition. For everything the railways must buy—labor, supplies, money—they have to pay the advanced prices of the day. But the protests of the

shippers and the rulings of the Commission forbid their raising a rate or adopting a money-saving economy. They attempted to readjust freight rates in 1900 one-fiftieth of a cent per ton mile above a ruinously low average and the outraged shippers secured the passage of the Hepburn Act!

How the federal Commission and shippers work together for the so-called regulation of the railways is evidenced in the unbroken tenor of the decisions handed down by the Commission. Out of 357 decisions printed during the year 1908-09, no less than 219, or 61.3%, were orders granting reductions of rates or reparation for charges found comparatively excessive or unreasonable. In not one case in a score was the rate found excessive or unreasonable per se. In only one case out of the 357 was an increased rate ordered, and this was done reluctantly and as unavoidable.

Although the decisions are for the most part the unanimous finding of the Commission, the following table distributes the opinions of the year among its members into dismissals and reductions or reparations among the Commissioners writing them:

Opinion by	Dismissing Complaints	Granting Reductions or Reparation
Chairman Knapp	21	20
Commissioner Clement	16	29
" Prouty	13	40
" Cockerill	20	20
" Lane	20	42
" Clark	29	28
" Harlan	19	40
Total	138	219

Per cent	39.7	61.3

Some of the cases upon which the Commission is called on to pass are so trivial as to be beneath the notice of a justice's court, while others involve issues so momentous as to threaten the whole structure of railway rates by which the unparalleled prosperity of the country has been made possible.

But the number of cases reaching the Commission for adjudication is insignificant compared with the grist of informal reparation orders that runs an endless stream through its regulating rollers. In the twelve months from December 1, 1908, to November 30, 1909, these aggregated no less than 2,223 separate orders involving amounts all the way from 47 cents to $14,717.64, as seen in the following orders:

> 7100. *Larabee Flour Mills Company* v. *Atchison, Topeka & Santa Fe Railway Company*. September 11, 1909. Refund of $0.47 on shipment of cotton bags from Kansas City, Mo., to Hutchinson, Kas., on account of excessive rate.
>
> 3629. *Lackawanna Steel Company* v. *Central Railroad Company of New Jersey*. June 26, 1909. Refund of $14,717.64 on shipments of spiegeleisen from Newark, N. J., and Hazard, Pa., to Buffalo, N. Y., on account of excessive rates.

Multiplying these awards by the number of orders enables the reader to imagine the range of their respective pettiness or portentous possibilities.

It is doubtful if the American people, or even the Interstate Commerce Commissioners themselves, realize how the formal decisions and informal orders of the Commission are slowly but surely whittling

away the safe margin of American railway profits. At the rate of two decisions every three days and forty informal orders per week, the work of incipient confiscation proceeds with remorseless enthusiasm.

With the best intentions in the world the present Interstate Commerce Commission is so enmeshed in its own anti-railway traditions, so enamored of the administrative control theories of its statistician, so covetous of unbridled, irresponsible authority to tear down where it has no constructive capacity, that anything like co-operation between the Commission and the railway management for the public good seems out of the question.

To the writer it appears that only blind rejection of facts can find any conserving element in the regulation of railways as at present administered. Signs of a helpful disposition in official acts are entirely lacking. The Senate and House calendars groan under bills for the further regulation and restriction of the railways, but not one contains a promise of relief. For not one is there a genuine public demand.

And what is the situation as this is written? It can be stated in a few lines. As a consequence of the drop of $300,000,000 in gross earnings in 1908, the railways in 1908 and 1909 cut $277,000,000 out of their expenditures. This was done mainly at the expense of maintenance of way and structures and in a cessation in the purchase of equipment, but the so-called economies of postponed expenditures permeated every line of railway extension, operation and replacement. In 1908, with 6,000 more miles of track to maintain, $18,788,217 less was spent for maintenance than in 1907, and in 1909 with 12,000 more miles of track $32,176,824 less was expended.

Between 1897 and 1907 the expenditures for maintenance of way increased from $159,434,403 to $343,544,907, or over 115%. This means an increase of approximately 8% a year, or at least $25,000,000 on present plant. Therefore at least $43,000,000 was withheld from this essential line of railway maintenance in 1908 and fully $82,000,000 in 1909, a total of $125,000,000. The saving on equipment was nearly as great and is dealt with in the body of the report.

A comparison of the income accounts for the month of October, 1907 and 1908, corroborates the foregoing statement as to the economies forced on the railways by the adverse winds of regulation and business depression.

Month of October	1907	1909
Earnings from operation	$250,575,757	$260,613,053
Operating expenses	166,999,266	156,628,513
Net earnings	$ 83,576,491	$113,984,540
Operating ratio	66.64	60.10

The canker worm in this, the most promising flower of returning prosperity, is revealed in the abnormal ratio of 60.10 for October, 1909, or nearly 7% below the American average. Now this 7% on the revenues of last October means that in some way over $16,000,000 less than normal was expended on American railways in that month alone. And October, 1909, was only a sample of how railways had cut expenses for 24 consecutive months.

That this should be so, with no reduction in the scale of wages or the price of supplies, is, in the view

of the writer, a situation of serious national concern. Happily he is not charged with any commission to suggest how or where the deferred debt of nearly $300,000,000 to efficient railway road and equipment is to be met. But that it must be met, to place the railways in as good condition as they were before the panic of 1907, when the cry was for more, not less facilities, does not admit of question. If it, together with the advance in wages now being adjusted, is to be met out of income, only an advance in freight rates can take care of it. If out of fresh capital, it can only be coaxed from the pockets of shrewd investors by rates of interest that discount the risk attendant on the unregulated and irresponsible regulation of railway revenues, resources and responsibilities. And it is proposed to make an irresponsible Commission, unfamiliar with the necessities of the situation and unversed in the ways and means of raising capital arbiters of these necessities, ways and means.

All attempts to meet such a situation by legislation, unless it be directed to a reform of the instrumentalities of regulation, must prove ineffectual. In a broader, saner, more helpful administration of the laws already on the federal and state statute books lies the hope for the future of the great American transportation industry. "Whate'er is best administered is best."

THE BUREAU'S STATISTICS FOR 1909.

Thus far what has been written has related almost wholly to the financial aspect of the transportation industry as presented through the monthly reports of the railways. While these in their way serve as an admirable barometer in keeping the public informed

as to general business conditions throughout the Union, they throw little light upon the railway operations behind the financial results. They are absolutely dumb on the main question upon which all railway legislation and regulation should hinge—adequate and efficient public service.

In the following pages the Bureau attempts to remedy this omission, in the essential particulars for the year ending June 30, 1909. The reports from which its summaries have been compiled were received almost a month earlier this year than last, but the publication of the Bureau's statistics has been delayed in order to make the usual comparisons with the Official Statistics for 1908. The writer is advised from Washington that the fault for this unusual delay rests with the Government printer—whose office is overwhelmed with Congressional and departmental work—and not with the Interstate Commerce Commission or its Bureau of Statistics and Accounts.

For the first time, the reports to this Bureau cover the division of freight movement into the seven chief commodities; the separation of revenues from Mail and Express; the distribution of expenses for injuries and damages, and the summaries of expenses for maintenance of way and equipment, traffic expenses, transportation expenses and general expenses. It is believed that with the addition of these accounts the annual report of the Bureau has become so comprehensive as to warrant its publication hereafter at an earlier date, without waiting on the publication of the official statistics for the preceding year.

This year the Bureau has received reports from 368 roads operating 221,132 miles of line or approximately 94.4% of the mileage and carrying over 97% of the traffic of the country. Last year

reports were received covering 216,460 miles. The increase of 4,672 miles fairly represents the actual increase of railway mileage in the United States for the twelve months.

In presenting these statistics, the writer has endeavored to make them as colorless summaries of facts as an earnest desire to arrive at the truth permits. Such comment as accompanies them will be confined to comparisons and elucidation and not to the furtherance of any personal theories.

For the sake of brevity, the Interstate Commerce Commission will be referred to herein as the "Commission"; the Commission's "Statistics of Railways in the United States" as "Official Statistics" and "the year ending June 30th" will be implied before the year named unless otherwise specified.

The statements as to foreign railways are compiled from the latest official sources available.

Here the writer wishes to record his personal appreciation of the assistance rendered by the executives and accounting officials of the railways, whose co-operation has made this report possible. In the midst of increasing burdens imposed on them in reporting to federal and state commissions and legislatures, the requests for information from this Bureau might have seemed excusably negligible. The completeness of the report itself testifies to the cordiality with which the Bureau's work is viewed.

Acknowledgments are also due to Federal and State officials for their uniform courtesy in responding to the many requests from this Bureau, and the writer has been much gratified to receive from the chief government railway official of one foreign country the assurance that he considers its

Annual Report "one of the most comprehensive and useful compilations of statistical matter relating to railways that has come into his hands."

SLASON THOMPSON.

CHICAGO, April 30, 1910.

I

MILEAGE IN 1909

According to the preliminary income report of the Interstate Commerce Commission for the year ending June 30, 1909, compiled from the monthly returns, the average railway mileage operated in the United States during the year was 233,002.67 miles; and the total mileage operated at the end of the year was 234,182.70.

The former total is made up of:	
Large roads operating 251 miles or more	214,916.86 miles
Small roads " 250 " or less	16,801.52 "
Switching or terminal companies	1,284.29 "
Total	233,002.67 miles

The returns to this Bureau, compiled from the annual reports for the same year, cover 221,132 miles, against 216,460 in 1908, an increase of 4,672 miles. Reports to the Commission for December, 1909, showed a total operated mileage of 236,166 miles.

In its report dated December 21, 1909, the Commission stated that for the year ending June 30, 1908, substantially complete returns had been received for 230,494 miles of line operated, including 8,661.34 miles used under trackage rights. These are the official figures of mileage for 1908, which will be used in all subsequent comparisons with the Bureau's figures for 1909—the latter, however, may include some switching and terminal mileage excluded from the former.

Of the mileage reporting to this Bureau, 8,927 miles were operated under trackage rights, leaving a net of 212,205 miles of line covered by capitalization and rental.

Assuming that the total operated mileage in the United States at the close of the fiscal year 1909 was 234,182, the complete returns to this Bureau cover approximately 94.4% of the mileage and 97% of the

traffic of all the railways in the United States. No attempt has been made, or will be made, to segregate the returns of switching and terminal companies from the Bureau's figures, of which they are an integral part.

The first summary under this table presents the *operated* mileage reported to this Bureau in 1909 and 1908, classified by states and territories in comparison with the official figures of mileage owned in 1908, with relation to area and population of the respective territorial divisions:

SUMMARY OF RAILWAY MILEAGE IN THE UNITED STATES BY STATES AND TERRITORIES IN 1909, 1908 AND 1907 AND ITS RELATION TO AREA AND POPULATION.

	Bureau's Figures		1907(a)	Miles of	Inhabitants
	1909 Operated Miles	1908 Operated Miles	Owned (Official) Miles	Line per 100 Sq. Miles of Territory	per Mile of Line
Alabama	4,917	4,644	4,840	9.77	406
Arkansas	3,996	3,758	4,861	9.21	301
California	6,376	6,251	6,664	4.38	243
Colorado	5,229	5,096	5,295	5.11	114
Connecticut	930	936	1,016	20.96	999
Delaware	342	343	336	17.14	615
Florida	3,117	2,960	3,970	7.39	148
Georgia	6,485	6,293	6,783	11.65	361
Idaho	1,651	1,568	1,731	2.09	102
Illinois	13,216	12,796	12,137	21.80	442
Indiana	7,774	7,326	7,259	20.24	388
Iowa	9,923	9,865	9,867	17.87	252
Kansas	9,125	9,175	8,936	10.94	184
Kentucky	3,229	3,205	3,441	8.71	690
Louisiana	3,860	3,805	4,558	10.43	326
Maine	1,984	1,750	2,093	7.19	361
Maryland	1,325	1,278	1,432	14.90	906
Massachusetts	2,079	2,079	2,112	26.45	1,492

Michigan	8,384	8,312	8,941	15.63	302
Minnesota	8,258	8,100	8,246	10.46	236
Mississippi	3,545	3,281	4,081	9.00	416
Missouri	8,200	8,141	8,039	11.79	429
Montana	3,537	3,406	3,307	2.28	91
Nebraska	6,099	6,083	5,932	7.76	200
Nevada	1,621	1,540	1,700	1.55	28
New Hampshire	1,211	1,211	1,248	13.86	369
New Jersey	2,046	2,046	2,250	30.59	917
New York	8,106	7,989	8,472	17.86	957
North Carolina	3,567	3,332	4,385	9.21	473
North Dakota	4,026	4,025	3,906	5.56	118
Ohio	8,951	9,041	9,261	22.75	502
Oklahoma	5,572	5,532	2,821	7.84	202
Oregon	1,687	1,600	1,939	2.07	237
Pennsylvania	10,532	10,224	11,259	25.25	621
Rhode Island	192	190	208	20.11	2,262
South Carolina	2,892	2,975	3,271	11.02	451
South Dakota	3,646	3,568	3,703	4.82	122
Tennessee	3,283	3,528	3,725	9.01	600
Texas	12,847	12,932	12,932	4.95	263
Utah	1,820	1,772	1,957	2.42	156
Vermont	941	926	1,071	11.98	351
Virginia	4,099	3,900	4,056	10.43	495
Washington	3,353	3,207	3,767	5.69	152
West Virginia	2,846	2,777	3,264	13.62	320
Wisconsin	7,039	6,900	7,459	14.01	304
Wyoming	1,429	1,414	1,526	1.56	70
Arizona	1,705	1,684	1,928	1.71	71
New Mexico	2,782	2,521	2,965	2.42	74
District of Columbia	51	42	31	53.53	9,709
Canada(b)	1,343	1,273			
United States	221,132	216,460	227,671	7.74	370

(a) Official mileage by States not available for 1908.

(b) Mileage operated in Canada by American roads.

SUMMARY OF RAILWAY MILEAGE IN THE UNITED STATES BY STATES AND TERRITORIES IN 1909 AND 1908 AND ITS RELATION TO AREA AND POPULATION—Continued.

	1908 Owned (Official) Miles	Miles of Line per 100 Sq. Miles of Territory	Inhabitants per Mile of Line
United States, 1909	234,182	7.88	379
" " 1908	230,494	7.76	378
" " 1907	227,671	7.74	370
" " 1906	222,575	7.55	373
" " 1905	217,018	7.34	378
" " 1904	212,577	7.20	379
" " 1903	207,187	7.00	384
" " 1902	201,673	6.82	388
" " 1901	196,075	6.64	391
" " 1900	192,941	6.51	393
" " 1899	188,277	6.37	395
" " 1898	185,371	6.28	394
" " 1897	182,920	6.21	390
" " 1896	181,154	6.15	384
" " 1895	179,176	6.08	382
" " 1894	176,603	6.02	379
" " 1893	170,332	5.94	377
" " 1892	165,691	5.78	380
" " 1891	164,603	5.67	380
" " 1890	159,272	5.51	384

The column of operated mileage in 1909 testifies to the comprehensive character of the reports to this Bureau, while the last two columns demonstrate how railway extension has kept pace with the growth of the country. Territorially the United States now has 43% more railway mileage than it had in 1890, and the last column proves that the mileage is greater proportionately to the population than it was twenty years ago. The contrast in the density of population

per mile of line between Rhode Island and Nevada is illustrative of the startling diversity of conditions under which railways are operated in the United States.

Railways Built in 1909.

The new mileage reported as constructed in 1909 tallies more nearly than usual with the increase in mileage for which operating reports are received. As reported in the *Railway and Engineering Review*, February 19, 1910, the new mileage by states was as follows:

Miles of Line Constructed During the Calendar Year 1909 by States and Territories.

State	Miles Built 1909	State	Miles Built 1909
Alaska	48	Montana	125.08
Alabama	35.62	Nebraska	13.15
Arkansas	155.20	Nevada	304.50
Arizona	48.02	New Hampshire	1.55
California	248.60	New Jersey	33.95
Colorado	98.13	New Mexico	35.00
District of Columbia	3.81	New York	52.20
Florida	102.81	North Carolina	111.92
Georgia	138.70	Ohio	18.41
Idaho	50.49	Oklahoma	163.20
Illinois	23.45	Oregon	158.38
Indiana	10.82	Pennsylvania	106.66
Kansas	87.21	South Carolina	66.14
Kentucky	101.52	Tennessee	94.26
Louisiana	131.57	Texas	650.61
Maine	87.00	Utah	28.00
Maryland	4.68	Virginia	85.75

Michigan	77.58	Washington	209.84
Minnesota	164.70	West Virginia	131.78
Mississippi	36.60	Wisconsin	68.30
Missouri	11.84	Wyoming	15.57
Total			4,040.60
Second track, sidings, etc.			1,515.07
Total all tracks			5,555.67

Railway Mileage of Foreign Countries.

The ratios of railway mileage to area and population in the table on page 19 may be compared with those of foreign countries for 1907 in the following statement:

Summary of the World's Railways and Ratio of the Mileage to the Area and Population of each Country in 1907.

From Archiv fur Eisenbahnwesen, May-June, 1909.

Countries	Miles 1907	Miles of Line per 100 Square Miles	Inhabitants per Mile of Line
Europe:			
Germany	36,065	17.2	1,563
Austria-Hungary	25,852	10.0	1,818
Great Britain and Ireland	23,084	19.0	1,785
France	29,716	14.2	1,316
Russia in Europe and Finland (2,057 miles)	36,279	1.8	2,941
Italy	10,312	9.3	3,125
Belgium	4,874	42.8	1,370
Netherlands and Luxemburg	2,230	15.0	2,564

Switzerland	2,763	12.2	1,205
Spain	9,227	4.8	1,923
Portugal	1,689	4.7	3,226
Denmark	2,141	14.3	1,150
Norway	1,606	1.3	1,390
Sweden	8,321	4.8	617
Servia	379	2.1	6,666
Roumania	1,994	3.2	2,941
Greece	771	3.1	3,125
Turkey in Europe, Bulgaria and Rumelia	1,967	1.9	5,000
Malta, Jersey and Isle of Man	68	16.1	5,273
Total for Europe, 1907	199,345	5.3	1,887
" " " 1906	196,437	5.2	1,993
" " " 1905	192,507	5.1	2,084
" " " 1904	189,806	5.0	2,084
" " " 1903	186,685	5.0	2,084
" " " 1902	183,989	4.9	2,127
" " " 1901	180,817	4.8	2,174
" " " 1900	176,396	4.7	2,220
" " " 1899	172,953	4.6	2,220
" " " 1898	167,614	4.4	
" " " 1897	163,550	4.3	
" " " 1896	160,030	4.2	
Increase in eleven years	39,315		
Other Foreign Countries in 1907:			
Canada		0.6	
	22,447		373
Mexico		1.8	
	13,612		321
Brazil	10,713	.32	1,408
Argentine Republic		1.3	
	13,673		356
Peru	1,332	.32	3,449
Uruguay		1.8	
	1,210		769
Chili	2,939	1.0	1.123
Central Russia in Asia	2,808	1.3	2,777
Siberia and Manchuria	5,664	.11	1,020
Japan	5,012	3.1	9,090

China	4,162	0.1	85,820
British India	29,892	1.4	10,000
New Zealand	2,570	2.4	324
Victoria	3,428	3.9	351
New South Wales	3,471	1.1	394
South Australia	1,924	0.16	188
Queensland	3,404	0.5	142
Egypt	3,445	1.0	2,860
Cape Colony	3,804	1.3	463
Natal	976	3.5	793
Transvaal	1,361	1.1	636
Recapitulation:			
Total for Europe	199,345	5.3	1,889
" " America	302,927	2.3	524
" " Asia	56,283	0.38	15,540
" " Africa	18,516	0.16	8,014
" " Australia	17,766	0.6	279
" " the whole world	594,837	—	—

Of the above total railway mileage for the whole world, no less than 332,360 miles, or nearly 56%, is operated in English speaking countries, the mileage of the United States alone being over 35% of the whole.

To the most casual student the disparity between the density of population to railway mileage in the United States and Europe of one to five, is as apparent as it is significant of our necessity for so much greater provision of transportation facilities per capita. If our per capita mileage were relatively the same as that of Europe, the United States would be set back to the transportation facilities of 1869, when the completion of the Union Pacific raised its total mileage to 47,254 miles. But even then it had a ratio of one mile of railway to 810 inhabitants, which was higher than Europe's ratio today.

Clearly there is nothing in the statistics of the railway mileage of the world to account for the epidemic of railway phobia that periodically convulses the people and legislatures of the United States of America.

Mileage of All Tracks in 1909.

Of almost equal importance to the mileage of American railways are the auxiliary tracks upon which the extent and efficiency of their public service so largely depends. As the next statement shows, these continue to increase more rapidly than the miles of line.

Summary of Mileage of Single Track, Second Track, Third Track, Fourth Track and Yard Track and Sidings, in the United States, 1897 to 1909.

Year	Single Track	Second Track	Third Track	Fourth Track	Yard Track and Sidings	Total Mileage Operated (all tracks)
1909 (94.4%) Bureau	221,132	20,637	2,186	1,491	80,669	326,115
1908 Official	(a)230,494	20,209	2,081	1,409	79,452	333,646
1907	227,455	19,421	1,960	1,390	77,749	327,975
1906	222,340	17,396	1,766	1,279	73,760	317,083
1905	216,973	17,056	1,609	1,215	69,941	306,796
1904	212,243	15,824	1,467	1,046	66,492	297,073
1903	205,313	14,681	1,303	963	61,560	283,821
1902	200,154	13,720	1,204	895	58,220	274,195
1901	195,561	12,845	1,153	876	54,914	265,352
1900	192,556	12,151	1,094	829	52,153	258,784
1899	187,543	11,546	1,047	790	49,223	250,142
1898	184,648	11,293	1,009	793	47,589	245,333
1897	183,284	11,018	995	780	45,934	242,013

(a) To the figures for 1908 should be added the 1,626 miles of main track and 2,085 of yard track and sidings of switching and terminal companies, excluded by the Official Statistician, raising the total of all tracks to 337,357.

By adding the auxiliary trackage reported to this Bureau for 1909 to the 234,182 miles of operated line reported to the Interstate Commerce Commission for June 30 of that year, it appears that the total of all tracks on that date was *upwards of 340,000 miles*.

It will be observed that in every instance the mileage of second, third and fourth track and yard track and sidings reported to this Bureau in 1909, the year of comparative stagnation in railway construction, exceeded the complete mileage of these tracks in 1908 reported to the Commission.

The above table (with the Commission's figures for single track) shows that where there has been an increase of only 50,798 miles of single track, or 27.7%, in twelve years, all trackage has increased over 98,000, or 42%, during the same period. It also shows that during the same twelve years second track has increased 87%; third track 120%; fourth track 91%, and yard track and sidings 76%.

Mileage and Track of British Railways.

As English railways are so often brought into comparison with American railways, it is well to know the total of all tracks in the United Kingdom as well as the mileage. Both are given in the following statement, compiled from returns to the British Board of Trade for the years ending December 31, 1904 to 1908:

Description of Track	1908	1907	1906	1905	1904
Single track (miles)	23,209	23,112	23,063	22,870	22,601
Second track	13,048	12,963	12,934	12,819	12,692
Third track	1,435	1,385	1,363	1,324	1,271
Fourth track	1,141	1,103	1,091	1,067	1,030
Fifth track	208	195	186	170	153
Sixth track	122	117	111	97	85
Seventh track	59	51	47	40	35
Eighth to twentieth tracks	94	87	75	44	34
Sidings	14,353	14,145	14,032	13,891	13,733
Total trackage	53,669	53,189	52,904	52,322	51,634

Here it will be perceived the mileage of British roads increased only 608 miles and the trackage only 2,035 miles in four years. During the same period, as shown in the preceding table, the mileage of American railways increased 18,251 miles and their total trackage 36,543. It is this continuous demand for increased mileage and trackage in the United States, to say nothing of equipment, that differentiates the problem confronting American railway management from British. In the United States we need more railways and still more railways, and the problem is to get the capital on reasonable terms to provide the facilities.

In railroad mileage alone we have over ten times that of the United Kingdom and we have more than six times as many miles of track. We have enough trackage in our yards and sidings to double track all the British railways, with enough over to put four

tracks where they have only two tracks now.

II

EQUIPMENT

AN OBJECT LESSON IN EQUIPMENT.

No car shortage occurred to interrupt the orderly movement of railway traffic during the fiscal year 1908-09. On the contrary, there was an unprofitable surplus of cars throughout the year, ranging from 110,912 in September, 1908, to 333,019 in January, 1909. From this high figure the surplus was slowly reduced by the demands of traffic until subsequent to the close of the fiscal year, in September last, it reached a practical level of shortages and surpluses. During the year there was an average of 150,000 freight cars in the shops, where in times of ordinary activity the mean would be in the neighborhood of 100,000.

These conditions, which prevailed since November, 1907, account for the greatly reduced purchases of rolling stock during the years 1908 and 1909 shown in the following record of locomotives and cars built in the United States during the past eleven years:

ELEVEN YEARS' OUTPUT OF CARS AND LOCOMOTIVES.
From the Railroad Age-Gazette.

Year	Locomotives	Number Passenger Cars	Freight Cars
1909(a)	2,887	2,849	96,419
1908(a)	2,342	1,716	76,555
1907(a)	7,362	5,457	284,188
1906(a)	6,952	3,167	243,670
1905(a)	5,491	2,551	168,006
1904	3,441	2,144	60,806
1903	5,152	2,007	153,195
1902	4,070	1,948	162,599
1901	3,384	2,055	136,950
1900	3,153	1,636	115,631
1899	2,475	1,305	119,886
Total	46,709	26,835	1,617,905

(a) Includes Canadian output.

Between 1898 and 1908 the Interstate Commerce Commission reported an increase of 21,464 locomotives, 11,697 passenger cars, and 856,999 freight and company cars. Allowing for the Canadian output in the above table, this would show 22,742 more locomotives, 13,821 more passenger cars, and 674,023 more freight cars built in ten years than are accounted for in the official returns. Roughly speaking, these last figures represent the number of locomotives and cars worn out beyond repair or destroyed that have to be replaced annually. It means that provision has to be made every year for the purchase of new equipment amounting to approximately 5% of locomotives and passenger cars and 4% of freight cars in order to maintain the equipment numerically, irrespective of the sums spent on maintaining the remainder in serviceable condition.

On the equipment reported by the Commission for 1908 this would necessitate the following outlay for replacement alone:

	Number	Needed for Replacement	Average Cost	Total Cost
Locomotives	57,698	5% = 2,884	$15,000	$43,260,000
Passenger cars	45,292	5% = 2,214	6,000	13,284,000
Freight cars	2,100,784	4% = 84,031	1,000	84,000,000
Company cars	98,281	3,931	500	1,965,500
Total cost for replacing equipment				$142,509,500

It is probable that the computed percentage for the replacement of locomotives and passenger cars is too high and that for freight cars too low. This is the opinion of operating officials. If so, it would amount to a set off and the aggregate would still be approximately $142,000,000 to be expended annually for new equipment to take the place of old, worn out and discarded rolling stock. Conditions forbade the expenditure of any such sum in 1908 and 1909.

Number and Capacity of Locomotives for Eight Years, 1909 to 1902.

Next follows a summary giving the number and capacity of locomotives for the seven years since the Commission has included capacity in the published

returns:

Year	Number	Tractive Power (Pounds)	Weight without Tender (Tons)	Average Weight (Tons)
1909 (94.4% represented)	55,495	1,421,114,798	4,033,309	72.7
1908 Final returns	57,698	1,519,568,551	4,071,554	71.5
1907	55,388	1,429,626,658	3,828,045	69.1
1906	51,672	1,277,865,673	3,459,052	66.9
1905	48,357	1,141,330,082	3,079,673	63.6
1904	46,743	1,063,651,261	2,889,492	62.1
1903	43,871	953,799,540	2,606,587	59.4
1902	41,225	839,073,779	2,323,877	56.3
Increase seven years to 1909	34.6%	69.4%	73.6%	29.1

Complete returns will raise the totals for 1909 approximately to 57,704 locomotives of 1,465,070,000 pounds tractive power and 4,158,000 tons weight, exclusive of tenders. These figures bear out the conclusion expressed above that the purchase of new locomotives in 1909 was barely sufficient to replace those abandoned or destroyed during the year. The loss, however, was in a measure made good by the greater weight of the new engines. As the average weight of locomotives in 1899 was approximately 53 tons, the figures just given indicate an increase of nearly 114% in the weight of all locomotives during the decade.

In connection with the estimate of $15,000 put on locomotives in this report, it is of interest to

reproduce the return to the legislature of New South Wales of the cost of engines built in the railway shops at Sydney recently. The figures refer to 6-wheel-coupled heavy mail and express engines weighing, with tender, 163,128 pounds, as published in the *Railway Age-Gazette*, December 3, 1909:

DETAILS OF LOCOMOTIVE COSTS.

	10 Engines	Cost Per Engine	Per Ton(a)
Direct charges:			
Materials	$117,462.77	$11,746.28	$161.29
Wages	76,484.23	7,648.42	104.99
Total	$193,947.00	$19,394.70	$266.28
Indirect charges:			
Percentage of shop charges (exclusive of superintendence) on wage basis in each shop, 37.84%	28,943.79	2,894.38	39.74
Superintendence, on wage basis, 3%	2,294.51	229.45	3.10
Interest on capital cost of new shop and machinery, including land	4,850.52	485.05	6.63
Proportion of interest on capital cost of old shops on locomotive work produced for new engines	5,449.53	544.95	7.45
Depreciation of machinery and plant, 2% on capital cost	5,149.99	515.00	7.03
Total indirect charges	$46,688.34	$ 4,668.83	$ 63.95
Total charges	$240,635.34	$24,063.53	$330.23

(a) Ton of 2,240 lbs.

Applied to a Mallet articulated compound locomotive, such as that built for the Erie weighing 410,000 pounds on the drivers, the rate per ton paid by the government of New South Wales would make it cost over $60,000. It did not cost any such sum, but the Australian experience is a straw which shows how the cost of locomotives is soaring. American railways find it necessary economy to build engines whose average weight is well above that built in the government shops at Sydney.

Passenger and Freight Cars.

During the same period, 1902 to 1909, covered in the table relating to locomotives, for which alone full data is available, the increase in the number of passenger cars and freight cars, and in the capacity of the latter, is shown in the following statement:

Year	Passenger Service	Freight Service		Average tons	Company's Service Number
		Number	Capacity (tons)		
1909 (97% represented)	44,665	2,050,049	71,028,266	34.6	96,739
1908 (Final returns)	45,292	2,100,784	73,526,440	35	98,281
1907	43,973	1,991,557	67,216,144	34	91,064
1906	42,282	1,837,914	59,196,230	32	78,736
1905	40,713	1,731,409	53,372,552	31	70,749
1904	39,752	1,692,194	50,874,723	30	66,615

1903	38,140	1,653,782	48,622,125	29	61,467
1902	36,987	1,546,101	43,416,977	28	57,097
Seven years' increase(a)	20.8%	35.9%	64.0%	23.5%	69.6%

(a) Final returns for 1909 will raise these percentages materially.

It is in the increased capacity of locomotives and cars rather than in their numbers that the seeker after truth will find the explanation of how American railways have been able to handle freight traffic that has increased in volume over 80% in ten years where numerically the increase of equipment has been less than 60%. During that period the average capacity of the freight car has increased from 27 to nearly 35 tons, accounting for an aggregate increase of 109.6%.

Between 1899 and 1909 the population of the United States increased from 74,318,000 to 88,806,000, or 19.5%. (On April 1, 1910, the treasury estimate was an even 90,000,000.) In the same ten years the number of passenger cars increased over 36%, accompanied by a steady advance in their size, strength and conveniences.

Between 1902 and 1907 the Official Statistics furnish the following information showing the gradual transformation taking place in the number and capacity of freight cars:

NUMBER AND CAPACITY OF DIFFERENT SIZES OF FREIGHT CARS, 1902-1907.

Class	Capacity Pounds	1902	1907	Increase or Decrease Per Cent

I	10,000	5,122	4,277	Dec.	16.5
II	20,000	15,615	7,244	"	53.5
III	30,000	46,353	10,132	"	78.1
IV	40,000	327,342	204,583	"	37.5
V	50,000	246,684	178,827	"	27.5
VI	60,000	634,626	802,187	Inc.	26.4
VII	70,000	22,493	34,652	"	53.6
VIII	80,000	158,179	452,070	"	185.9
IX	90,000	310	5,054	"	1,527.1
X	100,000	48,834	285,241	"	484.3
XI	110,000	389	1,476	"	279.4
XII	120,000	43	60	"	39.5
All over	120,000	2	214		—

The line of cleavage between former and modern railway methods of handling freight is clearly shown in the above table to lie between cars of 25 and 30 ton capacity. The former and all of less capacity are on the decline, whereas the latter and all of greater capacity are on the increase. Numerically the 30-ton cars still exceed those of 40 and 50 tons, but already they are exceeded by the combined capacity of the latter.

THE SURPLUS OF FREIGHT CARS.

For two years (28 months as this is written) the reports of the Committee on Car Efficiency of the American Railway Association show that the supply of freight cars has been in excess of the demand. In other words, the railways during that period were paying interest on a considerable percentage of unremunerative equipment, besides the cost of its maintenance. The rise and fall of this surplus of freight cars is set forth below:

FREIGHT CAR SHORTAGES AND SURPLUS BY MONTHS FROM JANUARY, 1907, TO APRIL, 1910.

Month	1907 Shortage	1908 Surplus	1909 Surplus	1910 Surplus
January	110,000	342,580	333,019	52,309
February	150,000	322,513	301,571	45,513
March	No data	297,042	291,418	45,672
April	100,000	413,605	282,328	84,887
May	60,000	404,534	273,890	
June	40,000	349,994	262,944	
July(a)	20,000	308,680	243,354	
August(a)	15,000	253,003	159,424	
September	60,000	133,792	78,798	
October	90,757	110,912	35,977	
November	57,003	132,829	39,528	
December (surplus)	209,310	222,077	58,354	

(a) In July and August, 1907, there was a net surplus.

At the date of one report in October, 1909, a surplus of cars in one territory was practically offset by a shortage in another territory.

FREIGHT CAR PERFORMANCE.

According to Statistical Bulletin No. 58 of the Committee on Relations between Railroads of the American Railway Association, the average performance of the freight cars of American and Canadian railways during the year ending June 30, 1909, including and excluding surplus cars, was as follows:

	Average Miles per Day		Average Ton Miles per Car per Day	

Month		Including Surplus Cars	Excluding Surplus Cars	Including Surplus Cars	Excluding Surplus Cars
July,	1908	20.0	24.8	275	342
August,	"	20.8	25.1	292	354
September,	"	22.0	25.2	320	367
October,	"	23.8	25.9	346	376
November,	"	23.5	25.8	341	375
December,	"	22.3	25.2	332	376
January,	1909	20.9	25.3	293	354
February,	"	21.7	25.9	306	365
March,	"	22.7	27.2	330	393
April,	"	22.4	26.8	310	371
May,	"	22.5	26.8	304	362
June,	"	22.4	26.5	314	371

These figures of the average miles per day of freight cars are the delight of demagogues and other detractors of American railways who ignore, or have never been able to comprehend, that the average performance of a car per day depends from six to nine times more on the time allowed for shippers to load and unload cars than on its speed in transit. This speed runs all the way from ten to forty miles and over an hour. But if freight trains averaged 40 miles an hour it would make little impression on the per day average of cars so long as 48 hours has to be allowed as a minimum at either end for loading and unloading and almost as much more for placing notices and disposing of cars, to say nothing of time consumed in making up trains.

The salient and significant feature of this table is the proof it affords that each car of those in commission averages the movement of one ton 367 miles per day. This means an average load of 14 tons per car. It would take at least three English or

European freight cars to average such a load.

Safety Appliances.

Of all the locomotives and cars in railway service in 1908, aggregating 2,302,055, less than 4% were not fitted with train brakes, and less than three quarters of 1% were unprovided with automatic couplers.

Block Signals.

While the gain in mileage protected by some form of block signals in 1909 is only slightly more than half the increase in 1907, it shows a healthy revival of this most important constructive work. At the close of the last calendar year, according to the *Railroad Age-Gazette,* the mileage on which some system of block signals had been installed was as follows:

System	Single Track	Two or More Tracks	Total 1909	Total 1908
Automatic block signals (miles)	6,436	7,983	14,419	11,932
Non-automatic block signals (miles)	40,323	8,593	48,916	48,777
Total miles	46,759	16,576	63,335	60,709
Miles of line operated by the companies, 1909				158,938

The second annual report of the government Block Signal and Train Control Board shows that little

advance has been made in the search after the perfect system of automatic mechanical operation. Since the organization of the board in 1907 no less than 835 plans and descriptions of inventions designed to enhance the safety of railway operation have been submitted for its consideration. Of these 184 were examined and reported upon in 1908 and 12 were found worthy of further investigation. During the past year 327 others have been reviewed with a net result that again 12 have been found to possess enough merit to warrant the Board in conducting further tests. It finds that the vast majority of the proposed devices are unsound either in principle or design.

With regard to some form of automatic stop, the Board says that it is not yet prepared to make a definite and positive recommendation, but it thinks it reasonable to expect that several forms of automatic train controlling devices will be found available for use. In this connection it very sensibly concludes:

"It is not to be expected that trials or tests conducted by the government will, independently of extended use by railways, result in the production of devices or systems fully developed to meet all the exacting conditions of railway operation."

III

EMPLOYES AND THEIR COMPENSATION

NUMBER 1,524,400

COMPENSATION
$1,008,270,000

The 368 railway companies reporting to this Bureau had 1,463,429 persons in their employ June 30, 1909, and their pay roll for the twelve months to that date amounted to $973,172,497. Experience has shown that these roads employ over 96% of the labor and pay 97% of the compensation earned by railway employes. From which it appears that the employes of all the railways in 1909 numbered 1,524,400, whose compensation for that year was approximately $1,003,270,000. This would show an increase of 66,756 men employed and a decrease of $48,362,225 in compensation—a discrepancy accounted for by the fact that the pay roll in June, 1908, was numerically at low tide while the aggregate compensation was swelled by the large pay rolls of the first six months of the fiscal year. The conditions were nearly reversed in 1909, for the pay roll was at the ebb during the first half of the year whereas the number on it did not begin to show the demands of increasing traffic until the very close of the fiscal year.

These statistics would be more enlightening if the number of employes was determined by the average from the monthly pay rolls throughout the year and not as at present "from the pay rolls on June 30." The discrepancies noted are liable to increase if the Commission succeeds in getting the permission of Congress to substitute December 31st for June 30th as the end of its statistical year. Under the present practice, the summary which follows reflects the improvement of business in the increase of employes, while their aggregate compensation continues to show the effect of the depression that prevailed throughout the greater part of the year. When,

however, that compensation comes to be divided by the "Aggregate number of days worked by all employes" during the year, the daily average which results is found to be within a fraction of a cent the same as for the preceding year.

The aggregate number of days worked by the employes of the roads reporting to this Bureau was 434,328,026 days in 1909 against 453,002,228 for the preceding year.

The first summary under this title gives the number, compensation and average pay of the several classes of employes of the roads reporting for the year 1909, together with the aggregates as reported to the Interstate Commerce Commission for the preceding years:

SUMMARY OF RAILWAY EMPLOYES, COMPENSATION AND RATES OF PAY BY CLASSES IN 1909 AND AGGREGATES FROM 1889 TO 1909.

Class 1909 (221,132 Miles Represented)	Number	Per 100 Miles of Line	Compensation	Average Pay per Day	Per Cent of Gross Receipts
General officers	3,312	1.6	$15,484,008	14.82	0.6
Other officers	7,415	3.3	16,847,754	6.53	0.7
General office clerks	67,222	30	51,945,231	2.31	2.2
Station agents	34,765	15	24,944,100	2.10	1.0
Other station men	135,056	61	78,289,039	1.81	3.3
Enginemen	55,747	25	77,762,158	4.46	3.3
Firemen	58,927	27	47,591,953	2.67	2.0
Conductors	42,325	19	50,269,581	3.76	2.1
Other trainmen	112,398	51	88,751,753	2.60	3.7
Machinists	47,629	22	41,381,054	2.98	1.7
Carpenters	59,477	27	42,954,993	2.43	1.8
Other shopmen	192,784	87	118,891,679	2.13	5.0
Section foremen	39,953	18	26,377,380	1.96	1.2

Other trackmen	308,369	140	107,734,419	1.38	4.5
Switch tenders, crossing tenders and watchmen	44,155	20	26,019,105	1.78	1.1
Telegraph operators and dispatchers	38,656	17	29,655,916	2.30	1.3
Employes, account floating equipment	8,632	4	6,537,196	2.32	0.3
All other employes and laborers	206,607	93	121,735,178	1.98	5.2
Total (94.4% mileage represented)	1,463,429	661	$973,172,497	2.24	41.00
1908 Official figures	1,458,244	632	$1,051,632,225	(b)2.25	43.38
1907	1,672,074	735	1,072,386,427	2.20	41.42
1906	1,521,355	684	(a)930,801,653	2.09	40.02
1905	1,382,196	637	839,944,680	2.07	40.34
1904	1,296,121	611	817,598,810	No data	41.36
1903	1,312,537	639	775,321,415	No data	40.78
1902	1,189,315	594	676,028,592	No data	39.28
1901	1,071,169	548	610,713,701	No data	38.39
1900	1,017,653	529	577,264,841	No data	38.82
1899	928,924	495	522,967,896	No data	39.81
1898	874,558	474	495,055,618	No data	39.70
1897	823,476	449	465,601,581	No data	41.50
1896	826,620	454	468,824,531	No data	40.77
1895	785,034	441	445,508,261	No data	41.44
1894	779,608	444	No data	No data	—
1893	873,602	515	No data	No data	—
1892	821,415	506	No data	No data	—
1891	784,285	486	No data	No data	—
1890	749,301	479	No data	No data	—
1889	704,743	459	No data	No data	—

(a) Includes $30,000,000 estimate pay-roll of Southern Pacific, whose records were destroyed in the San Francisco disaster.

(b) Bureau computations.

This table brings out clearly the effect of the depression of 1908 on railway labor. While there was a decrease in numbers employed in 1908 of 213,830 or nearly 13%, coincident with a proportionate decrease in gross revenues, the reduction in compensation amounted to less than 2%. This anomaly was due to the fact that the increased scale of pay adopted in the winter of 1906-07 was only effective during six months of the fiscal year 1907, whereas it was in full operation throughout 1908, as it still is, with demands, negotiations and arbitrations regarding wages all tending upward.

Unremunerative Expenditures.

Last year attention was called to the unremunerative burdens imposed on the railways by the multiplying demands of legislatures and commissions for reports on every conceivable feature of their multifarious affairs. This year with the compensation of every other class showing the effects of the enforced retrenchments of the period, that of the several classes especially affected by these requirements and the enactments relating to the hours and conditions of employment continue to be the only ones marked by advances over the record figures of 1907, as appears from the following comparison:

COMPENSATION OF CLASSES ESPECIALLY AFFECTED BY MULTIPLYING DEMANDS OF COMMISSIONS AND LEGISLATURES IN 1907 AND 1909.

Class	1907 227,455 Miles Represented	1909 221,132 Miles Represented
Other officers	$15,012,226	$16,847,754
General office clerks	48,340,123	51,945,231
Station agents	24,831,066	24,944,100
Telegraph operators and dispatchers	29,058,251	29,655,916
Employes, account floating equipment	6,035,415	6,537,196
Total	$123,277,081	$129,930,197
Add 4% for unreported mileage, 1909		5,197,207
Total		$135,127,404
Increase over 1907		11,850,323

Moreover, had the aggregate compensation of these five classes followed the general trend of all other railway compensation, the expenditure on this account would have been at least $22,000,000 less than it was. This sum represents only a part of what the railways have to pay for a system of accounting and reporting out of all proportion to its published results. The public has no idea of the onerous and unprofitable burdens imposed on the railways by the impractical theory of administering railways through the medium of arbitrary and theoretical accounts.

AVERAGE DAILY COMPENSATION 1909-1892.

Where the data in regard to total compensation of railway employes has been kept since 1895, that of their daily average pay runs back to 1892, thus covering the period of the last preceding severe

panic. Under instructions of the Official Statistician, these averages are computed by dividing the compensation paid by the actual days worked throughout the year in the several classes as nearly as it has been practicable to do so. Although the formula is more or less arbitrary, the system has been continuous and so the results are reliable for comparative purposes.

In the statement following, figures for 1895, 1896 and 1905 have been omitted to economize space, and because they present no significant variations from the years preceding them.

COMPARATIVE SUMMARY OF AVERAGE DAILY COMPENSATION OF RAILWAY EMPLOYES FOR THE YEARS I 1892.

Class	1909(a)	1908(a)	1907	1906	1904	1903	1902	1901	1900	1899	1898
General officers	14.82	15.18	11.93	11.81	11.61	11.27	11.17	10.97	10.45	10.03	9.73
Other officers	6.53	6.42	5.99	5.82	6.07	5.76	5.60	5.56	5.22	5.18	5.21
General office clerks	2.31	2.35	2.30	2.24	2.22	2.21	2.18	2.19	2.19	2.20	2.25
Station agents	2.10	2.10	2.05	1.94	1.93	1.87	1.80	1.77	1.75	1.74	1.73
Other station men	1.81	1.82	1.78	1.69	1.69	1.64	1.61	1.59	1.60	1.60	1.61
Enginemen	4.46	4.46	4.30	4.12	4.10	4.01	3.84	3.78	3.75	3.72	3.72
Firemen	2.67	2.65	2.54	2.42	2.35	2.28	2.20	2.16	2.14	2.10	2.09
Conductors	3.76	3.83	3.69	3.51	3.50	3.38	3.21	3.17	3.17	3.13	3.13
Other trainmen	2.60	2.64	2.54	2.35	2.27	2.17	2.04	2.00	1.96	1.94	1.95
Machinists	2.98	2.95	2.87	2.69	2.61	2.50	2.36	2.32	2.30	2.29	2.28
Carpenters	2.43	2.40	2.40	2.28	2.26	2.19	2.08	2.06	2.04	2.03	2.02
Other shopmen	2.13	2.13	2.06	1.92	1.91	1.86	1.78	1.75	1.73	1.72	1.70
Section foremen	1.96	1.96	1.90	1.80	1.78	1.78	1.72	1.71	1.68	1.68	1.69
Other trackmen	1.38	1.45	1.46	1.36	1.33	1.31	1.25	1.23	1.22	1.18	1.16
Switchmen, flagmen and watchmen	1.78	1.82	1.87	1.80	1.77	1.76	1.77	1.74	1.80	1.77	1.74
Telegraph operators and dispatchers	2.30	2.30	2.26	2.13	2.15	2.08	2.01	1.98	1.96	1.93	1.92
Employes account floating equipment	2.32	2.37	2.27	2.10	2.17	2.11	2.00	1.97	1.92	1.89	1.89
All other employes and laborers	1.98	1.98	1.92	1.83	1.82	1.77	1.71	1.69	1.71	1.68	1.67

(a) Averages for 1909 and 1908 are calculated from the returns to the Bureau of days worked and con classes of roads representing 97% of the traffic.

The average pay of general officers for 1909 and 1908 in this summary is out of proportion, for the

reason that the returns to the Bureau cover only 60% of the class numerically and include all the larger systems. Before 1894, this class included "Other officers," so the returns for 1893 and 1892 are not comparable with those for this class in subsequent years.

Comparing the average daily compensation of the four great classes most intimately associated in the public mind with railway operations in 1899 and 1909, it appears that during the decade the average wages of enginemen increased approximately 20%; of firemen 27%; of conductors 20%; and of other trainmen, including switchmen, brakemen and baggagemen—the most numerous body—34%.

An estimate based on the number employed and their aggregate compensation in 1899, allowing 310 working days to the year, would place the increase for all employes during the decade at 23%.

The relation of the compensation of railway employes to the gross earnings of the railways, which furnish the fund from which they are paid, and also to the sum of the expenses incurred in producing those earnings for the past ten years, is shown in the next summary, in conjunction with the operating ratio:

SUMMARY SHOWING PROPORTION OF COMPENSATION OF EMPLOYES TO GROSS EARNINGS AND OPERATING EXPENSES, AND OF OPERATING RATIO TEN YEARS, 1899 TO 1909.

	Ratio Compensation of Labor to Gross Earnings	Ratio Compensation of Labor to Operating Expenses	Ratio of Operating Expenses to Gross Earnings
1909	41.00%	62.06%	66.12%
1908	43.38%	62.33%	69.67%
1907	41.42%	61.41%	67.53%
1906	40.02%	60.79%	66.08%
1905	40.34%	60.40%	66.78%
1904	41.36%	61.07%	67.79%
1903	40.78%	61.65%	66.16%
1902	39.28%	60.58%	64.66%
1901	38.39%	59.27%	64.86%
1900	38.82%	60.04%	64.65%
1899	39.81%	61.04%	65.24%
Increase 1899 to 1909	3.00%	1.65%	1.35%

The significance of this statement is that in spite of all the labor saving devices and economies of operation—reduced grades, modified curves and more efficient equipment—adopted by the railways during the past decade, the proportionate cost of labor to earnings and to expenses has increased. It reached an abnormally high ratio in 1908 because of the unprecedented recession in revenues during the second half of the year. The fact that it has been above 40% persistently since 1902 proves that labor continues to receive its full proportion of the receipts of American railways.

PAY OF EMPLOYES ON BRITISH RAILWAYS.

Although the statistics of British railways are

singularly barren of details respecting the compensation of British railway "servants," as they are termed, the reports of Boards of Conciliation afford data as to the rates of pay of several classes as follows:

SCALE OF WAGES OF DRIVERS AND FIREMEN ON NORTH BRITISH RAILWAY, 1909.

	Rate per Day of 12 Hours	
	Drivers	Firemen
Passenger engines, main line, long road	$1.56	$0.88
Passenger engines running into chief terminal station	1.44	.84
Passenger engines, branch lines	1.32	.80
Goods engines, main line, long road, trip men	1.44	.88
Goods engines, main line, other than long road	1.32	.84
Goods and mineral engines running into depots and terminal stations	1.20	.80
Goods and mineral engines working branch lines and collieries	1.14	.76
Mineral pilot, pilot and shunting engines	1.04	.72

In his award in the case of the North Eastern Railway, Sir James Woodhouse fixed the following scales:

Firemen.—First year, 84 cents per day; 2d year, 90 cents; 3d year, 96 cents; 4th and 5th years, $1.02; 6th year, $1.08; 7th year, $1.14; 8th year, and subsequent years, $1.20. Firemen to pass for drivers during the 8th year.

Cleaners.—Age 16 to 17 years, $2.40 per week; 17 to 18 years, $2.64; 18 to 19 years, $3.12; 19 to 20

years, $3.60; 20 to 21 years, $4.08; and an advance of 24 cents per week for each subsequent year up to a maximum of $4.80 per week.

"That the wages of all goods and mineral guards be increased as follows:

"(a) The wages of those who have been in receipt of $7.20 (the maximum of the existing scale) for not less than two years shall be increased to $7.44 per week.

"(b) The wages of those who have been in receipt of the said maximum for not less than five years shall be increased to $7.68 per week.

"The bonus for working with large engines on freight trains discontinued when any guard becomes entitled to the maximum wages of $7.68 per week."

Men working in the London district get from 6 to 12 cents more per day than those in outside districts.

The award in the case of the Great Northern made an addition of 24 cents to the weekly scale of the following grades: Signalmen $4.32, $4.56, $4.80 and $5.04; passenger guards and brakemen $5.28 up to $6.00; goods guards and brakemen $5.04 up to $6.24; ticket collectors $5.04 up to $5.52; horse shunters $4.56 up to $5.04; parcels porters $4.32 to $5.04; carriage cleaners $4.08 to $4.32; plate layers, second men and under men $4.32 and less up to $5.04; ballast train guards, flagmen and greasers rates less than $5.04 per week.

An additional allowance of 24 cents per week is made to men stationed in the London district.

From these figures a fair idea is gained of the average pay of British railway labor. They support

the statement that there are over 100,000 railway men in the United Kingdom working for less than one pound ($4.87) a week. The total compensation paid British railway employes in 1908 was $150,248,000 against $162,440,000 for the preceding year. But whether the decrease was due to a reduction in pay or in numbers employed cannot be told, as there has been no census of railway "servants" since 1907. The average pay may be safely approximated at $260 per year per man, boy and porter, who two years ago numbered 621,341.

In 1907, Special Agent Ames, of the Interstate Commerce Commission, reported wages on the railways of the United Kingdom as follows:

Enginemen	$9.32 per week
Firemen	5.76 " "
Conductors	6.26 " "
Brakemen	6.44 " "
Shunters	5.80 " "
Examiners	5.80 " "
Signalmen	5.66 " "
Trackmen	5.58 " "

Pay of Railway Employes in Other Countries.

The contrast between the wages of American and European railway employes is emphasized by those paid on the continent. The official statistics of the empire show an increase of 5% in the average yearly compensation of German railway employes in 1908. Their number and pay for that year to December 31st in the four main classes into which they are divided were as follows:

NUMBER AND PAY OF GERMAN RAILWAY EMPLOYES BY PRINCIPAL DIVISIONS FOR THE YEAR ENDING DECEMBER 31, 1908.

Division	Employes Number	Compensation (Total)	Average per year	Increase over 1907
General administration	31,996	$25,167,240	$787	$34
Maintenance and guarding road	177,633	42,891,753	241	5
Station service and train crews	302,343	116,219,657	384	24
Switching crews and shops	187,183	75,328,084	402	18
Total	699,155	$259,606,734	$371	$19
Increase over 1907	3,598	14,216,875	—	—

Combined with a falling off in revenues and an increase in the cost of materials this increase in the compensation of employes had the effect of raising the operating ratio of German railways from 69.01 in 1907 to 73.56 in 1908. It also increased the proportion of wages to gross earnings from 37.25 to 40.1% and had the effect of reducing the net revenues from 5.60% to 4.51% on the cost of construction.

How railway labor fares under government ownership in a republic as compared with its pay in an empire may be judged from a comparison of the following statement as to the number and pay of the railways of Switzerland with the like classes in the preceding table for Germany.

NUMBER AND PAY OF SWISS RAILWAY EMPLOYES BY PRINCIPAL DIVISIONS IN 1907.

Division	Employes Number	Compensation (Total)	Average per Year
General administration	1,631	$ 780,715	$478
Maintenance and inspection of way	10,308	1,459,977	142
Transportation and train service	17,815	6,829,426	383
Porters and laborers	12,219	3,209,810	262
Total	41,973	$12,279,928	$292

The wages paid the employes of Swiss railways in 1907 amounted to only 31.9 per cent. of the gross earnings, and yet they added enough to the cost of operation to help increase the telltale ratio of expenses to revenues from 64.99 in 1906 to 67.29 in 1907. The result was increased operating expenses per mile and a decrease in the amount available for interest in dividends from 3.26% in 1906 to 3.23% in 1907.

As the Swiss republic has to pay 3½% on government loans its investment in railways does not appear to be a very profitable one.

EMPLOYES OF FRENCH RAILWAYS.

The employes of the railways of France are divided into the following classes:

General administration	3,119
Transportation and traffic	128,823
Traction and material	80,732
Way and structures	81,897

Auxiliaries	82,809
Female employes	29,178
Total	406,558

The official statistics only give the compensation of employes in the division of traction and material, where the 80,732 men employed get an average of $187 per year.

On the state railways of Belgium, firemen receive from $15.20 to $22.80 per month, the higher wage only after 15 years' service; enginemen begin at $22.50 per month and at the end of 24 years' service work up to $38.00 per month; conductors earn from $15.97 per month up to a maximum of $34.70; brakemen, beginning as shunters (switchmen) at 45 cents a day, when promoted get a minimum of $17.10 per month, from which they are slowly advanced to a maximum of $22.00. The average railway worker in Belgium gets 2.22 francs (43 cents) a day.

Whole classes of American railway employes get more in a month than Belgian railway employes average in a year.

THE COST OF LIVING.

What and how great the virtue and the art,
To live on little with a cheerful heart.—Pope.

Not because it has any legitimate place in fixing the standard of railway wages, which should be relative to the part capacity, intelligence, industry, loyalty and experience play in railway service, but because in recent years the steady increase in the cost of living has been made the fulcrum on which every lever to advance wages works, is it proper to

refer to the subject in this report.

Now there is nothing in the whole wilderness of economics so utterly illusive and misleading as this same cost of living. It is as incapable of statistical expression as the airy imaginings of a dream and yet it broods over the domestic happiness of nations with all the disquieting effects of a nightmare—and like every nightmare it comes from eating too much and wanting to eat more.

In economics, beyond the barest subsistence, the cost of living is not ruled by necessity but by individual choice. Each person and family settles it along the lines of abstinence or indulgence. It ranges from the "dinner of herbs where love is" and the virtues of self-denial are nourished, to the feasts of Lucullus and Pompeian profligacy in whose indulgence whole peoples have perished.

In every discussion of the subject first consideration is given to the price of food. This amounts to measuring the cost of living with an elastic string. The proportion of the cost of food to the cost of living varies in every land, in every occupation and in every household. It amounts to less than 40% in an average American family, but each family fixes it for itself. Following certain well recognized economic laws the percentage for subsistence increases as the income decreases. For instance, in France families with an income of under $4.80 per week spend 63% of it for food alone, whereas those with $9.60 a week spend 53%. In England, families averaging $5.12 a week spend 67% on food, while those of $9.60 spend 57% or less. In Germany, a similar inquiry showed that families with an average income of $4.23 per week spent 68.7% on food (excluding beer), or 69.5% (with beer);

whereas families with an income of $9.60 per week spent less than 57% on food "excluding beer."

The exhaustive investigation made by Commissioner Carroll D. Wright when head of the Bureau of Labor in 1903 anticipated for the United States these results of more recent European inquiries, as appears from the following table showing the per cent of total expenditure made for various purposes in normal families according to classified incomes:

PER CENT OF EXPENDITURE FOR VARIOUS PURPOSES IN 11,156 NORMAL BY CLASSIFIED INCOMES, 1901.

Classified income	Rent	Fuel	Lighting	Food	Clothin
Under $200	16.93	6.69	1.27	50.85	8.68
$200 or under $300	18.02	6.09	1.13	47.33	8.66
$300 or under $400	18.69	5.97	1.14	48.09	10.02
$400 or under $500	18.57	5.54	1.12	46.88	11.39
$500 or under $600	18.43	5.09	1.12	46.16	11.98
$600 or under $700	18.48	4.65	1.12	43.48	12.88
$700 or under $800	18.17	4.14	1.12	41.44	13.50
$800 or under $900	17.07	3.87	1.10	41.37	13.57
$900 or under $1000	17.58	3.85	1.11	39.90	14.35
$1000 or under $1100	17.53	3.77	1.16	38.79	15.06
$1100 or under $1200	16.59	3.63	1.08	37.68	14.89
$1200 or over	17.40	3.85	1.18	36.45	15.72
All classes	18.12	4.57	1.12	43.13	12.95

While it is scarcely believable that many American families with incomes under $200 spent less than $100 a year on food—the European percentage in such cases being more credible—there is no reason to question the general economic law reflected in this table, that "the proportion of income spent on food diminishes as the income increases." But it is

governed more by individual tendencies, character and taste than by any rule or principle. Each family works out the problem on its own account.

According to the evidence presented at recent arbitration hearings in this city, American switchmen, as a body, belong in the classes whose family expenditures are $1,000 or over. Irrespective of the incomes of other members of their families, the arbitrators found "that the actual monthly earnings of switchmen in the Chicago district, for those who worked full time *runs from about $80 to $100 per month*." This means over $1,000 yearly compensation. Therefore they are in the class which spends less than 39% of its income on food.

The average income for all railway employes engaged in train service, that is, enginemen, firemen, conductors and other trainmen, is probably above the highest figure in the foregoing table and therefore the proportion of their income spent for food would be approximately 36%.

But accepting 40% as approximately the proportion of the pay of all railway employes spent on food, it follows that it takes only two-fifths of one per cent increase in wages to take care of an increase of one per cent in the price of food.

With this in mind it becomes instructive to follow the retail prices of the various articles of food as selected by Mr. Wright in his inquiry into the cost of living in 1901 and adopted by the Bureau of Labor in subsequent Bulletins. These for thirty articles of food for the eighteen years 1890 to 1907, as given in Bulletin No. 77 of the Bureau of Labor, and for the two years 1908-1909 as computed from Bradstreet's index and other sources of commodity prices, are given in the following statement relatively to the

average price for 1890 to 1899 = = 100:

RELATIVE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN THE U
1890 TO 1909. (AVERAGE PRICE FOR 1890-1899 = = 100.(

Year	Apples, Evaporated	Beans, Dry	Beef, Fresh, Roasts	Beef, Fresh, Roasts	Beef, Salt	Bread, Wheat	Butter	Cheese
1890	109.0	103.3	99.5	98.8	97.5	100.3	99.2	98.8
1891	110.3	106.2	100.0	99.4	98.3	100.3	106.4	100.3
1892	99.3	102.4	99.6	99.3	99.5	100.3	106.8	101.5
1893	107.0	105.0	99.0	99.6	100.3	100.1	109.9	101.8
1894	105.8	102.8	98.3	98.2	98.9	99.9	101.7	101.6
1895	97.4	100.5	98.6	99.1	99.6	99.7	97.0	99.2
1896	88.6	92.7	99.1	99.5	99.8	99.9	92.7	97.9
1897	87.8	91.5	100.3	100.2	100.9	100.0	93.1	99.0
1898	95.4	95.9	101.7	102.0	102.1	99.8	95.1	97.5
1899	99.5	99.7	103.7	103.9	103.2	99.6	97.7	102.4
1900	95.2	110.0	106.5	106.4	103.7	99.7	101.4	103.9
1901	96.8	113.9	110.7	111.0	106.1	99.4	103.2	103.3
1902	104.4	116.8	118.6	118.5	116.0	99.4	111.5	107.3
1903	100.8	118.1	113.1	112.9	108.8	100.2	110.8	109.4
1904	99.2	116.8	112.8	113.4	108.3	103.9	109.0	107.4
1905	106.0	116.3	112.2	112.9	107.9	104.5	112.7	110.9
1906	115.6	115.2	115.7	116.5	110.8	102.3	118.2	115.5
1907	124.6	118.8	119.1	120.6	114.1	104.5	127.6	123.2
1908	126.4	138.9	126.2	131.5	116.4	124.5	123.5	121.3
1909	128.6	141.2	132.6	134.1	128.2	124.5	134.8	142.0

Year	Corn Meal	Eggs	Fish, Fresh	Fish, Salt	Flour, Wheat	Lard	Milk, Fresh, unskimmed	Molasses
1890	100.0	100.6	99.3	100.7	109.7	98.2	100.5	104.7
1891	109.7	106.9	99.6	101.7	112.5	99.8	100.5	101.7
1892	105.2	106.8	100.1	102.2	105.1	103.6	100.6	101.2
1893	103.1	108.1	100.1	103.4	96.1	117.9	100.4	100.6
1894	102.2	96.3	100.4	101.5	88.7	106.9	100.2	100.3
1895	100.8	99.3	99.8	98.9	89.0	100.1	100.0	99.0

1896	95.0	92.8	100.2	97.5	92.7	92.5	99.9	98.7
1897	93.7	91.4	99.8	95.2	104.3	89.8	99.7	97.7
1898	95.0	96.2	100.5	98.8	107.4	93.9	99.4	97.9
1899	95.1	101.1	100.2	100.2	94.6	97.1	98.9	98.2
1900	97.4	99.9	100.4	99.1	94.3	104.4	99.9	102.2
1901	107.1	105.7	101.4	100.9	94.4	118.1	101.1	101.3
1902	118.8	119.1	105.0	102.8	94.9	134.3	103.3	102.1
1903	120.7	125.3	107.3	108.4	101.2	126.7	105.8	103.8
1904	121.5	130.9	107.9	111.7	119.9	117.3	106.3	104.0
1905	122.2	131.6	109.9	113.8	119.9	116.6	107.0	104.4
1906	123.2	134.2	116.2	116.8	180.1	128.0	108.9	105.3
1907	131.6	137.7	120.6	121.6	117.7	134.2	116.8	107.7
1908	154.0	140.2	116.2	118.4	140.0	132.1	115.4	102.2
1909	160	142.2	120.4	122.6	154.4	153.8	141.6	106.4

Year	Pork, Salt, Bacon	Pork, Salt, dry or pickled	Pork, Salt, Ham	Potat-oes, Irish	Prunes	Rice	Sugar	Tea
1890	95.8	95.3	98.7	109.3	116.8	101.3	118.6	100.0
1891	96.6	98.9	99.3	116.6	116.5	102.5	102.7	100.4
1892	99.1	100.5	101.9	95.7	113.5	101.3	96.2	100.2
1893	109.0	108.7	109.3	112.3	115.6	98.4	101.5	100.1
1894	103.6	103.4	101.9	102.6	100.9	99.0	93.8	98.7
1895	99.4	99.2	98.8	91.8	94.2	98.8	91.8	98.5
1896	96.7	95.5	97.6	77.0	86.8	96.7	96.6	98.8
1897	97.4	97.3	98.2	93.0	84.3	97.9	95.7	98.5
1898	100.2	99.1	95.1	105.4	86.3	101.7	101.3	100.7
1899	102.9	101.8	99.2	96.1	85.1	102.4	101.7	104.4
1900	109.7	107.7	105.3	93.5	83.0	102.4	104.9	105.5
1901	121.0	117.5	110.2	116.8	82.6	103.5	103.0	106.7
1902	135.6	132.5	119.4	117.0	83.4	103.5	96.1	106.0
1904	137.9	125.8	118.4	121.3	79.6	101.6	101.9	105.8
1905	138.8	126.0	118.5	110.2	81.4	102.6	98.2	105.5
1907	157.3	141.2	130.7	120.6	88.4	108.5	99.6	105.3
1908	142.4	137.4	112.0	138.4	—	105.1	100.0	108.6
1909	180.0	151.2	145.0	120.0	—	103.3	105.0	109.0

No authority is claimed for the prices in these

tables for the years 1908 and 1909. They merely represent the tendencies in those years, as found in official and unofficial wholesale prices of the several commodities, and there are often striking divergences between wholesale and retail prices over short periods. Eventually they follow the same course, although not always in the same proportion.

Now let us see how the average retail price of these 30 articles of food compares with the average daily pay of the four representative classes of railway employes in train service for the ten years 1899 to 1909.

	Average Daily Compensation				Relative Prices of Food, 1890-1899 = =100
Year	Engineme	Firemen	Conductors	Other Trainmen	
1899	$3.72	$2.10	$3.13	$1.94	99.6
1900	3.75	2.14	3.17	1.96	101.5
1901	3.78	2.16	3.17	2.00	105.5
1902	3.84	2.20	3.21	2.04	110.9
1903	4.01	2.28	3.50	2.27	111.6
1905	4.12	2.38	3.50	2.31	112.5
1906	4.12	2.42	3.51	2.35	116.2
1907	4.30	2.54	3.69	2.54	120.7
1908	4.46	2.65	3.83	2.64	117.7
1909	4.46	2.67	3.76	2.60	127.7
Per cent. increase	19.9	27.1	20.1	34.0	28.2

Here it will be observed the percentage of increase

in the average daily compensation of "Other trainmen" exceeds the relative increase in the price of food, that of firemen almost equals it, while that of enginemen and conductors is below it by approximately 8 points. But, as demonstrated in the table from the Eighteenth Annual Report of the Commissioner of Labor (1903), a smaller percentage of the income of enginemen and conductors is spent on food than of those employes receiving lower pay.

Moreover as only two-fifths of all expenditures is spent on food an increase of 20% in wages would take care of a 50% advance in the average price of food—provided the increase in wages was not attended by a corresponding increase in every other item entering into the cost of living.

And right here's the rub with any attempt to measure wages by the cost of living. Which is the egg and which is the hen, in the matter of precedence. Does the cost of living lay the income or does the income hatch the cost of living?

Economically and theoretically it is not up to the railways to solve this world old conundrum. Practically they are called on to meet every advance in the cost of living of their employes to which in twenty years they have not added a nickel, and they are denied the privilege, enjoyed by every other employer of labor, to add its increased cost to the price of their only commodity or service—transportation.

Today the advances in the scale of railway wages awarded, proposed and demanded mean an increase of from $60,000,000 to $75,000,000 in the annual "cost of living" of the railways. The advance made in 1906-07 added $120,000,000 to the pay roll of 1908. Combined, these two advances within three years

mean an increase of approximately $200,000,000 a year to the operating expenses of the railways without adding a single unit to efficiency of the labor factor in railway operation.

This is equal to an annual first charge of 5% on $4,000,000,000! Imagine the hue and cry from the press, the immediate injunctions from Washington, the despondent wail from Wall Street, if the railways proposed to pour that much "water" into their own cost of living without getting a mile of track, a single engine, car, or coach, a cubic yard of ballast, one untreated tie or any semblance of improvement or new facility to show for the vast expenditure!

And yet the railways have their increased cost of living to meet just as the rest of us. Nothing they need and must have can be purchased at the prices of a few years back. When you mention steel rails you have named about the only railway necessity that has not advanced its cost of living in recent years, and the railways have to buy 100-pound rails where five years ago 80-pound rails sufficed, and ten years ago 70 pounds was heavy enough for the lighter cars and engines of the time.

But at the first suggestion of advancing rates to meet advancing prices of commodities the Commissions were overwhelmed with protests from shippers and the paring of freight rates down went on as the prices of the goods they carried went up.

In ten years the price of lumber advanced nearly 50%. As a cheap bulky commodity it had enjoyed a low rate in order to move it and it was moved at the expense of other commodities. When it was able to pay a little more toward the cost of getting it to market the proposal of an advance was met with indignant protests from lumber shippers and dealers

and reversed thumbs by the sympathetic commissions.

The railways pay more for their lumber and other material today than they did ten years ago but they will have to fight for any advance in rates to meet this part of their cost of living. It is said to be a poor rule that will not work both ways—but the cost of living seems to have only one way of working so far as railway economics are concerned.

Just as a straw to indicate that high prices of food are the result and not the basis of high wages the following table of comparative prices in London and New York from the New York *Times* of March 27, 1910, is instructive:

COMPARATIVE RETAIL PRICES OF ARTICLES OF FOOD IN LONDON AND NEW YORK IN MARCH, 1910.

	London. Cents.	New York. Cents.
Apples, 1 lb	4 to 6	10
Bread, 1 lb	4	5
Butter, 1 lb	24 to 32	30 to 35
Cheese, 1 lb	14 to 16	18 to 22
Cocoa, 1 lb	16 to 36	25 to 50
Coffee, 1 lb	16 to 30	20 to 50
Currants, 1 lb	4 to 8	8 to 12
Eggs, 12 to 16	25	6 to 12—25
Codfish, 1 lb	8 to 12	15 to 29

Fish (general), 1 lb	4 to 12	10 to 25
Flour, 3 lbs	9 to 10	12
Meats:		
Bacon, 1 lb	16 to 24	25 to 30
Beef, 1 lb	16 to 20	22 to 30
Pork, 1 lb	12 to 16	20 to 24
Milk, 1 pint	4	4 to 5
Oatmeal, 1 lb	4 to 6	5 to 10
Onions, 1 lb	2	4
Oranges, 1 doz	10 to 12	18 to 50
Potatoes, 1 lb	1 to 2	3 to 4
Prunes, 1 lb	8 to 12	10 to 18
Raisins, 1 lb	6 to 10	10 to 16
Rice, 1 lb	4	6
Syrup, 1 lb	6	10
Sugar white, 1 lb	6	6
Sugar, yellow, 1 lb	4	5
Tapioca, 1 lb	8	10
Tea, 1 lb	20 to 60	30 to 1.50
Tomatoes, 1 lb	8	12

The amazing feature of this statement is that the United States produces and exports to the United Kingdom enormous quantities of breadstuffs, meat and provisions, which constitute the chief articles of food in London and which are sold there at prices from 20% to 25% lower than in New York. Clearly it is the high scale of wages that fosters the high cost of living in the United States and there can be little

question but it breeds the high wages it feeds on.

It is humanly certain, though economically unsound, that wages will continue to advance with the cost of living and will not recede proportionately as prices of food fall. But both will decline together when for any considerable period there is a surplus of efficient labor for the requirements of American industry. Even railway labor in the most stable of all employments yielded to this influence in 1893 and 1894; and the prices of food receded to the low mark in the following years 1895, 1896 and 1897. Not until wages took their upward turn in 1898 did the cost of food begin to show above the index average of 1890-1899.

IV

CAPITALIZATION

According to the Twenty-third Annual Report of the Interstate Commerce Commission the amount of railway capital, including stocks and bonds "outstanding in the hands of the public on June 30, 1908, was $12,840,091,462, which, if assigned on a mileage basis, shows a capitalization of $57,230 per mile of line."

In the face of all the fustian about over-capitalization of American railways, this is a most remarkable admission, not only of their moderate, but of their decreasing capitalization per mile.

In its report on the Intercorporate Relationships of

Railways, dated March 10, 1908, the Commission found that as the result of its investigation the figure for railway capital outstanding in the hands of the public, "Measuring the claim of railway securities on railway revenues," reduced the amount "from $67,936 per mile of line (1906) to $58,050 per mile of line."

Of course there was never any justification for using the larger sum as a true measure of railway capitalization, for it was known to contain at least 15% duplicated capital.

In its Statistics of Railways for the year ending June 30, 1907, the Commission gave the net amount of railway capital outstanding in the hands of the public at that date, "assigned on a mileage basis as $58,298 per mile of line," or $1,068 more than the figure reported for 1908.

As the computation for 1908 was made on a basis of 224,363 miles of line, this would indicate a shrinkage of no less than $239,616,480 in the par value of railway capital. It is needless to say there was no such shrinkage.

Net Capitalization in 1909.

Following the earlier judgment of the Official Statistician, this Bureau seeks to arrive at a fair approximation of the capitalization of the railways of the United States through the reports of operating roads and the capitalization of the rentals paid for leased roads. This, in the more recent language of the Statistician, furnishes the only capitalization that "measures the claim of railway securities on railway revenues."

Applied to the returns received by this Bureau

from 221,132 miles of operated line, this formula yields the following result for the year ending June 30, 1909:

SUMMARY SHOWING CAPITALIZATION OF 368 COMPANIES OPERATING 221,132 MILES OF LINE FOR THE YEAR ENDING JUNE 30, 1909.

	Capitalization 1909 (182,046 Miles Owned)	
Capital stock	$6,199,919,551	
Funded debt	8,015,841,805	
Receivers' certificates	20,497,447	
		$14,236,258,803
Rental of 39,086 miles, $120,784,982, capitalized at 5%.		2,415,699,640
Total		$16,651,958,443
Deduct:(a)		
Railway stocks owned (actual value)	$1,889,157,214	
Other stocks owned (actual value)	206,461,423	
Railway bonds owned (actual value)	1,054,095,905	
Other bonds owned (actual value)	140,282,728	
		3,289,997,270
Net capitalization, 1909		$13,361,961,173
Net capitalization per mile operated		60,425

(a) The par value of these stocks and bonds owned is given as $4,739,231,832.

An estimate of $25,000 per mile for the 11,870 miles of line not reporting to this Bureau would add

$296,750,000 to the above total. From this should be deducted $150,000,000 for the sum assigned by the Official Statistician "to other properties," and we arrive at the following close approximation of the true measure of the capital employed in the transportation industry of the United States:

Net capitalization, 233,002 miles operated line, 1909	$13,508,711,173
Net capitalization per mile of line	57,962
Net capitalization per mile of track	39,730

In computing the average capital per mile last given, no allowance has been made for the 8,927 miles operated under trackage rights for the sufficient reason that the rental paid therefor is represented in the total capitalization just as fully as if so much capital had been expended in the construction of that many miles of line.

It is worthy of note that the net capitalization thus arrived at through a straightforward analysis of the returns of the operating companies is in substantial agreement with the Commission's report on the Intercorporate Relationship of Railways in 1908. The construction of 11,000 miles of line since 1906 would undoubtedly account for the difference between $58,050 and $57,962 per mile of line.

SUMMARY SHOWING NET CAPITALIZATION OF THE RAILWAYS OF THE UNITED STATES, 1909-1904.

Year	Net Capital	Per Mile of Line
1909	$13,508,711,173	$57,962
1908	13,007,012,563	58,864

1907	13,064,279,303	59,600
1906	12,628,000,000	57,966
1905	11,167,105,992	53,328
1904	10,711,794,278	52,099

Owing to the intercorporate ownership of stocks and bonds and the consequent intercorporate payments of interest and dividends, it is no easy matter to make an entirely satisfactory estimate of the return paid to capital out of the purely transportation revenues of the railways. But the persistent reiteration by the Official Statistician of the fictitious aggregate of all the dividends paid by operating and non-operating companies, covering in 1908, by his own admission, $3,927,453,365 duplicated capital, justifies the attempt.

The operating income of the roads reporting to this Bureau for the year 1909 is arrived at thus:

Gross earnings (221,132 miles operated)	$2,375,141,766
Operating expenses	1,568,008,389
	$
Net earnings from operation	807,133,377
Less taxes	82,650,214
	$
Net operating income	724,483,163

This $724,483,163 is the balance in the hands of the 368 companies of the moneys received by them from transportation, or, as the Official Statistician now calls it, "rail operations," for the payment of interest, rent, other deductions, dividends, additions and betterments, reserves, surplus and deficits. But before proceeding to this distribution these

companies received $200,725,696 income from other sources, principally interest and dividends on stocks and bonds owned and for rent of track, and a net balance of $5,410,338 from outside operations. The total of these two sums, $206,136,034, may be arbitrarily applied first to offset the item of rent, $120,784,982, paid for leased lines and track, and the balance in payment of interest and dividends in proportion to the value of bonds and stocks owned as above, viz.: 36% and 64%, respectively.

This enables us to make the following distribution of the net operating income of the railways reporting to this Bureau, as follows:

Net operating income, as above			$724,483,163
Disposition of same:			
Interest on funded debt	$324,181,521		
Less paid from "other income"	30,843,416	$293,338,105	
Interest on current liabilities		22,546,779	
Other deductions		70,174,473	
Dividends preferred stock	50,183,739		
Dividends common stock	176,607,550		
	$226,791,289		
Less paid from "other income"	54,832,742	171,958,547	
Dividends on other securities		769,222	

Additions and betterments charged to income		24,807,546	
Appropriations to reserves		16,984,447	
Miscellaneous		5,602,761	
Deficits of weak lines		4,996,195	
Surplus available for adjustments and improvements		113,205,088	$724,483,163

This table shows the actual disposition made of the net income from operation of the roads reporting to this Bureau, representing 97% of the railway business of the United States, except that $120,784,982 of the income from other sources has been eliminated from the account and applied to offset the rental paid by the reporting roads.

It will be observed that the gross dividends declared were only $226,791,289, which is 3.64% on the par value of the stock of the 368 reporting companies.

Misrepresentations as to Dividends.

The discrepancy between this condition and the official statement as to dividends declared in 1908 calls for an analysis of the latter. This reads, "The amount of dividends declared during the year (1908) was $386,879,362, being equivalent to 7.99% on dividend-paying stock. For the year ending June 30, 1907, the amount of dividends declared was $308,088,027."

Two income accounts—one of operating roads and the other of leased roads—for the year ending June 30, 1908, give a clew as to how the Official Statistician more than doubles the dividends actually paid out of transportation revenues. The gross total is made up of these four items:

Operating roads:	
Dividends declared from current income	$271,328,453
Dividends declared out of surplus	57,733,808
Leased roads:	
Dividends declared from current income	33,843,577
Dividends declared out of surplus	27,550,596
Total	$390,456,434

As these income accounts show that the operating companies received $280,427,460 "other income" from outside operations and sources other than transportation, and the leased roads received $111,153,013 "income from lease of road," the source of the major part of this fictitious dividend is revealed. The $280,427,460 from other sources would pay the entire income of the leased roads and leave nearly $170,000,000 to extinguish so much of the dividends declared by the operating roads.

Modified as to details, this is what actually occurs every year. In the year 1908 the total amount paid out of transportation revenues on account of capital of the 97% of the railways of the United States reporting to this Bureau was represented in the sums:

Net interest on funded debt	$282,354,000
Interest on current liabilities	31,835,708

Rent paid for lease of roads	113,529,261
Net dividends	104,074,006
Total	$531,792,975

This total was equivalent to 4.15% on the net capitalization of the roads represented. The rental paid the lessor roads constituted the fund from which those roads paid their interest and dividends. Further remark on the misleading and harmful statement of the Official Statistician as to dividends declared in 1908 is unnecessary.

V

COST OF CONSTRUCTION

Incomplete as are the figures of the cost of the railways of the United States, and exclusive as they are of the millions put back into the properties out of income for additions, betterments and reconstruction in the process of operation, yet the statistics of the cost of construction and equipment afford a complete answer to all charges that American railways are over-capitalized.

Upon the question of the cost of road and equipment in 1909, the returns of the 368 roads reporting to this Bureau furnish the following data:

SUMMARY OF COST OF ROAD AND EQUIPMENT COVERING 221,132 MILES OF OPERATED LINE FOR 1909.

Item	Amount
Cost of road (182,046 miles owned)	$6,603,504,463
Cost of equipment	1,122,409,813
Undistributed cost of road and equipment	3,080,064,960
Cost of 39,086 miles leased lines rental capitalized	2,415,699,876
Total	$13,220,678,876

Adding to this $290,750,000 to represent the 11,870 miles of road not reporting to this Bureau at $25,000 per mile, we obtain

$13,417,438,876

as the cost of road and equipment of the 233,002 miles of line employed in the transportation industry of the United States in 1909, or

$58,031 per mile of line.

This is an underestimate by reason of the failure of a few lines to furnish even approximate figures on the accumulated cost of their properties. Averaging the cost of locomotives at $15,000, of passenger cars at $6,000, of freight cars at $800, and of company's cars at $500 apiece—their present cost rates much higher—the equipment of American railways represents an investment of over $3,000,000,000, and its bare maintenance alone involves an expenditure of nearly $400,000,000 annually.

Physical Valuation of the Railways.

It is worthy of passing note that just as the railway companies have shown their indifference to a physical valuation of their property, the clamor of regulators and agitators in its favor has subsided. The

proposal lost its attractiveness to them the moment they became convinced that such an investigation would put a valuation on the roads so high as to take not only the wind out of their sails but the last drop of water out of their mouths. To-day the only insistent demand for this futile undertaking comes from quarters interested in the distribution of the appropriation of several millions it would cost.

Credit for the reversal in the popular and political attitude on this subject is largely due to the valuations attempted by the states of Minnesota, Washington and Wisconsin. The results in these states may be briefly summarized as follows:

	Miles of Line	Capitalization per Mile	Valuation by State, per Mile
Minnesota, 1907	7,596	$44,206	$54,201
Washington, 1908:			
Great Northern	806	44,078	73,900
Northern Pacific	942	70,278	106,500
Oregon R. R. & Navigation Co	501	43,012	38,900
Wisconsin, 1906	7,135	33,424	34,630

Even Senator Albert B. Cummins of Iowa has seen such a bright light on this subject that in his speech before the Traffic Club of Chicago last February he said that he would not be willing to make a present valuation of railroad property a basis for determining rates, "for the reason that it was more than probable that the present capitalization of between fifteen and sixteen billions would be increased to twenty billions."

In the Bureau's Statistics for 1908 it was said:

"If the valuations in Minnesota and Washington, made by none too friendly commissions, are any criterions of what a national valuation made under presumably unbiased federal authority would be, the present cost to reproduce the railways of the United States would be nearer $20,000,000,000 than any sum within the anticipations of those agitating for such valuation."

Capitalization of Foreign Railways.

With both sides of the balance sheet testifying to a capital investment in American railways of under $60,000, and official valuation abandoned *because it would demonstrate that they could not be reproduced for less than $80,000 per mile*, the reader is asked to compare the American figures with those of the capitalization, or cost of construction, of the principal foreign countries set forth below. These have been compiled from the latest available official returns.

Summary of Railway Capitalization of the Principal Foreign Railways from Latest Data.

Year	Country	Miles of Line	Capital or Cost of Construction	Per Mil
	Europe:			
1908	United Kingdom	23,205	$6,382,296,742	$275,04(
1908	Germany	35,558	3,903,848,400	109,78
1907	Russia in Europe (exclusive of Finland)	32,900	(a)3,170,876,360	80,98
1907	France	(b)24,730	3,447,366,000	139,39(
1907	Austria	13,427	1,515,576,885	112,87

1907	Hungary	11,769	741,586,391	63,01(
1907-08	Italy (State roads only)	8,699	1,086,000,000	124,73(
1905	Spain (13 roads)	6,840	583,632,000	85,32(
1906	Sweden	7,938	257,408,450	32,42(
1907	Belgium (State only)	2,537	430,800,000	169,80(
1907	Switzerland	2,740	298,709,210	109,00(
	Other Countries:			
1909	Canada	24,104	1,608,990,656	66,75(
1908	British India	30,576	1,364,669,375	44,63(
1907	Argentine Republic	13,690	820,433,796	59,93(
1908	Japan	4,444	190,173,728	42,80(
1909	United States of America	233,002	13,508,711,173	57,97(

(a) Russian capitalization, including railways in Asia, covers a total of 39,277 miles, from which the capital per mile is computed.

(b) This is exclusive of 4,259 miles of local interest.

The most striking feature in this table is the steady advance it shows in the capital cost of German railways. In ten years this has increased from 251,597 marks per kilometer in 1898 to 283,608 in 1908, *i. e.* 31,731 marks per kilometer or $12,282 per mile. This means an increase of $991,687,440 in capital cost for an increase of only 5,525 miles of line.

VI

OWNERSHIP OF AMERICAN RAILWAYS

Returns to this Bureau place the number of stockholders of record at the date of the last election of directors prior to June 30, 1909, of the 368 roads reporting at 320,696. As only 182,046 of the 221,132 miles operated by these roads was covered by the capital stock, this would show 1¾ stockholders for each mile of road and would indicate that there are at least 415,000 stockholders in all the railways of the United States. Owing to the incompleteness of the returns on this subject and the fact that large blocks of stock are held in the names of associations and trustees, it is safe to estimate that the actual ownership of railway stock is distributed among at least 440,000 persons.

In 1905 the Commission reported the number of stockholders of record prior to June 30, 1904, as 327,851, but has given no later figures. It may be of interest to compare these figures with the partial reports to this Bureau since then.

Year	Number Reporting	Number of Stockholders
1904	1,182 roads	327,851
1906	284 "	226,986
1907	317 "	240,554
1908	315 "	315,727
1909	340 "	320,696

If the ownership of railway bonds, which is even more widely distributed than that of stocks, could be traced, it would be found that over a million investors are interested in the financial welfare of the railways. This would give to each an interest of

$13,000, from which the average income is not over $520 a year.

The attempt of the Commission in 1908 to secure evidence that the control of the railways was concentrated in a few hands by calling for a statement of the "ten largest holders of voting securities" of the reporting companies having established that nowhere did they *own* a majority or an approach to a majority of the controlling stock, inquiry along that line was dropped in 1909.

In railways, as in any republic, the latent power is widely distributed among the many, while the administrative responsibility is necessarily entrusted to the few.

VII

PUBLIC SERVICE OF THE RAILWAYS

It is the reproach of our system of government statistics of railways that their first concern is financial results, which the government takes no thought to improve, and the harrowing roll of accidents, and not the adequacy of the service and the steady development of the means of transportation. Every month, almost every week, the public is informed of the volume of traffic, and every quarter the record of casualties is told in sensational head lines. It is left for belated annual reports to record the public service of this great industry upon whose progressive efficiency every other industry in

the United States depends.

It is not upon what the railways earn, but upon what they DO that the whole industrial fabric of the republic rests. It is not upon the dividends they pay but upon the traffic they carry, the net income withheld from dividends and put into improvements, that their success as carriers depends.

The Passenger Traffic.

In considering the public service of the railways it is customary to give first attention to the passenger traffic. This is not because it is the most important branch of the service but because passengers are numbered by millions, where thousands suffice in the enumeration of the shippers, who frequently mistake themselves for the entire American people.

In twenty years between June 1, 1889, and June 1, 1909, the population of the United States increased from 61,289,000 to 88,806,000, or nearly 45%. In the meantime the passenger cars provided by the railways increased from 24,586 to 46,026, or over 87%. But this does not measure the liberal provision made by the railway for the travelling public, which is more fully and accurately expressed by the amazing growth of the number of passengers carried one mile from 11,553,820,445 in 1889 to approximately 29,452,000,000 in 1909, or nearly 155%.

Here is shown an increase of cars not far short of double the increase in population and an increase in passengers carried proportionately greater than the numerical increase in cars.

In the meantime the average receipts of the traffic have declined from 2.165 cents per passenger mile in

1889 to 1.916 in 1909—a decline of over 11%, although every item involved in the service, locomotives, cars, track, stations, labor, etc., cost more. The passenger service, except as precursor to the freight service, and in certain densely populated sections, was unremunerative in 1889 and is more so now. It is maintained at the expense of the freight service by what the Railroad Commission of Wisconsin has characterized as "a species of piracy practiced upon the shippers of freight."

The salient features of the passenger service reported to this Bureau for the year 1909, as compared with the final official returns for the preceding year, are shown in the following statement:

Item	Bureau Figures 1909	Official Figures 1908
Miles of line represented	221,132	230,494
Passengers carried.	854,255,337	890,009,574
Passengers carried 1 mile	28,788,855,000	29,082,836,944
Passenger revenue	$551,634,278	$566,832,746
Mileage of passenger trains	491,903,107	505,945,582
Average number of passengers in train	58	54
Average cars to a train	5.3	—
Passenger car miles	2,594,508,987	2,705,659,994
Average passenger journey (miles)	33.71	32.66
Average receipts per passenger mile (cents)	1.916	1.937

According to the monthly reports to the Interstate Commerce Commission covering an average of 233,002 miles of line, the passenger revenues in 1909 were $564,302,580, or $1,943,077 less than the above revenues for only 228,164 miles of line in 1908.

The average receipts per passenger mile in 1909 are the lowest ever reported for American railways.

Taken in connection with the official returns covering the period since 1900, the above figures afford evidence of the confiscatory effect of the 2-cent passenger laws on railway revenues, as appears from the following statement:

SUMMARY OF PASSENGER MILEAGE, REVENUE AND RECEIPTS PER PASSENGER MILE, 1900 TO 1909.

Year	Passengers Carried One Mile	Increase Over Preceding Year (Per Cent)	Passenger Revenue	Receipts per Passenger Mile
1900	16,038,076,200	—	$323,715,639	2.003
1901	17,353,588,444	8.2	351,356,265	2.013
1902	19,689,937,620	13.4	392,963,248	1.986
1903	20,915,763,881	6.2	421,704,592	2.006
1904	21,923,213,536	4.8	444,326,991	2.006
1905	23,800,149,436	8.6	472,694,732	1.962
1906	25,167,240,831	5.7	510,032,583	2.003
1907	27,718,554,030	10.1	564,606,343	2.014
1908	29,082,836,944	4.9	566,245,657	1.937
1909	29,452,000,000	1.3	564,302,580	1.916
Increase, per cent	83.7	—	74.6	—

Here it is shown that the passenger service rendered has increased 12% more than the passenger revenues. But more significant than this is the column of yearly increases in service by percentages. This utterly explodes the theory that passenger travel is greatly stimulated by low fares—aside from some positive incentive to increased travel, such as periodical expositions, the Louisiana Purchase Exposition for instance, the effect of which is clearly traceable in the increased service in 1905, which includes the heavy travel during the months of heavy attendance, July 1 to December 1, 1904.

The 2-cent passenger laws were passed so as to become generally effective July 1, 1907, and their effect on passenger receipts during the following year was such that these receipts were actually less in 1909 than in 1907, although the service performed by the railways was over 6% greater. Had the railways received the same rate in 1909 that they did in 1907 their revenue from passengers would have been nearly $29,000,000 more than it was.

PASSENGER TRAFFIC 1909-1888.

In the next statement the salient facts in regard to the passenger traffic since the Commission began collecting the data is passed under review.

Year	Passengers Carried (Millions)	Passengers Carried One Mile (Millions)	Mileage Passenger Trains (Millions)	Average Passengers in Train	Average Journey Miles	Passer Rever (Milli
1909	888	29,452	507	58	33	50

1908	890	29,082	500	59	33	56
1907	873	27,718	509	51	32	56
1906	797	25,167	479	49	31	51
1905	738	23,800	459	48	32	47
1904	715	21,923	440	46	31	44
1903	694	20,915	425	46	30	42
1902	649	19,689	405	45	30	39
1901	607	17,353	385	42	29	35
1900	576	16,038	363	41	28	32
1899	523	14,591	347	41	28	29
1898	501	13,379	334	39	27	26
1897	489	12,256	335	37	25	25
1896	511	13,049	332	39	26	26
1895	507	12,188	317	38	24	25
1894	540	14,289	326	44	26	28
1893	593	14,229	335	42	24	30
1892	560	13,362	317	42	24	28
1891	531	12,844	308	42	24	28
1890	492	11,847	285	41	24	26
1889	472	11,553	277	42	25	25
1888	412	10,101	252	40	24	23
Increase 1888 to 1907	115%	191%	101%	45%	38%	138%
Decrease						

The several increases shown in the first, second, third and sixth columns of the table reflect the general advancement in passenger traffic. That of 45% in the average passengers to a train marks the progress in density of that traffic which may eventually place it on a profitable basis. In Massachusetts, where this density yields an average of 79 passengers to a train there is no demand for a two-cent rate statute, for the conditions have made a rate of 1.64 cents profitable. In the group of states consisting of Ohio, Indiana, Michigan, Illinois, Iowa, Wisconsin and Minnesota, where the density of

traffic yields only 46 passengers by train, a statutory two-cent fare becomes confiscatory because it costs at least one dollar to operate a passenger train one mile and 46 times two cents is only 92 cents. Moreover the 46 passengers per train is only an average and there are as many trains that average less as more. The average has to be raised above 50 to yield any margin of profit on passenger traffic. If it were not for the density of traffic in the New England and North Atlantic group of states the average for the entire United States would be well below 46 passengers per train.

The steady increase in the distance traveled per passenger reflects the effect of trolley competition in diverting the short haul passenger traffic.

The most noteworthy feature of the seventh column is the decline of 98/1000ths of a cent in the average receipts per passenger mile between 1907 and 1909, making a new low record after hovering around the two cent mark for fourteen years. As noted above, this reduction in the average cost the railways nearly $29,000,000 on the passenger traffic of 1909.

In this connection it is interesting to recall that between 1888 and 1893 the Official Statistician, then as now Professor Adams, made the following computation of the average cost of carrying one passenger one mile for the whole United States:

	1888	1889	1890	1891	1892	1893
Average cost of carrying a passenger one mile, cents	2.042	1.993	1.917	1.910	1.939	1.955

It will be observed that the average receipts per passenger mile in 1909 are below the computed cost in every one of the years above named, except 1891. When the advance in the cost of everything necessary to the service—track, labor, equipment, conveniences, speed, terminal facilities—is considered, the practical coincidence of average cost and receipts leaves no margin for legitimate profits.

Receipts from Mail and Express.

Closely associated with the passenger traffic of the railways are the mail and express services. Although principally carried by passenger trains, each has a special service of its own by mail and express trains. But all are included under the passenger service. The receipts from these two branches of the service during the last decade are shown in the following statement:

Summary of Receipts from Mail and Express, 1899 to 1908.

Year	Mail		Express	
	Revenues	Percentage of Earnings	Revenues	Percentage of Earnings
1899	$35,999,011	2.74	$26,756,054	2.04
1900	37,752,474	2.54	28,416,150	1.91
1901	38,453,602	2.42	31,121,613	1.96
1902	39,963,248	2.31	34,253,459	2.07
1903	41,709,396	2.19	38,331,964	1.98
1904	44,499,732	2.25	41,875,636	2.12
1905	45,426,125	2.18	45,149,155	2.17
1906	47,371,453	2.04	51,010,930	2.19

1907	50,378,964	1.94	57,332,931	2.21
1908	48,517,563	2.03	58,602,091	2.45
1909	50,935,000	2.08	63,669,000	2.60
Increase, per cent	41.5	—	138.0	—

Aside from the striking contrast in the percentages of increase of revenues from these two sources, the most significant feature of this table is the reversal it shows in their respective importance from the railway revenue point of view. Prior to 1905, carrying the mails brought larger, if not more profitable, returns to the railways. Since then the returns from express have increased so much more rapidly that they are now nearly 23% more than those from mails.

If proof were needed of the absolute falsity of the charge that the railways are receiving an exorbitant rate for carrying mail, the above table of their receipts from the service in connection with the following statement of mail handled and revenues in view of the finding of the Joint Commission of Congress in 1899 would furnish it. After a thorough investigation of the subject lasting from August, 1898, to July, 1900, the Commission came to the following conclusion:

"Upon a careful consideration of all the evidence and the statements and arguments submitted, and in view of all the services rendered by the railroads, we are of the opinion that the prices now paid to the railroad companies for the transportation of the mails are not excessive, and recommend that no reduction thereof be made at this time."

The increase in the railroad service since this

report was made is shown in the following statement of miles of mail transportation by railroads, the postal revenues and the number of clerks in the railway mail service since 1899:

	Annual Transportation of Mail by Railroads (Miles)	Postal Revenues	Number of Railway Mail Clerks
1899	287,591,269	$95,021,384	8,388
1900	297,256,303	102,354,579	8,695
1901	302,613,325	111,631,193	9,105
1902	312,521,478	121,848,047	9,627
1903	333,491,684	134,224,443	10,418
1904	353,038,397	143,582,624	11,621
1905	362,645,731	152,826,585	12,474
1906	371,661,071	167,932,783	13,598
1907	387,557,165	183,585,006	14,357
1908	407,799,039	191,478,663	15,295
1909	—	203,562,383	15,866
Increase in 10 years, per cent	50.5	124.7	89.1

Compared with the increase of only 41.5% in the revenues from mail received by the railways during the same period, each one of the above percentages testifies to a positive reduction in the rate received by the railways for the service. And if the increase in weight of mail carried in 1909 were known, the contrast between the service and the pay would be more striking. In 1899 the total weight of all mail was reported as 635,180,362 pounds. In 1907 the estimates made from the special weighing placed the weight of mail carried that year at 1,290,358,284

pounds, or an increase of nearly 105% in eight years. By reference to the above table it will be seen that the railway revenues from mail between 1899 and 1907 increased only 40%. The contrast is illuminating. In its light the charge that the railways are in any way responsible for the postal deficit is grotesque.

Freight Traffic

According to the monthly returns to the Interstate Commerce Commission, the proportion of revenues from freight of the railways of the United States to total earnings from operation, for the years 1908 and 1909, receded to the unusually low figures of 68.51% and 68.88% respectively. The official summary for 1908, based on the annual returns, shows a proportion of 69.17% for that year, which probably is nearer the mark.

The annual reports to this Bureau for 1909 yield a proportion of 69.18% for last year.

Accepting this proportion taken from the annual returns as being based on the same character of reports as those from which former ratios were derived, the preponderance of freight traffic is shown in bold relief in the following statement of the ratio of its revenues to total earnings from operation, 1899 to 1909:

Year	Proportion of Freight Revenues to Total Earnings		Year	Proportion of Freight Revenues to Total Earnings
1899	69.55%		1905	69.67%
1900	70.56%		1906	70.54%

1901	70.41%		1907	70.44%
1902	69.93%		1908	69.17%
1903	70.39%		1909	69.18%
1904	69.82%			

The average proportion for the nine years preceding 1908 is seen to be slightly above 70%, and the fact that it was almost one point below 70% in 1908 and 1909 indicates that it was the freight traffic that bore the brunt of the business depression which curtailed railway revenues during those years.

In no other of the leading countries of the world does the freight traffic assume the overwhelming relative proportion that it does in the United States. In the United Kingdom it amounts to 50.35%; in France to 53.64%; and in Germany, including express and mail, to 65%. If these were classed with freight in the United States, it would raise the proportion for that traffic here to over 74%.

FREIGHT TRAFFIC 1909 AND 1908.

The next statement presents the significant items of the freight traffic in 1909 for the roads reporting to this Bureau compared with those of the final official returns for the preceding year.

Item	1909 Bureau Figures	1908 Official Figures
Miles operated	221,132	230,494
Number of tons carried	1,441,012,426	1,532,981,790
Tons carried 1 mile	217,756,776,000	218,381,554,802
Freight revenue	$1,643,028,564	$1,655,419,108

Mileage of freight trains	560,602,557	587,218,454
Number of cars in train	29.7	28.3
Average number of tons in train	388	351.80
Average haul per ton (miles)	151.1	143.83
Average receipts per ton mile (mills)	7.54	7.54

Experience has shown that in comparing these statements of averages for passenger and freight traffic, allowance has to be made for the fact that the Bureau's figures include all the great systems and are exclusive of some 13,000 miles of minor lines. It is difficult to estimate the effect of these discrepancies with anything like exactness. But complete returns invariably show a shorter mean haul and journey for the entire country than the Bureau's figures indicate and also a less train load of passengers and freight, the result being a slightly higher average for passenger and freight ton receipts per mile.

Last year from its returns the Bureau computed the passenger mile receipts at 1.933 cents and the ton mile receipts at 7.53 mills. The Commission's final figures were 1.937 cents and 7.54 mills respectively.

FREIGHT TRAFFIC 1909 TO 1888.

In the next summary is presented a condensed statement of the significant data relating to the freight traffic for the twenty-two years that the Commission has been compiling statistics.

SUMMARY OF TONS CARRIED, TON MILEAGE, MILEAGE OF FREIGHT TRAIN TONS IN TRAIN, FREIGHT REVENUES AND AVERAGE RECEIPTS PER TO

Year	Tons Carried (Millions)	Tons Carried One Mile (Millions)	Mileage Freight Trains (Millions)	Average Tons in Train	Average Haul per Ton (Miles)	Freig Reven (Millio
1909	(a)1,486	222,900	579	388	151	$1,682
1908	1,532	218,381	597	360	143	1,655
1907	1,796	236,601	629	357	131	1,823
1906	1,631	215,877	594	344	132	1,640
1905	1,427	186,463	546	322	130	1,450
1904	1,309	174,522	535	307	133	1,379
1903	1,304	173,221	526	310	132	1,338
1902	1,200	157,289	499	296	131	1,207
1901	1,089	147,077	491	281	135	1,118
1900	1,081	141,596	492	270	130	1,049
1899	943	123,667	(b)507	243	131	913
1898	863	114,077	503	226	132	876
1897	728	95,139	464	204	130	772
1896	765	95,328	479	198	124	786
1895	696	85,227	449	189	122	729
1894	638	80,335	446	179	125	699
1893	745	93,588	508	183	125	829
1892	706	88,241	485	181	124	799
1891	675	81,073	446	181	120	736
1890	636	76,207	435	175	119	714
1889	539	68,727	383	179	127	644
1888	480	61,329	348	176	128	613
Increase 1888 to 1909	209%	263%	66%	120%	18%	174%
Decrease						

(a) Figures for 1909 computed on basis of returns to this Bureau.

(b) Includes 75% of mixed train mileage, that being the practice prior

Mark the one column which shows a decrease. This means a remission of almost exactly a quarter of

a cent per ton mile in the average receipts from freight. On the tonnage carried in 1909 it meant a saving of over $540,000,000 to the shippers. In the presence of the present high price of everything carried by the railways, there is no ground for assuming that any portion of this half billion dollars withheld from the railways ever reached the ultimate consumer. On the contrary the presumption is unavoidable that it has been absorbed by the shippers and consignors, whose profits are greater than ever.

Proportion of Commodities Moved 1899-1909.

Referring to the movement of different classes of commodities in his report for 1904, the Official Statistician said: "A slight change in the ratio of freight carried for any one of the classes named may have decided results, not only upon the earnings of the roads, *but upon the average rate per ton mile*." But without knowing the length of the haul of the respective classes, any estimate of the effect of such variation must be largely speculative.

In 1909, for the first time the Bureau undertook to collect the information as to the tonnage of the main divisions of commodities carried. Its inquiries were limited to the tonnage originating on the several roads, and the next statement presents the results in comparison with the official figures for 1907, which are the last available:

Tonnage and Proportion of Different Classes of Commodities Moved 1909 and 1907.

	1909		1907	

Class of Commodity	Tonnage Reported as Originating on Line	Per Cent of Aggregate	Tonnage Reported as Originating on Line	Per Cent of Aggregate
Products of agriculture	76,955,131	9.49	77,030,071	8.62
Products of animals	21,807,486	2.69	20,473,486	2.29
Products of mines	449,938,248	55.50	476,899,638	53.39
Products of forests	83,679,179	10.33	101,617,724	11.38
Manufactures	109,625,669	13.52	137,621,443	15.41
Merchandise	35,500,833	4.38	34,718,487	3.89
Miscellaneous	33,318,272	4.09	44,824,123	5.02
Total	810,784,818	100.00	893,184,972	100.00

NOTE.—These tables fail to include nearly 200,000,000 tons unassigned.

The most significant feature of this statement is the marked decrease, absolutely and relatively, in the tonnage of manufactures carried. Great as was the decrease in the tonnage of animals carried there was an increase relatively.

The next statement shows the percentages of commodity tonnage moved since the Commission has compiled the information divided between low and high rate freight.

SUMMARY SHOWING PERCENTAGE OF FREIGHT TRAFFIC MOVEMENT BY CLASSES OF COMMODITIES, 1907 TO 1899.

Table headings:

Col A: Products of Agriculture

Col B: Animals

Col C: Mines

Col D: Forest
Col E: Total
Col F: Manufactures
Col G: Merchandise
Col H: Miscellaneous
Col I: Total

Year	Low Rate Freight Percentage of Aggregate					High Rate Freight Percentage of Aggregate			
	A	B	C	D	E	F	G	H	I
1899	11.33	3.12	51.47	10.89	76.81	13.45	4.49	5.25	23.19
1900	10.35	2.87	52.59	11.61	77.42	13.41	4.26	4.91	22.58
1901	10.76	2.91	51.67	11.67	77.01	13.75	4.16	5.08	22.99
1902	9.23	2.64	52.36	11.64	75.87	14.49	4.37	5.27	24.13
1903	9.56	2.63	51.56	11.67	75.42	14.39	4.69	5.50	24.58
1904	9.59	2.74	51.56	12.53	76.42	13.41	4.83	5.34	23.58
1905	9.03	2.54	53.59	11.24	76.40	13.60	4.32	5.68	23.60
1906	8.56	2.32	53.09	11.24	75.21	14.81	4.06	5.92	24.79
1907	8.62	2.29	53.39	11.38	75.68	15.41	3.89	5.02	24.32
1908	8.74	2.46	55.72	11.35	78.27	13.15	4.04	4.54	21.73
1909	9.49	2.69	55.50	10.33	78.01	13.52	4.38	4.09	21.99

It will be observed that the percentage of low rate freight carried in 1909 was greater than for any other year covered by these statistics. This was due more to the falling off in manufactures and miscellaneous freight than to any increased movement of low class freight.

Car Service Operations.

What the Department of Commerce and Labor calls "a convenient index to the traffic activities of the country" is found in the following comparative statement of cars handled by the various car service associations and demurrage bureaus, 1905-1909.

NUMBER OF CARS HANDLED BY 36 CAR SERVICE ASSOCIATIONS AND DE
BUREAUS DURING TWELVE MONTHS ENDING DECEMBER, 1905-19

Names of Associations and Bureaus	Twelve Months Ending December			
	1905	1906	1907	1908
Alabama	752,982	744,548	779,402	631,487
Central New York	611,601	654,861	753,269	738,054
Central (St. Louis)	863,788	908,096	919,130	838,017
Chicago	2,166,910	2,251,763	2,282,191	2,161,767
Cincinnati	675,117	748,763	771,990	635,365
Cleveland (a)	640,364	796,687	1,016,003	715,764
Colorado	425,140	455,540	445,900	385,260
Columbus	394,152	443,638	469,773	363,130
East Tennessee	320,855	358,733	388,066	293,597
Indiana	912,827	962,941	1,104,855	1,077,786
Intermountain	116,533	158,231	184,577	153,885
Lake Superior	332,633	371,312	415,642	338,109
Louisville Car	495,095	541,945	506,528	518,955
Memphis	235,569	258,316	255,169	239,156
Michigan	687,428	766,950	838,928	696,926
Missabe Range	30,241	37,613	42,786	42,930
Missouri Valley	1,538,087	1,665,882	1,910,139	1,606,758
Nashville	300,602	336,110	351,572	326,385
New York and New Jersey	997,304	1,100,067	1,409,161	1,248,609
North Carolina	357,474	374,710	407,257	404,334
Northeastern Pennsylvania	802,072	836,443	917,936	633,655
Northern	1,467,041	1,722,345	1,736,981	1,515,706
Pacific	761,382	972,398	1,166,886	1,147,345
Pacific Northwest	647,726	727,474	888,093	845,405
Philadelphia	2,056,744	2,218,755	2,326,723	1,921,142
Pittsburg	3,375,530	3,295,463	2,935,299	1,977,891
Southeastern	813,444	862,379	853,720	823,948
Southern	273,273	301,273	492,914	513,437
Texas	932,992	977,630	986,475	1,118,622
Toledo	262,875	312,329	530,617	383,870

Virginia and West Virginia	818,915	866,861	893,905	778,940
Western New York	812,409	881,640	986,962	806,488
Western (Omaha)	622,868	718,872	770,470	733,346
Wisconsin	1,157,036	1,119,326	1,118,720	1,022,270
Total reported by 34 associations and bureaus (b)	27,659,009	29,749,894	31,858,039	27,638,339
Baltimore and Washington Demurrage Bureau	(c)721,428	(c)740,903	(c)735,103	588,930
Illinois and Iowa Demurrage Bureau	(d)	3,054,315	3,258,770	(d)

(a) Cleveland reported 10,016 lake coal cars for December, 1909.

(b) The Butte Terminal Association was superseded by the Montana D Bureau in May, 1908. The returns of the new bureau for the twelve month December, is 448,381 cars.

(c) Figures apply to larger territory; change and revision of 1907, 190 figures made October 1, 1909.

(d) Not reported.

VIII

EARNINGS AND EXPENSES

Having in the preceding pages given the facts as to the provision made by the railways for fulfilling their obligations as common carriers, it is now in order to

present a brief review of their receipts and expenditures in relation to their public service.

For the second successive year the Bureau has to warn the reader that innovations in the forms of keeping railway accounts prescribed by the Commission preclude the making of strictly accurate comparisons of the returns for 1909 with those of any preceding year. In submitting its report for 1908 the Commission made the following explanation:

"A number of important changes have been made in the annual report forms for 1908, particularly in the grouping of certain items in connection with the Income Account and the Profit and Loss Account. The figures which follow do not include returns applying to carriers classed as switching and terminal. The changes in the income account submitted in the report under consideration are so far reaching in their results, in a number of instances, as to impair direct or close comparison with figures for similar items contained in previous statistical reports."

In the comparative Income Account below, which aims to present the situation as it would result from the actual operations had such operations been conducted by a single corporation, the Bureau has sought to make the returns for 1908 and 1909 conform as nearly as possible to "previous statistical reports." It should be premised, however, that the official figures for 1908 exclude the returns from switching and terminal companies, whereas the Bureau's figures for 1909 include some portion of these returns, which are as much an integral part of the transportation service of American railways as any they perform. The official figures for 1908 do not correspond absolutely to the preliminary figures

for the same year compiled from the monthly reports as reviewed in the Introduction to this report.

With this by way of explanation, the comparative Income Account for the years 1909 and 1908 is submitted:

COMPARATIVE INCOME ACCOUNT OF THE RAILWAYS IN THE UNITED STAT
AS A SYSTEM FOR THE YEARS ENDING JUNE 30, 1909 AND 19

Item	Amount		
	1909 (221,132 miles operated)		19((230,002 mil
Passenger revenue	$ 551,634,278		$ 566,832,746
Mail revenue	49,508,972		48,517,563
Express revenue	61,883,695		58,692,091
Freight revenue	1,643,028,564		1,655,419,108
Other earnings from operation	69,086,257		64,344,481
Gross earnings from operation		$2,375,141,766	
Operating expenses	$1,568,111,272		$1,669,547,876
Taxes	82,650,214		78,673,794
Total	$1,650,761,486	$1,650,761,486	$1,748,221,670
Net earnings from operation		724,380,280	
Net revenue from outside operations		5,410,338	
Operating income		$ 729,790,618	
Disposition:			
Net interest on funded debt	$ 293,338,105		$ 282,354,001
Interest on current liabilities	22,546,779		31,835,708
Rent paid for lease of road	120,784,982		111,153,013
Additions and betterments charged to income	24,807,546		28,086,454

Appropriations to reserves and miscellaneous items	22,587,208		21,636,182
Other deductions	70,174,473		64,669,546
Total deductions		$ 554,239,093	
Surplus available for dividends, adjustments and improvements		175,551,525	
Net dividends		171,607,550	
Balance to profit and loss		$ 3,943,975	

In 1909 the "Income Account" of the railways was swelled and confused by including therein $200,725,696 of intercorporate payments, while that for 1908 includes $274,450,192 "Other Income" which, as has been formerly noted by the Official Statistician, swells the totals to a fictitious figure. It is out of this fictitious income that fictitious interest and dividends are paid, fictitious deductions made, and fictitious surpluses accumulated. If "Other deductions" in the above statement had been charged against "Other income" instead of being deducted from earnings from operation the balance to Profit and Loss for each year would have been so much larger.

What becomes of the rent paid by operating roads for leased roads is well shown in the statement included in the Commission's preliminary report of statistics for 1908 in which the amount received by the latter mentioned in the table just submitted is disposed of.

CONDENSED INCOME ACCOUNT AND PROFIT AND LOSS ACCOUNT OF LEASED ROADS FOR THE YEAR ENDING JUNE 30, 1908.

Income Account		
Gross income from lease of road	$111,153,013	
Salaries and maintenance of organization	390,841	
Taxes accrued	5,881,352	
Net income from lease of road		$104,880,820
Other income		5,436,129
Gross corporate income		$110,316,949
Deductions from gross corporate income		62,232,508
Net corporate income		$ 48,084,441
Disposition of net corporate income:		
Dividends declared from current income	$ 33,843,577	
Additions and betterments charged to income	1,088,002	
Appropriations to reserves and miscellaneous items	258,580	
Total		$ 35,190,159
Balance carried forward to credit of profit and loss		12,894,282
Profit and Loss Account		
Credit balance in Profit and Loss Account, June 30, 1907		$ 45,852,031
Credit balance brought from Income Account, June 30, 1908		12,894,282
Total		$ 58,746,313
Dividends declared out of surplus		27,550,596
Other profit and loss items—debit balance		2,006,573
Balance credit June 30, 1908, carried to balance sheet		$ 29,189,144

Included under the blind item of "Deductions from gross corporate income, $62,232,508" in this statement may be mentioned rents of other roads and facilities of which these leased roads are the lessees, interest on funded debt and other interest, sinking funds chargeable to income and other deductions not specifically provided for elsewhere. In case of operating roads this item also includes the balance of hire of equipment, to which, of course, there is a credit with other operating roads.

The significant feature in this statement is the decrease in the profit and loss credit balance of $16,662,887. But this does not alter the fact that what becomes of rent paid for lease of road is no more a concern of interstate commerce than what becomes of the rent paid for warehouses or office space in any terminal. The operating roads pay all the cost of maintenance of way and equipment. The leased roads are not common carriers in any sense. They are simply distributing mediums of the rents paid them—this rent being the equivalent of interest on so much capital. As appears from the foregoing table, the expense of maintaining the organization of these leased properties amounted in 1908 to 35/100ths of 1 per cent.

Distribution of Gross Earnings.

How the gross earnings of the railways reporting to this Bureau in 1909 ($2,375,141,766) were distributed is shown in the next statement in comparison with a similar division of earnings in 1908 and 1907.

STATEMENT OF DISTRIBUTION OF GROSS EARNINGS OF 221,132 MILES OF LINE IN 1909 COMPARED WITH THE PERCENTAGES FOR 1908 AND 1907.

(GROSS EARNINGS 1909, $2,375,141,766.)

Item	Amount 1909	Per Cent 1909	Per Cent 1908	Per Cent 1907
Operating expenses:				
Maintenance of way and structures	$ 299,757,077	12.62	13.41	13.27
Maintenance of equipment	358,747,371	15.10	15.42	14.22
Traffic expenses	48,453,707	2.08	2.00	—
Transportation expenses	799,690,194	33.67	36.24	37.50
General expenses	61,462,923	2.58	2.58	2.54
Total	$1,568,111,272	66.03	69.67	67.53
Disposition of same:				
Pay of employes	$ 973,174,419	41.00	43.43	41.42
Fuel for locomotives	184,359,112	7.76	—	7.74
Oil and water for locomotives	19,951,184	.84	—	.88
Material and supplies	219,463,028	9.24	—	11.81
Hire and rent of equipment and facilities	54,638,243	2.30	—	2.46
Loss and damage	56,379,042	2.37	—	1.83
Miscellaneous(a)	60,146,242	2.52	—	1.39
Total expenses	$1,568,111,272	66.03	69.67	67.53
Taxes(b)	88,531,566	3.72	3.53	3.10
Rentals of leased roads	114,903,630	4.84	4.64	4.69
Interest on funded debt and current liabilities	315,884,884	13.30	13.34	13.14
Dividends	171,607,550	7.23	4.42	8.78

Deficits of weak companies	20,223,246	.85	1.24	.19
Betterments, reserves and sundries	47,494,754	2.00	2.07	1.50
Surplus	48,384,864	2.03	1.09	1.07
Total (gross earnings)	$2,375,141,766	100.00	100.00	100.00
Gross earnings 1908	2,393,805,989			
Gross earnings 1907	2,589,105,578			

(a) Legal expenses, advertising and insurance are included under "Miscellaneous"; stationery and printing under "Material and Supplies."

(b) Includes taxes paid by leased lines and deducted from rent.

Owing to the fact that interest on funded debt and dividends are paid out of the common fund derived from operation and investments, the amounts devoted to these items in the above statement are necessarily computations. That they are not underestimates is proved by the fact that the surplus would not permit of larger charges for interest and dividends paid out of net earnings. Any interest or dividends materially greater than the amounts stated above, not paid out of the rents accruing to leased roads as given, must necessarily be derived from other sources than transportation revenues, and has no place in railway accounts coming under the provisions of the Act to Regulate Commerce among the several states.

IX

TAXES

So far as taxes are concerned, seasons of prosperity, depression and marking time are alike to American railways. The burden of their taxation knows no recession but mounts steadily, absolutely, per mile and in proportion to gross earnings.

The 368 roads reporting to this Bureau owning 182,046 miles of line and operating 221,132 miles, of which 39,086 miles were leased, paid $82,650,214 taxes in 1909. The Commission's report for 1908 shows that the leased roads paid $5,881,352 taxes out of their rents. Putting a conservative estimate of $200 a mile on the 11,870 miles of line not represented in this report would add $2,374,000 to the above figures and bring the aggregate taxes paid by the railways of the United States in 1909 up to the striking total of $90,905,566.

How railway taxation has increased absolutely and relatively to earnings and mileage during the past twenty-one years is shown in the following statement:

TAXES ANNUALLY AND RELATIVELY, 1889 TO 1909.

Year	Taxes Paid	Per Mile	Percentage of Earnings
1909 (Official figures)	$89,026,226	$382	3.73
1908	84,555,146	367	3.53
1907	80,312,375	353	3.10
1906	74,785,615	336	3.21
1905	63,474,679	292	3.04

1904	61,696,354	290	3.12
1903	57,849,569	281	3.04
1902	54,465,437	272	3.15
1901	50,944,372	260	3.20
1900	48,332,273	250	3.24
1899	46,337,632	247	3.53
1898	43,828,224	237	3.51
1897	43,137,844	235	3.84
1896	39,970,791	219	3.48
1895	39,832,433	224	3.70
1894	38,125,274	216	3.56
1893	36,514,689	215	2.99
1892	34,053,495	209	2.90
1891	33,280,095	206	3.04
1890	31,207,469	199	2.96
1889	27,590,394	179	2.86

In this table the figures for 1909 are based on the monthly reports to the Commission and are subject to revision, but they are in substantial agreement with the estimate on the returns to the Bureau.

Observe that the highest ratio of taxes to gross earnings shown in this table was 3.84 per cent in 1897, when everything relating to railways, except taxes, was prostrated under the reign of receiverships that followed the panic of 1893. It was of 1897 that the Official Statistician recorded the fact that "70.10 per cent of outstanding stock paid no dividends, and 16.59 per cent of outstanding bonds, exclusive of equipment trust obligations, paid no interest."

There is instruction and warning behind the remarkable increase in the ratio of taxation shown in the figures for 1894 to 1897. There is the reflection of similar conditions in the rising ratios of 1908 and 1909.

X

DAMAGES AND INJURIES TO PERSONS

There are two items in railway accounts connected with the expense of operation that give the management most serious concern, because no means has been devised to limit or control them. In a leaflet issued by this Bureau in September last, it was estimated that the payments of American railways on account of "Injuries to Persons" and "Loss and Damage" for the year 1908 would approximate $56,700,000, or more than 2.3 per cent of their gross earnings. The Commission has not yet made public the final figures for 1908, but the returns on these accounts of the 368 roads reporting to this Bureau for the year 1909, aggregate $56,379,024, or 2.37 per cent of their gross earnings.

Divided according to the new system of accounting adopted by the Commission, these returns show the following figures:

SUMMARY OF PAYMENTS ON ACCOUNT OF INJURIES TO PERSONS AND LOSS AND DAMAGE DURING THE YEAR 1909.

Account		Amount	Per Cent of Earnings
Injuries to persons		$23,456,038	.99
Maintenance of way	$ 2,702,066		
Maintenance of equipment	2,315,119		
Transportation	18,438,853		

Loss and damage		32,922,986	1.38
To freight	$24,768,453		
To baggage	300,869		
To property	4,469,496		
To live stock, etc.	3,384,168		
Total		$56,379,024	2.37

Unlike many of the other expenses of American railways, the burden of this "cost of operation" does not fall heaviest on the large systems. In the case of one road of moderate importance payments on these two accounts amounting to 4.8 per cent of gross earnings were enough to tip the balance into a deficit after paying interest on funded debt; one minor but prosperous road, after paying 14 per cent of gross receipts to meet these two accounts, had nothing left for dividends after paying interest, which amounted to less than 10 per cent of its earnings; and a small third road after being called on to pay 21.5 per cent of its earnings for injuries and damages had only 6 per cent of its operating revenue left to pay interest on funded debt, which called for 20 per cent of the earnings, and taxes reduced the net operating revenue to less than 4 per cent.

These are extreme cases but they illustrate how the "Injury and Damage" claims strike roads that can ill afford to pay them as well as the great systems which are the common prey of every claimant with enough of a grievance to interest an attorney who scents a contingent fee.

That the claims behind these expenses are largely meretricious is indicated, if not proved, by their disproportionate increase in the past ten years, during which the railways have expended millions in providing safeguards for their trains and employes.

This increase absolutely and relatively to gross earnings is shown in the following statement:

PAYMENTS ON ACCOUNT OR "LOSS AND DAMAGE" AND "INJURIES TO PERSONS" DURING THE DECADE 1899 TO 1909 AND PROPORTION TO GROSS EARNINGS.

Year	Loss and Damage		Injuries to Persons	
	Amount	Per Cent of Earnings	Amount	Per Cent of Earnings
1899	$ 5,976,082	.455	$ 7,116,212	.541
1900	7,055,622	.474	8,405,980	.565
1901	8,109,637	.510	9,014,144	.567
1902	11,034,686	.639	11,682,756	.676
1903	13,726,508	.722	14,052,123	.739
1904	17,002,602	.861	15,838,179	.802
1905	19,782,692	.946	16,034,727	.770
1906	21,086,219	.907	17,466,864	.751
1907	25,796,083	.996	21,462,504	.829
1908	—	—	—	—
1909	32,922,986	1.386	23,456,038	.988
Increase in 10 years, per cent	450.5	204.6	229.6	82.6

Startling as are these increases absolutely, those relatively to earnings present a condition truly alarming, for which there is no apparent relief except through a revulsion in the popular tolerance of blackmail at the expense of the railways.

In no other country in the world are the railways held up on bogus claims for damages to the extent they are in the United States. Under the strict laws of the United Kingdom, as to compensation for damages

and injuries, the British railways paid less than 7/10ths of 1 per cent of their earnings for all damages, losses and injuries, or less than one-third the proportion paid by American railways on the same account.

XI

LOCOMOTIVE FUEL

Despite the continuous improvements in the steam-producing capacity of railway locomotives per ton of coal, the steady advance in the cost of coal during the past ten years has more than offset the economies of locomotive construction. This is shown in the next statement, which gives the cost of locomotive fuel and its relative proportion to gross earnings and operating expenses, and also the average price per short ton of coal in the United States since 1899:

SUMMARY OF COST OF LOCOMOTIVE FUEL AND PROPORTION TO EARNINGS AND EXPENSES OF AMERICAN RAILWAYS, 1909 TO 1899, WITH PRICE OF BITUMINOUS COAL PER TON DURING THE SAME PERIOD.

Year	Miles of Line	Cost of Locomotive Fuel	Proportion to Operating Expenses	Proportion to Gross Earnings	Price of Coal at Mines per Ton(a)
1909	221,132	$184,359,112	11.757	7.77	—

1908	230,494	197,385,513	12.098	8.25	1.12
1907	227,454	200,261,975	11.471	7.74	1.14
1906	222,340	170,499,133	11.119	7.34	1.11
1905	216,973	156,429,245	11.278	7.51	1.06
1904	212,243	158,948,886	11.893	8.05	1.10
1903	205,313	116,509,031	11.675	7.70	1.24
1902	200,154	120,074,192	10.776	6.96	1.12
1901	195,561	104,926,568	10.602	6.61	1.05
1900	192,556	90,593,965	9.809	6.09	1.04
1899	187,534	77,187,344	9.478	5.88	.87

(a) These figures are from the latest report of the United States Geological Survey.

The significance of this table is that it cost the railways almost one-third more for fuel per dollar earned in 1909 than it did in 1899, the increase in the proportion of fuel cost to gross earnings having been 32%, due to the advance of 31% in the price of coal at the mines during that period.

The effect of the anthracite coal strike and the Commission's award of date March 18, 1903, upon the cost of bituminous coal is seen in the sharp advances in 1902 and 1903.

The railways have not escaped the advance in their cost of living due to the increased price of fuel any more than the public at large, and so far they have not been able to shift any portion of that cost, as manufacturers and shippers have done.

XII

THE SAFETY OF AMERICAN RAILWAYS

Never before in the history of railways has such a record for comparative safety been made as that recorded of American railways during the year ending June 30, 1909. Following its custom the Interstate Commerce Commission has published the report of accidents. It remains to set forth here the more remarkable record of safety.

OF THE 368 COMPANIES REPORTING TO THIS BUREAU, NO LESS THAN 347, OPERATING 159,657 MILES OF LINE AND CARRYING 570,617,563 PASSENGERS, WENT THROUGH THE YEAR WITHOUT A SINGLE FATALITY TO A PASSENGER IN A TRAIN ACCIDENT.

Of the remaining 21 companies, no less than 10, operating 27,681 miles and carrying 185,447,507 passengers, only missed such perfect immunity by a single fatality each in accidents to trains. This leaves 11 roads whose misfortune it was to bear the burden of train accident fatalities to passengers during the year.

The invariable rule of the Bureau precludes the publication of the honor roll of safety. And it is well so, for it would lead to invidious comparisons, where, in such matters as accidents, all comparisons are as irrelevant as they are invidious.

But it may be stated that the roll of immunity includes roads in every section of the union, from Maine to California, several great systems operating over 7,000 miles of line each, as well as little branch lines of below ten miles of single track; lines operated with all the safety appliances known to twentieth century progress and lines operated under as primitive conditions as prevailed on this continent

more than half a century ago.

THIS RECORD OF COMPLETE IMMUNITY, STRETCHING OVER 159,657 MILES OF OPERATED LINE, REPRESENTS A MILEAGE NEARLY SEVEN TIMES THAT OF ALL BRITISH ROADS, AND EQUALS THE AGGREGATE OF ALL EUROPE, EXCLUDING RUSSIA BUT INCLUDING THE BRITISH ISLES.

What immunity to fatalities to passengers over such a vast mileage means may be partly realized from the fact that only twice in half a century has it occurred on the 23,000 miles of British railways, and never, to the writer's knowledge, so far as statistics reveal, on the railways of any of the great divisions of Europe. Certainly it has never occurred on the aggregate railways of Europe.

It would take seven consecutive years of immunity from fatalities to passengers in train accidents on British railways to equal this phenomenal record of American roads.

In presenting similar returns for 1908, it was said that "considering the myriad units of risk involved, the record for immunity from fatal accidents to passengers is without parallel in the history of railway operation." How that record has been not only equalled but surpassed is shown in the following statement for the last two years:

SUMMARY OF MILEAGE AND TRAFFIC OF ROADS ON WHICH NO PASSENGER WAS KILLED IN A TRAIN ACCIDENT DURING THE YEARS 1908 AND 1909.

	1909	1908

Number of operating companies	347	316
Mileage of these companies	159,657	124,050
Passengers carried	570,617,563	455,365,447
Passengers carried 1 mile	18,953,025,000	14,776,368,000
Tons of freight carried	1,116,877,052	916,123,410
Tons of freight carried 1 mile	151,974,495,000	121,589,399,000
Passengers killed in train accidents	None	None
Passengers injured in train accidents	2,585	2,695

This table proves that the area of perfect safety, so to speak, was extended over from 22% to 26% more units of risk in 1909 than in 1908, which already held the palm for immunity in train accident fatalities to passengers.

The figures given above as to passengers injured in train accidents are equally illuminating as to the safety of American railways, for they demonstrate that with the multiplication of risks in 1909 the number of injured was less by 4%. The fact that no passenger is killed in train accidents is more or less adventitious, but a reduction in the number injured testifies to a reduction in the opportunities for fatalities.

During the past ten years the average of passengers injured in train accidents on British railroads has been 580, which, considering the difference in the units of risk, is 100% higher than the above record

for 159,657 miles of American railway in 1909.

The following table, which includes no less than six great systems of over 2,000 miles each, presents similar data in respect to the ten roads whose record for safety to passengers in train accidents is marred by a single fatality:

SUMMARY OF MILEAGE AND TRAFFIC OF ROADS ON WHICH ONLY ONE PASSENGER WAS KILLED IN A TRAIN ACCIDENT DURING THE YEAR 1909.

	1909
Number of operating companies	10
Mileage of these companies	27,681
Passengers carried	185,447,507
Passengers carried 1 mile	5,778,621,000
Tons of freight carried	213,086,612
Tons of freight carried 1 mile	40,177,881,000
Passengers killed in train accidents	10
Passengers injured in train accidents	778

These figures show a mileage of 4,481 miles greater than all the railways of the United Kingdom, approximately one-half the passenger mileage, and over three times the ton mileage, with only 10 passengers killed in train accidents, to an average of 20 on British railways during the past ten years.

Further analysis of the returns to the Bureau, since data along this line has been compiled, affords the following statement of the number of roads and their mileage that have records of entire immunity from fatalities to passengers in train accidents of from one up to six years:

STATEMENT SHOWING NUMBER OF RAILWAYS AND MILEAGE ON WHICH NO PASSENGER HAS BEEN KILLED IN A TRAIN ACCIDENT, 1904 TO 1909.

		Number of Companies	Miles of Line
Six consecutive years,	1904-1909	17	9,641
Five " "	1905-1909	95	44,894
Four " "	1906-1909	177	57,331
Three " "	1907-1909	228	69,713
Two " "	1908-1909	287	108,710
One year, 1909		347	159,657

Gratifying and remarkable as was the immunity from fatalities of the class under consideration in 1909, the fact that for a period of five years 95 American roads with a mileage practically double that of all British railways have carried hundreds of millions of passengers without a fatality to one of them is so at variance with the popular impression regarding the dangers of American railway travel as to seem little short of marvelous.

The impressive character of this showing will be better appreciated when it is understood that the immunity from fatalities in train accidents represents consecutive years counting back from 1909. No road has been admitted to the list where the immunity has been interrupted by a single accident. With this fact in mind, the clean slate of the 17 roads for six years challenges admiration, especially as the Bureau's reports in 1904 covered less than two-fifths of the operated mileage of the United States.

RAILWAY ACCIDENTS IN 1909.

Having thus shown the gratifying immunity from

fatalities to passengers in train accidents during the year 1909, and on 9,641 miles of line since 1904, it remains to present the reverse side of the picture, which is so invariably thrust forward in official documents. Accident Bulletin No. 32 of the Interstate Commerce Commission furnishes the following data as to the number killed and injured on the railroads of the United States during the last two fiscal years:

SUMMARY OF CASUALTIES TO PERSONS IN RAILWAY ACCIDENTS FOR THE ENDING JUNE 30, 1909 AND 1908.

Class of Accident	1909				1908		
	Passengers		Employes		Passengers		Em
	Killed	Injured	Killed	Injured	Killed	Injured	Killed
Collisions	94	3,033	248	2,362	111	4,284	303
Derailments	37	2,717	227	1,448	54	3,057	260
Miscellaneous train accidents, including locomotive boiler explosions	—	115	45	1,067	—	89	79
Total train accidents	131	5,865	520	4,877	165	7,430	642
Coupling or uncoupling	—	—	161	2,353	—	—	239
While doing other work about trains or while attending switches	—	—	93	14,315	—	—	206
Coming in contact with overhead bridges, structures at side of track, etc	2	36	76	1,229	4	37	110
Falling from cars or engines or while getting on or off	137	3,076	481	10,259	159	2,501	668
Other causes	65	3,139	1,125	18,771	78	2,677	1,493

Total (other than train accidents)	204	6,251	1,936	46,927	241	5,215	2,716
Total (all classes)	335	12,116	2,456	51,804	406	12,645	3,358
Totals in 1907:							
In train accidents	410	9,070	1,011	8,924	—	—	—
In other than train accidents	237	4,527	3,342	53,765	—	—	—
All classes of accidents	647	13,597	4,353	62,689	—	—	—

The same cause which accounted for the remarkable recession of railway casualties in 1908 was still operative in a more marked degree throughout 1909, as evidenced in the above table. Here is shown a reduction from 1907 of 68% in fatalities to passengers in train accidents and of nearly 50% in those to employes. Even in all classes of accidents the decrease is almost as striking. A drop from 647 to 335 in fatalities to passengers and from 4,353 to 2,456 in fatalities to employes, resulting from whatever cause, should be a matter for national congratulation and thanksgiving.

That the facts herein set forth should have no lesson for national authorities beyond moving them to appeal for additional control of safety appliances is nothing short of a national scandal. As for safety devices, the railways in 1907 were practically as well equipped as in 1909. The percentage operated under the protection of block signals was 27.1% in 1909 against 26.2% in 1907, a difference inappreciable as compared with the recorded difference in fatalities. The government inspectors reported the equipment

in better condition in 1907 than for any previous year by fully 30%, and yet that was the worst year in the annals of railway accidents.

An English writer (H. Raynor Wilson), his vision unobscured by the propinquity of patent devices, has placed his finger on the true cause of the reduction in railway accidents in the United States in 1908 and 1909 when writing in "The Safety of British Railways" he says:

> "Experience in America during the period of depression that has prevailed since the summer of 1907 shows that fewer accidents occur during such times. There are not so many goods trains, the men are less 'pushed,' they work fewer hours, and the careless and indifferent are weeded out."

But we do not have to go to England for a convincing analysis of the causes of the remarkable decrease in accidents on American railways in 1908 and 1909. In the presence of similar conditions Statistician Adams in his official report for 1894 penned the following:

> "Another explanation may be suggested for this decrease in casualties to railway employes. The character of equipment used during the year covered by this report was undoubtedly of a higher grade than in previous years. A large number of old cars of abandoned type were destroyed during the year, while there was an increase in the better grades of cars equipped with train brakes and automatic couplers. This, however, is a suggestion merely, there being no statistical proof of any relation between a higher grade equipment and the decrease of accidents to employes. It is also probable, in view of the fact that liability to accident is increased by the employment of the shiftless and unskilled, that the grade of labor was raised through the discharge of so large a number of employes. This latter suggestion

finds support in the fact that the ratio of casualties in the Southern States, where the grade of labor is somewhat inferior, has for a series of years been higher than in the Northern and Eastern States."

With a continuation of similar conditions as to traffic and labor throughout 1895, the Official Statistician, having not yet accepted the theory that violation of rules, carelessness and negligence are amenable to patent appliances, emphasized the concluding suggestion of his 1894 report in these terms:

"From the above comparative statement it is clear that the year ending June 30, 1895, is more satisfactory, so far as accidents are concerned, than any previous year. Reference was made in last year's report to the fact that the marked reduction in the pay roll of the railways, by which the incompetent and inefficient were dropped from the railway service, and the consignment to the scrap heap of equipment worn out or out of date, were largely responsible for the greater safety in railway travel and railway employment shown by the statistics of the year. The result of raising the character of the railway service and grade of railway equipment is yet more marked during the present year, and to this must be added the fact that the demands upon the passenger service during the present year have been somewhat decreased. It is also worthy of suggestion, although the facts yet at command are not adequate for confident assertion, that the fitting of equipment with automatic devices is beginning to show beneficial results."

From that year to this the fitting of equipment with automatic devices has proceeded with uninterrupted despatch. Where in 1895 only 27.7% of it was equipped with train brakes and 31.3% with automatic couplers, in 1907 the Commission

reported 94.4% equipped with train brakes and 99% with automatic couplers. In every form of mechanical safety device the railway equipment of 1907 was incomparably better than in 1895, and yet the number of fatal accidents to employes in 1907 exceeded those in 1895 seven to three and to passengers three and four-fifths to one. In the matter of deaths in coupling accidents alone are "beneficial results" traceable to automatic safety devices. The character of the men in the service, their automatic observance of regulations, intelligence and alert devotion to duty are the best preventives of railway accidents, and the conditions prevalent after the panics of 1893 and 1907 are conducive to these conditions.

It is not likely, however, that the American people will welcome experiences, even in homeopathic doses, such as we knew in 1904, as the cure for railway accidents. But from the lessons of every depression, as read in the statistics of railway fatalities, the American people have a right to expect their representatives in federal and state legislatures to learn that the prevention of railway accidents rests on the intelligence, vigilance and experience of the man and not with the multiplication of devices. Automatic obedience to rules will prevent more accidents than all the safety devices that cumber the shelves of the Patent Office at Washington. Invention, however, is easier to the average American than plain everyday observance of rules. Besides the selling of devices to railways is a profitable business.

Accidents Increase in 1909-10.

Accident Bulletin No. 33 for the first quarter of the

current fiscal year shows the unfavorable turn in casualties always attendant on reviving business. Given in brief the figures are as follows:

CASUALTIES TO PERSONS, JULY, AUGUST AND SEPTEMBER, 1909.

Class	Killed	Injured
To passengers:		
From accidents to trains	56	2,325
By accidents from other causes	48	2,088
To employes:		
From accidents to trains	137	1,427
By accidents from other causes	611	13,401
Total classes	852	19,241
Corresponding quarter 1908	734	16,545

As this report goes to press, the Commission, through the Associated Press, has issued a summary of Accident Bulletin No. 34 which states that there were 1,073 persons (105 passengers and 969 employes) killed and 21,849 injured on the steam railways of the United States during the three months ending December 31, 1909.

This shows an increase over the corresponding quarter last year of 275 killed and 5,003 injured. For the same quarter in 1907 the killed were 1,092; in 1906, 1,430; and in 1905, 1,109. As the quarter ending December 31, 1909, saw railway traffic at its highest pressure, it shows an improvement over the records of 1907, '06 and '05.

The number injured is the highest ever recorded for three months, surpassing the quarter ending September 30, 1907, however, by only 126. But as

explained elsewhere, "injuries" is too elastic a term for comparative statistics.

ACCIDENTS TO OTHER PERSONS.

Where the quarterly Bulletins of the Commission make no mention of the accidents to persons other than passengers and employes, the annual reports of the carriers supply the missing data as to "Other Persons." These include casualties at highway crossings, to trespassers, persons walking, standing or sleeping on the track, workmen in railway shops and all other accidents directly or indirectly connected with the transportation industry. Accidents to "Other Persons" cover over 60% of all fatalities charged to the railways and of these over 80% are to trespassers.

The returns to this Bureau show the following casualties to persons other than passengers and employes during the year ending June 30, 1909:

Class	Killed	Injured
Trespassers (including suicides)	4,919	5,697
Not trespassing	820	3,069
Total other persons	5,739	8,766

These figures warrant the estimate that the total number of trespassers and other persons killed and injured in the United States in 1909 through the operation of railways was approximately 5,978 and 9,132 respectively. This marks a decrease from 1908, but not nearly so great as in the case of passengers and employes.

FATALITIES IN RAILWAY ACCIDENTS SINCE 1888.

We are now enabled to present a complete statement of the fatalities connected with the transportation industry since the Commission began compiling casualty statistics in 1888. The figures in this summary are confined to fatalities, for the reason given by the Commission that it "is well known the term 'injury,' as used in statistics of this character, is elastic." As a matter of fact the terms injury and casualty are so individually or locally indefinite and variable as to have little or no statistical value.

PASSENGERS, EMPLOYES AND OTHER PERSONS KILLED IN RAILWAY ACCIDENTS FROM 1888 TO 1908.

Year	Passengers	Employes	Other Persons		Total
			Trespassers	Not Trespassing	
1909	335	2,456	5,124	854	8,769
1908	406	3,358	5,560	940	10,264
1907	647	4,353	5,612	1,044	11,656
1906	359	3,929	5,381	949	10,618
1905	537	3,361	4,865	940	9,703
1904	441	3,632	5,105	868	10,046
1903	355	3,606	5,000	879	9,840
1902	345	2,969	4,403	871	8,588
1901	282	2,675	4,601	897	8,455
1900	249	2,550	4,346	660	7,865
1899	239	2,210	4,040	634	7,123
1898	221	1,958	4,063	617	6,859
1897	222	1,693	3,919	603	6,437
1896	181	1,861	3,811	595	6,448
1895	170	1,811	3,631	524	6,136
1894	324	1,823	3,720	580	6,447
1893	299	2,627	3,673	647	7,346
1892	376	2,554	3,603	614	7,147

1891	293	2,660	3,465	611	7,029
1890	286	2,451	3,062	536	6,335
1889	310	1,972	Not	(a)3,541	5,823
1888	315	2,070	given	(a)2,897	5,282

(a) Includes trespassers.

To the most casual student this table illustrates how railway accidents increase and decline with periods of business activity and recession. The effect of the panic of 1893-94 is seen in the decrease in accidents in 1895 and 1896. The temporary slowing up in 1904 is reflected in fewer fatalities in 1905, and a drop of 11% in the business of 1908 was followed by a decreased death roll of 12% for that year and 25% in 1909.

Relation of Accidents to Passenger Traffic.

The relation of railway accidents to passenger travel is most accurately measured in the following statement of the number of passengers carried one mile to one killed in train accidents during the years for which these statistics have been compiled:

Passengers Carried One Mile to One Killed.

Year	Passengers Killed in Train Accidents	Passengers Carried One Mile	Passengers Carried One Mile to One Killed
1909	131(a)	29,452,000,000	288,745,100
1908	165(b)	29,082,836,944	196,505,648
1907	410	27,718,554,030	72,802,600
1906	182	25,167,240,831	183,702,488
1905	350	23,800,149,436	68,000,427
1904	270	21,923,213,536	81,197,087

1903	164	20,915,763,881	127,535,745
1902	170	19,689,937,620	115,823,162
1901	110	17,353,588,444	157,759,894
1900	93	16,038,076,200	172,463,183
1899	83	14,591,327,613	175,799,127
1898	74	13,379,930,004	180,809,864
1897	96	12,256,939,647	127,676,454
1896	41	13,049,007,233	318,268,469
1895	30	12,188,446,271	406,281,542
1894	162	14,289,445,893	88,206,456
1893	100	14,229,101,084	142,291,010
1892	195	13,362,898,299	68,522,555
1891	110	12,844,243,881	116,765,853
1890	113	11,847,785,617	104,847,660
1889	161	11,553,820,445	71,762,859

(a) Of these only 102 were passengers in the ordinary sense of the term.

(b) Of these only 148 were passengers in the ordinary sense of the term.

The student has to go back to the years of continued business paralysis, 1895 and 1896, to find any record of immunity to passengers from fatalities in train accidents at all comparable with the conditions that prevailed in 1909.

Decreased Hazard to Train Crews.

Never in the history of American railways has the occupation of the men directly engaged in the operation of trains been as free from fatalities as during the year 1909. This is proved by the following statement showing the number of trainmen killed in all descriptions of accidents since the figures have been compiled, with the ratio to the number employed:

SUMMARY SHOWING NUMBER OF TRAINMEN KILLED IN RAILWAY ACCIDENTS 1889 TO 1909, WITH RATIO TO NUMBER EMPLOYED.

	Trainmen	Trainmen in Yards	Yard Trainmen Switching Crews	All Trainmen	Number of Trainmen for One Killed
1889	1,179	—	—	1,179	117
1890	1,459	—	—	1,459	105
1891	1,533	—	—	1,533	104
1892	1,503	—	—	1,503	113
1893	1,567	—	—	1,567	115
1894	1,029	—	—	1,029	156
1895	1,017	—	—	1,017	155
1896	1,073	—	—	1,073	152
1897	976	—	—	976	165
1898	1,141	—	—	1,141	150
1899	1,155	—	—	1,155	155
1900	1,396	—	—	1,396	137
1901	1,537	—	—	1,537	136
1902	1,507	—	—	1,507	135
1903	2,021	—	—	2,021	123
1904	1,181	487	488	2,156	120
1905	1,155	386	493	2,034	133
1906	1,360	400	575	2,335	124
1907	1,507	459	630	2,596	125
1908	1,097	362	496	1,955	150
1909	789	270	313	1,372	202

The figures of the Interstate Commerce Commission have only made the division of trainmen shown above since 1904. Here again the last column proves the relation of accidents to the ebb and flow of traffic.

Freight Traffic and Accidents.

The preponderating part played by the immense freight traffic of American railways as a cause of accidents is shown in the following analysis of the sixty "prominent collisions" described in the Commission's quarterly Accident Bulletins for the year 1909:

Kind of Train in Accident	Number of Collisions	Killed	Injured
Passenger and passenger	8	30	225
Freight and passenger	18	68	374
Freight and freight	34	47	91
Total	60	145	690

Here it will be observed freight trains were involved in 86.6% of the prominent collisions of the year and shared in responsibility for 79.3% of the fatalities. The proportion of injured in accidents to freight trains is not so great for the obvious reason that the number of persons exposed in collisions involving only freight trains is generally limited to train crews.

Causes of Train Accidents.

An examination of the causes given for the prominent collisions and derailments in the Accident Bulletins of the Commission since the passage of the Act of March 3, 1901, requiring the railway companies to make full monthly reports of all accidents affords the following general statement:

Cause	Number of Accidents
Negligence, error or forgetfulness of some member of train crew	241
Recklessness, carelessness, overlooking or disregarding orders or taking chances	233
Disobedience	53
Incompetence or inexperience	20
Defect of equipment, tires, wheels, etc.	64
Defect of roadway	24
Malicious acts	27
Misadventure, washouts, landslides, cyclones, etc.	91
Undiscovered	41
Total	794

Among the prominent derailments charged against the railways in the Bulletin for April, May and June, 1909, is the following, resulting in one killed and three injured.

> "Automobile running on track, derailed by running over a dog, one guest killed."

Through the inclusion in these Bulletins of accidents on trolley lines, their value as records of railway accidents is being greatly impaired. Without any information as to the number of passengers carried by the electric cars it is impossible to arrive at an accurate idea of the relation of accidents to traffic, and without this the mere record of accidents has little information value.

ACCIDENTS ON BRITISH RAILWAYS.

For a second time in their history, in the year ending December 31, 1908, British railways went through a twelvemonth without killing a single

passenger in a train accident, thus paralleling their record of 1901 in this respect. In the matter of passengers injured, the year 1908 showed a remarkable improvement, not only over 1901 but over any other year in the history of British railways. When it comes to the totals of casualties, however, 1908 shows little variation from the average record.

The following table shows the total number of persons killed and injured in the working of British railways, as reported to the Board of Trade for the calendar year 1908 as compared with 1901:

Class	1908		1901	
	Killed	Injured	Killed	Injured
Passengers:				
In accidents to trains	—	283	—	476
By accidents from other causes	107	3,105	135	2,269
Total passengers	107	3,388	135	2,745
Employes:				
In accidents to trains	6	164	8	156
By accidents from other causes	426	24,017	568	14,522
Total employes	432	24,181	576	14,678
Other persons:				
Accidents to trains	—	7	3	5
While passing over railways at level crossings	51	44	55	26

While trespassing on line (including suicides)	479	118	426	171
Not coming under above classification	59	747	82	750
Total other persons	589	916	566	952
Grand total all classes, 1908	1,128	28,485	1,277	18,375
" " " " 1907	1,211	25,975	—	—
" " " " 1906	1,252	20,444	—	—
" " " " 1905	1,180	18,236	—	—
" " " " 1904	1,158	18,802	—	—
" " " " 1903	1,262	18,557	—	—
" " " " 1902	1,171	17,814	—	—
" " " " 1901	1,277	18,375	—	—
" " " " 1900	1,325	19,572	—	—
" " " " 1899	1,340	19,155	—	—
Total, ten years	12,294	205,415	—	—

As one year of traffic on American railways approximates ten years on British railways, the above totals for ten years on the latter may be compared with 8769 killed and 73,052 injured on the former last year, or with 11,839 killed and 111,016 injured in 1907, the darkest year in the annals of American railway accidents.

Attention is asked to the apparently startling increase in injuries on British railways since 1905. The increase is absolutely fictitious, having resulted from "a change in the definition of a reportable accident," and not from any greater hazard in the working of British roads. This confirms the objection, expressed in the report of the British Board of Trade in 1903, to any changes in the form of tables extending over a long series of years that "admit of comparisons, which any change of form would invalidate if not destroy."

It will be perceived that the mere change in the definition of what constitutes a reportable accident increased the number of injuries reported against British railways fully 50%. This justifies the writer's view that comparisons of injuries in railway accidents are of little value. Even the same injury does not affect two persons in the same degree. One "hollers" and cries for a doctor where the other whistles and goes on with his work.

The inquiries of the Board of Trade into the causes of British railway accidents in 1908 confirm former findings that, exclusive of train accidents, in the case of passengers "they mostly arise from carelessness of the passengers themselves," and the same is true of the vast majority of accidents to employes.

Overwork and Railway Accidents.

At last the statistics of the British Board of Trade furnish what well nigh amounts to demonstration that long hours play very little part as an actual cause of railway accidents. Under the statute the Board requires reports of all instances of periods of duty in excess of twelve hours worked on British railways. For the month of October, 1908, the

returns show 31,052 excess hours worked out of 2,773,891; and for October, 1909, 24,486 out of 2,695,036, or an excess of 1.12% in 1908 and .92%, in 1909.

Now, out of 861 accidents investigated in 1908, only 16, or 1.85%, occurred to men working in excess of 12 hours; and out of 804 investigated in 1909 only 9, or 1.12%. This bears out the opinion of a high English official, that experience "does not show any close connection between long hours and accidents."

The following statement shows the relation of accidents to the hours the persons involved have been on duty on British railways for a period of five years:

HOURS WHEN BRITISH ACCIDENTS OCCUR.

Three months to	Off duty	Hours on Duty when Accidents Occurred													
		1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	1
Sept. 30, 1908	1	20	18	19	17	15	23	19	11	11	17	14	17	3	
Dec. 31, 1908	5	12	22	34	14	23	23	16	14	19	13	11	8	5	
March 31, 1909	4	14	16	29	28	16	17	18	19	11	12	15	7	0	
June 30, 1909	1	15	16	10	19	15	14	15	16	24	12	11	5	0	
Year 1909	11	61	72	92	78	69	77	68	60	65	54	51	37	8	
Year 1908	6	60	103	83	85	77	81	72	70	63	57	53	35	8	
Year 1907	1	70	86	78	78	71	64	59	48	68	62	43	35	14	
Year 1906	6	52	64	70	86	63	81	68	70	71	61	42	39	7	
Year 1905	3	52	74	65	54	71	66	59	48	53	56	41	37	7	
Five years	27	295	399	388	381	351	369	326	296	320	290	230	183	44	

It will be observed that out of these 3,945 accidents investigated and reported on by British inspectors during the years 1905 to 1909, inclusive, a majority happened during the first half of the twelve hours for which the men were booked and 2.28% when they were working overtime. In no instance was the accident attributed to long hours.

Railway Accidents in Europe.

Excluding the returns of injured, for the reason that no two countries have a common definition of a reportable injury, the accidents on European railways, according to the latest reports, resulted in the following fatalities:

Killed in European Railway Accidents.
(Total mileage represented 182,459.)

Country	Year	Passengers	Employes	Other Persons	Total	Precedi Year
United Kingdom	1908	107	432	587	1,128	1,211
Germany	1908	105	604	644	1,353	1,558
Russia in Europe	1905	231	478	1,149	1,858	1,632
France	1907	(a)36	322	(b)301	659	627
Austria	1907	11	147	145	303	213
Hungary	1907	32	138	172	343	319
Italy	1907-8	(c)42	105	115	262	277
Spain	1907	25	64	213	302	219
Portugal	1904	—	—	—	55	—
Sweden	1906	10	45	57	112	105
Norway	1908	1	4	6	11	9
Denmark	1907-8	(c)1	20	9	30	22
Belgium	1907	4	72	70	146	125
Holland	1907	3	18	25	46	60
Switzerland	1907	14	45	36	95	78

Roumania	1907-8	8	42	50	100	103
Totals	—	630	2,536	3,580	6,803	6,595

(a) Train accidents only; other accidents to passengers included under "Other Persons."

(b) Excluding suicides.

(c) Statistics cover State railways only.

These figures, representing a European mileage of 182,459, may be compared with those of the United States in 1897 when it had 183,284 miles of line and an accident record of 222 fatalities to passengers, 1,693 to employes and 4,522 to other persons; or even with the American record for 1909, when with a mileage 27% greater the record stood 335 fatalities to passengers, 2,456 to employes and 5,978 to other persons. The excess of fatalities to other persons in this country is due to the notorious indifference to danger and law of all classes of citizens in using railway right of way as a common thoroughfare for adults and playground for children. Despite the elevation of the tracks in Chicago, the writer has seen scores of youngsters scarcely able to walk playing on those raised tracks and laughing at the locomotives as they went shrieking by.

In all comparisons of accidents on American railways with those on foreign roads, it should be remembered that our excess of mileage and freight traffic more than balance their density of passenger traffic and that nowhere else on earth is railway right of way common to foolhardy pedestrians and creeping children.

The Railroad Commission of Indiana is to be commended for its efforts to enlist public sentiment against trespassing on railway tracks.

XIII

RAILWAY RECEIVERSHIPS IN 1909

Only five railway companies, operating 859 miles of line, went into the hands of receivers during the calendar year 1909, as compared with 24 companies, operating 8,009 miles, for the preceding year. The capitalization of these five roads was $78,095,000, against $596,359,000 for those financially involved in 1908. The following statement gives the names, mileage, funded debt and capital stock of the roads for which receivers were appointed in 1909:

	Mileage	Funded Debt	Stock
Atlanta, Birmingham & Atlantic	572	$18,533,000	$35,000,000
Alabama Terminal	—	2,445,000	3,000,000
Georgia Terminal	—	3,000,000	1,500,000
Yellowstone Park	32	696,000	696,000
Chicago, Peoria & St. Louis	255	5,875,000	7,350,000
Total	859	$30,549,000	$47,546,000

The number, mileage and capitalization of the railways that have failed since 1875 are as follows, the figures being from the *Railroad Age Gazette*:

RECEIVERSHIPS SINCE 1876.

	Roads	Miles	Bonds and Stock		Roads	Miles	Bonds Stoc

1876	42	6,662	$467,000	1893	74	29,340	1,781,
1877	38	3,637	220,294	1894	38	7,025	395,
1878	27	2,320	92,385	1895	31	4,089	369,
1879	12	1,102	39,367	1896	34	5,441	275,
1880	13	885	140,265	1897	18	1,537	92,
1881	5	110	3,742	1898	18	2,069	138,
1882	12	912	39,074	1899	10	1,019	52,
1883	11	1,990	108,470	1900	16	1,165	78,
1884	37	11,038	714,755	1901	4	73	1,
1885	44	8,836	385,460	1902	5	278	5,
1886	13	1,799	70,346	1903	9	229	18,
1887	9	1,046	90,318	1904	8	744	36,
1888	22	3,270	186,814	1905	10	3,593	176,
1889	22	3,803	99,664	1906	6	204	55,
1890	26	2,963	105,007	1907	7	317	13,
1891	26	2,159	84,479	1908	24	8,009	596,
1892	36	10,508	357,692	1909	5	859	78,
Total, 34 years					712	128,498	$7,370,

[Three figures omitted in bonds and stock column.]

XIV

COST OF RAILWAY REGULATION

Nothing in the record of railway development in the United States has increased with the rapidity of the cost of their regulation under the act creating the Interstate Commerce Commission. Since the first Commission, composed of Judge Thomas M. Cooley, of Michigan, chairman, William R. Morrison, of Illinois, Augustus Schoonmaker, of New York, Aldace F. Walker of Vermont, and Walter L. Bragg, of

Alabama, Commissioners, and Edward E. Moseley, Secretary, and Prof. Henry C. Adams, Statistician, to date the yearly expenditures on its account have been as follows:

1888	Five	Commissioners	$97,867
1889	"	"	149,453
1890	"	"	180,440
1891	"	"	214,844
1892	"	"	221,745
1893	"	"	217,792
1894	"	"	209,250
1895	"	"	216,206
1896	"	"	234,941
1897	"	"	234,909
1898	"	"	237,358
1899	"	"	238,125
1900	"	"	243,624
1901	"	"	255,979
1902	"	"	271,728
1903	"	"	298,842
1904	"	"	321,533
1905	"	"	330,739
1906	"	"	382,141
1907	Seven	Commissioners	538,827
1908	"	"	736,530
1909	"	"	988,936

From this it appears that the cost of regulating American railways has increased tenfold in twenty years. Of this only $34,000 is chargeable to the increase in number and compensation for the Commission under the Hepburn Act. Of the balance it was charged by Representative Adair of Indiana in a speech in Congress last January that $450,000 annually was for "Interstate Commerce Detectives."

XV

STATISTICS OF FOREIGN RAILWAYS

In the following review of the mileage and traffic statistics of the principal divisions of Europe and other countries, the information has been derived from the latest official sources wherever available, and where estimates have been resorted to as noted they have been computed from ascertained facts.

Country	Year	Miles Covered by Capital-ization	Capitalization or Cost of Construction	Passenger Revenues	Freig Rever
United Kingdom	1908	23,205	$6,382,296,742	$207,539,004	$286,7
German Empire	1908	35,558	3,903,848,400	178,100,400	412,6
France	1907	24,817	3,455,436,000	145,355,448	176,6
Russia in Europe	1905	31,545	(b)3,170,876,360	58,813,500	221,9
Austria	1907	13,427	1,515,576,800	41,716,800	122,2
Hungary	1907	11,769	741,586,200	20,836,800	54,6
Italy(a)	1907-8	8,762	(c)1,091,608,000	31,149,886	51,2
Spain	1905	8,432	649,919,610	16,215,866	34,6
Portugal	1905	1,425	162,385,280	4,014,196	5,3
Sweden	1906	7,938	267,408,450	10,665,270	21,0
Norway	1908	1,608	61,841,610	2,253,420	3,0
Denmark(a)	1907-8	1,191	59,806,620	5,111,910	5,2
Belgium	1907	2,871	(d)451,592,980	18,340,790	38,5
Holland	1907	2,225	191,821,000	10,978,400	10,6
Switzerland	1907	2,740	303,426,747	16,222,422	21,2
Roumania	1907-8	1,979	183,492,074	5,089,191	10,2
Canada	1909	24,104	1,608,963,337	39,073,488	95,7
Argentine	1907	13,690	820,433,280	19,853,760	56,5

Japan(a)	1908	3,982	190,173,728	18,786,895	14,6
British India	1908	30,809	1,336,005,760	55,132,160	84,2
New South Wales	1909	3,623	231,870,440	8,380,744	14,4
Total		255,700	$26,780,369,418	$913,630,350	$1,741,8
United States	1908	230,494	(e)12,840,091,462	566,832,746	1,665,4

(a) State only.

(b) Including Siberian.

(c) 1906-7.

(d) State only. 2,543 miles.

(e) Exclusive of switching and terminal companies (1,626 miles).

Transcriber Note: The table below is a continuation of the table above. These two tables were on facing pages in the original text.

Operating Expenses	Per Cent Expense to Revenue	Passengers Carried	Average Journey Miles	Freight Tons Carried	Average Haul (Miles)	Pe Cer Ne Rever to Capi
$372,103,990	63.7	1,725,631,620	7.8	491,595,056	25.0	3.3
476,290,080	73.6	1,361,655,150	14.1	461,296,759	61.6	4.5
183,444,503	55.9	474,335,306	19.9	156,504,353	78.8	4.1
216,987,500	67.8	116,441,000	73.2	156,129,875	151.1	3.7
120,103,800	70.8	223,717,302	19.1	151,941,132	53.7	3.2
53,309,000	67.6	107,171,000	21.4	61,483,000	69.5	3.
73,735,071	82.6	64,276,501	25.0(f)	32,635,763	66.0(f)	1.
27,750,936	48.6	41,846,249	26.0(f)	22,662,548	69.4	4.
4,426,236	45.3	13,446,043	20.0(f)	3,775,559	54.0(f)	3.
21,624,840	66.3	46,452,445	16.8	31,961,244	43.4	4.2
3,727,620	69.1	10,679,732	15.5	4,501,455	35.4	2.5
9,344,430	84.5	20,818,639	21.7	4,726,757	55.1	2.9
38,428,809	64.4	181,216,314	14.0	72,494,073	43.5	4.7
19,174,400	83.6	42,319,000	18.4	15,924,600	53.8	1.9
26,311,883	67.3	97,752,465	12.8	17,411,711	69.5	3.
9,587,468	60.0	8,193,037	42.2	6,796,315	55.9	3.5
104,600,082	72.1	32,683,309	62.0	66,842,258	197.0	2.5
56,198,080	67.7	41,911,512	25.2	27,933,828	115.9	3.9
17,875,971	51.2	101,115,739	23.3	18,312,223	78.7	8.
86,408,000	60.2	321,169,000	37.7	62,398,000	159.1	4.3
14,380,252	58.7	52,051,556	11.1	9,298,929	68.4	4.3
$1,935,812,951	66.1	5,084,882,919	16.52	1,876,625,438	66.7	3.7
1,669,547,876	69.75	890,009,574	32.66	1,532,981,790	142.5	4.1

(a) State only.

(b) Including Siberian.
(c) 1906-7.
(d) State only. 2,543 miles.
(e) Exclusive of switching and terminal companies (1,626 miles).
(f) Estimated.

From the data here furnished it is possible to arrive at a close approximation of the passenger and freight rates in the countries named. The average passenger journey and freight haul in the United States is nearly twice as long as the average for the rest of the world. In comparing net results it should be remembered that rentals and taxes should be deducted from the American figures.

For further details of the railways of Canada, the United Kingdom and the German Empire, for which complete statistics are available, the reader is referred to succeeding pages.

Here the writer would acknowledge the courtesy of the Railway Department of Canada for advance copies of the Dominion railway statistics for 1909.

Railways of Canada.

Statistics of the Railways of the Dominion for the Years Ending June 30, 1907, 1908 and 1909.

	1907	1908	1909
Miles of line operated	22,608	22,966	24,104
Second track	1,096	1,211	1,464
Yard track and sidings	4,092	4,546	4,761
All tracks	27,796	28,723	30,329

Capital cost:			
Stock	$588,563,591	$607,425,349	$647,534,647
Funded debt	583,369,217	631,869,664	660,946,769
Government railways	100,958,402	109,423,104	111,545,903
Subsidies	162,017,157	166,291,482	188,963,337
Total capital cost	$1,434,908,367	$1,515,009,599	$1,608,990,656
Per mile of line	63,910	65,968	66,752
Passenger traffic:			
Passengers carried	32,137,319	34,044,992	32,683,309
Passengers carried 1 mile	2,049,549,813	2,081,960,864	2,033,001,225
Average journey (miles)	64	61	62
Average passengers per train	56	54	51
Mileage of passenger trains	30,220,461	31,950,349	32,295,730
Mileage of mixed trains	5,971,414	6,210,807	7,061,580
Receipts from passengers	$39,184,437	$39,992,503	$39,073,488
Receipts per passenger mile (cents)	1.911	1.920	1.921
Freight traffic:			
Tons carried	56,497,885	63,019,900	66,842,258
Tons carried 1 mile	11,687,711,830	12,961,512,519	12,961,512,519
Average haul (miles)	183	206	197
Freight train mileage	38,923,890	40,476,370	40,304,906
Average tons per train	260	278	278

Receipts from freight	$94,995,087	$93,746,655	$95,714,783
Receipts per ton mile (mills)	8.12	7.23	7.27
Miscellaneous receipts	$12,558,689	$13,179,155	$10,268,065
Total receipts	146,738,214	146,918,313	145,056,336
Expenses of operation:			
Way and structures	$20,887,092	$20,778,610	$21,153,274
Maintenance of equipment	21,666,373	20,273,626	21,510,303
Conducting transportation	57,325,543	62,486,270	54,284,587
General expenses	3,869,664	3,765,636	3,853,094
Traffic expenses	—	—	3,798,824
Total expenses	$103,748,672	$107,304,142	$104,600,082
Ratio to earnings	70.72%	73.04%	72.11%
Net receipts	$42,989,552	$39,614,171	$40,456,251
Percentage to capital cost	3.00%	2.61%	2.51%
Gross receipts per mile	$6,535	$6,398	$6,018
Gross expenses per mile	4,621	4,672	4,339
Number of employes	124,012	106,404	125,195
Compensation	$58,719,493	$60,376,607	$63,216,662
Proportion of gross earnings	40.02%	41.10%	43.58%
Proportion of operating expenses	56.61%	56.27%	60.43%
Average per employe per year	$473	$569	$505

Railways of the United Kingdom.

Statistics of Mileage, Capitalization, and Traffic for the Years 1907 and 1908.

	1907	1908
Length of railways:		
Double track or more (miles)	12,845	12,926
Single track	10,263	10,279
Total length of line	23,108	23,205
Total length, all tracks, sidings, etc.	53,158	53,669
Total capitalization (paid up)	$6,302,099,773	$6,382,296,742
Capitalization per mile of line	272,723	275,040
Passenger traffic:		
Passengers carried	1,259,481,000	1,278,115,000
Season ticket journeys	445,101,956	447,516,620
Passengers carried one mile	13,295,747,058	13,459,926,636
Average journey (miles)	7.8	7.8
Receipts from passengers	$205,036,740	$207,539,004
Average receipts per passenger per mile (cents)	1.54	1.542
Mail and other passenger train receipts	$43,213,632	$44,067,043
Freight traffic:		
Minerals, tons carried	407,602,177	388,424,541

General merchandise	108,284,939	103,170,515
Total freight, tons	515,887,116	491,595,056
Tons carried one mile	12,897,177,900	12,289,876,400
Average haul (miles)	25	25
Receipts from freight	$298,058,610	$286,786,249
Average receipts per ton mile (cents)	2.31	2.333
Miscellaneous receipts	$45,634,648	$45,493,075
Total receipts	$591,943,630	$583,885,371
Expenses of operation	373,085,840	372,103,990
Ratio of expenses to earnings	63.0	63.75
Net receipts	$218,857,790	—
Percentage to total paid-up capital	3.47	—
Gross receipts per mile	$25,616	$25,162
Gross expenses per mile	16,165	16,035
Number of employes	621,341	(a)621,341
Total compensation	$158,116,560	$156,348,915
Proportion of gross earnings	26.7	26.78
Proportion of operating expenses	42.4	42.02
Average per employe per year	$254.47	$251.78

(a) No enumeration of employes has been made since 1907, the last preceding, in 1904, gave a total of 581,664.

RAILWAYS OF GERMANY.

STATISTICS OF MILEAGE, COST OF CONSTRUCTION, AND TRAFFIC FOR THE YEARS 1906, 1907 AND 1908.

	1906	1907	1908

Length of State railways (miles)	32,050	32,367	32,922
Length of private railways	2,513	2,613	2,636
Total	34,563	34,980	35,558
Cost of construction	$3,613,493,706	$3,767,220,777	$3,903,848,400
Cost per mile	104,548	107,694	109,788
Passenger traffic:			
Passengers carried	1,209,224,072	1,294,881,923	1,361,655,150
Passengers carried (one mile)	17,189,336,940	18,372,644,327	19,202,935,120
Average journey (miles)	14.21	14.18	14.10
Receipts from passengers	$170,165,002	$172,339,593	$178,100,400
Receipts per passenger per mile (cents)	0.99	0.94	0.93
Freight traffic:			
Fast freight and express:			
Tons carried	3,791,769	3,935,538	4,013,970
Tons carried 1 mile	265,115,720	272,898,271	269,726,040
Average haul (miles)	69.91	69.34	66.96
Receipts from same	$16,924,080	$17,295,969	$17,015,040
Receipts per ton mile (cents)	6.38	6.34	6.32

All freight:			
Tons carried	455,144,382	484,147,325	461,296,759
Tons carried one mile	28,118,620,680	29,702,981,149	29,420,680,340
Average haul (miles)	61.78	61.35	61.60
Receipts from freight	$397,580,738	$418,021,052	$412,635,760
Receipts per ton mile (cents)	1.41	1.41	1.42
Miscellaneous receipts	$63,151,060	$68,413,909	$56,715,200
Total receipts	$630,796,800	$658,774,554	$647,451,503
Expenses of operation	407,174,400	454,610,032	476,290,080
Ratio expenses to earnings	64.5	69.1	73.6
Net receipts	$223,622,400	$204,645,522	$171,261,040
Percentage on cost of construction	6.18	5.42	4.51
Gross receipts per mile	$18,251	$18,833	$28,173
Gross expenses per mile	11,780	12,996	13,489
Number of employes	648,437	695,557	699,155
Total compensation	$219,390,932	$245,389,859	$259,606,560
Proportion of gross earnings	34.78	37.25	40.10
Proportion of operating expenses	53.88	53.98	54.50
Average per employe per year	$338.35	$352.82	$371.00

Mark the increased capital cost per mile and in proportion of wages to earnings, and the increased ratio of net earnings to cost of construction. Then figure how long it will take at this rate before the German people are taxed to support their railways or by increased rates because the railways have been run for politics and not for the people.

XVI

GROWTH OF RAILWAYS

In three-quarters of a century American railways, from small beginnings in Pennsylvania in 1827, Maryland in 1828, South Carolina in 1830, and New York and Massachusetts in 1831, show the following remarkable growth by decades:

PROGRESS OF RAILWAYS IN THE UNITED STATES SINCE 1

States	1835	1840	1850	1860	1870	1880	189
Alabama	46	46	75	743	1,429	1,851	3,1
Arkansas	—	—	—	38	256	896	2,1
California	—	—	—	23	925	2,220	4,1
Colorado	—	—	—	—	157	1,531	4,1
Connecticut	—	102	402	601	742	954	1,0
Delaware	16	39	39	127	224	280	3
Florida	—	—	21	402	446	530	2,3
Georgia	—	185	643	1,420	1,845	2,535	4,1
Idaho	—	—	—	—	—	220	9
Illinois	—	—	111	2,799	4,823	7,955	9,8

Indiana	—	—	228	2,163	3,177	5,454	5,8
Iowa	—	—	—	655	2,683	5,235	8,3
Kansas	—	—	—	—	1,501	3,439	8,8
Kentucky	15	28	78	534	1,017	1,598	2,6
Louisiana	40	40	80	335	479	633	1,6
Maine	—	11	245	472	786	1,013	1,3
Maryland and D.C.	117	213	259	386	671	1,012	1,1
Massachusetts	113	301	1,035	1,264	1,480	1,893	2,0
Michigan	—	50	342	779	1,638	3,931	6,7
Minnesota	—	—	—	—	1,072	3,108	5,4
Mississippi	—	—	75	862	990	1,183	2,2
Missouri	—	—	—	817	2,000	4,011	5,8
Montana	—	—	—	—	—	48	2,1
Nebraska	—	—	—	—	1,812	2,000	5,2
Nevada	—	—	—	—	593	769	9
New Hampshire	—	53	467	661	736	1,015	1,1
New Jersey	99	186	206	560	1,125	1,701	2,0
New York	104	374	1,361	2,682	3,928	6,019	7,4
North Carolina	—	53	154	937	1,178	1,499	2,9
North Dakota	—	—	—	—	35	635	1,9
Ohio	—	30	575	2,946	3,538	5,912	7,7
Oklahoma	—	—	—	—	—	275	1,2
Oregon	—	—	—	—	159	582	1,2
Pennsylvania	318	754	1,240	2,598	4,656	6,243	8,3
Rhode Island	—	50	68	108	136	210	2
South Carolina	137	137	289	973	1,139	1,429	2,0
South Dakota	—	—	—	—	30	630	2,4
Tennessee	—	—	—	1,253	1,492	1,824	2,7
Texas	—	—	—	307	711	3,293	7,9
Utah	—	—	—	—	257	770	1,0
Vermont	—	—	290	554	614	912	9
Virginia	93	147	384	1,379	1,486	1,826	3,1
Washington	—	—	—	—	—	274	1,6
West Virginia	—	—	—	—	387	694	1,3
Wisconsin	—	—	20	905	1,525	3,130	5,4
Wyoming	—	—	—	—	—	472	9
Arizona	—	—	—	—	—	384	1,0
New Mexico	—	—	—	—	—	643	1,2

Total	1,098	2,818	9,021	30,635	52,922	93,671	159,2

The most striking feature of this statement is the number of states devoid of railway mileage previous to 1870, which since then the railways have converted into mighty commonwealths whose resources have been multiplied "some thirty fold, some sixty and some an hundred". And those to which the railways have made the greatest prosperity possible are the states whose politicians today are trying the hardest to muzzle the ox that treads out the corn for their people.

Growth of Railways of the World.

In the following table is given the mileage of the principal countries in the world from the earliest date available to the latest:

Country	Miles of Road Completed						
	Opened	1840	1850	1860	1870	1880	1889
Great Britain	1825	1,857	6,621	10,433	15,537	17,933	19,943
United States	1827	2,818	9,021	30,626	52,922	93,296	160,544
Canada	1836	16	66	2,065	2,617	7,194	12,585
France	1828	—	1,714	5,700	11,142	16,275	21,899
Germany	1835	341	3,637	6,979	11,729	20,693	24,845
Belgium	1835	207	554	1,074	1,799	2,399	2,776
Austria (proper)	1837	—	817	1,813	3,790	7,083	9,345
Russia in Europe	1838	—	310	988	7,098	14,026	17,534
Italy	1839	13	265	1,117	3,825	5,340	7,830
Holland	1839	10	110	208	874	1,143	1,632
Switzerland	1844	—	15	653	885	1,596	1,869
Hungary	1846	—	137	1,004	2,157	4,421	6,751

Denmark	1847	—	20	69	470	975	1,217
Spain	1848	—	17	1,190	3,400	4,550	5,951
Chili	1851	—	—	120	452	1,100	1,801
Brazil	1851	—	—	134	504	2,174	5,546
Norway	1854	—	—	42	692	970	970
Sweden	1858	—	—	375	1,089	3,654	4,899
Argentine Republic	1857	—	—	—	637	1,536	4,506
Turkey in Europe	—	—	—	41	392	727	1,024
Peru	—	—	—	47	247	1,179	993
Portugal	—	—	—	42	444	710	1,188
Greece	1869	—	—	—	6	7	416
Uruguay	1869	—	—	—	61	268	399
Mexico	1868	—	—	—	215	655	5,012
Roumania	—	—	—	—	152	859	1,537
Australia(a)	—	—	—	—	—	789	4,850
Japan	1874	—	—	—	—	75	542
British India	1853	—	—	838	4,771	9,162	15,887
China	1883	—	—	—	—	—	124
Africa	—	—	—	—	—	583	2,873

(a) Including New Zealand.

(b) Or latest figures.

RECOMMENDATIONS

In conclusion I would reiterate the following recommendations:

RAILWAY STATISTICS.

That the Bureau of Railway Statistics and Accounts, now a division of the Interstate Commerce

Commission, be transferred to the Department of Commerce and Labor.

That its statistics be confined to the affairs of operating railway companies, the only carrier companies engaged in Interstate Commerce.

That its inquiries be confined to the data necessary to furnish the public with a comprehensive knowledge of railway conditions and operations in the United States from year to year.

That these statistics be devoted to publicity and not to the promotion of personal or official theories.

ACCIDENTS.

That Congress provide for an official investigation of all railway accidents in the United States along the lines so successfully adopted in the United Kingdom, and not in a spirit of hostility to the railways, as proposed in pending legislation.

This investigation should be through a Bureau of the Department of Commerce and Labor, composed as follows:

One Chief Inspector.

Ten District Inspectors, one for each Interstate Commerce group, appointed from Engineer service of the United States Army, with the rank of Major. This would insure fitness and impartiality for the work and valuable experience in regard to railway operations to the Army Engineers.

Three Deputy Inspectors for each group.

Three Assistant Inspectors for each group.

Several groups might require four inspectors of each class, and as many could get along with two.

Enough money could be deducted from the Interstate Commerce Commission appropriation to pay these officials liberally, so as to secure competent service, without crippling the legitimate work of the Commission.

Respectfully submitted,

SLASON THOMPSON.

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TRANSCRIBER'S NOTE

Fractions have been left in the form a/b except for ¼ ½ ¾. A dozen or so occurrences of 'nn a-b' have been changed to 'nn-a/b', mainly on pages 27-40, for consistency.

Footnote anchors in a table are of the form (a) and the corresponding Footnote is placed at the bottom of that table. Other Footnote anchors are of the form [A] with placement at the end of that Chapter.

Obvious typographical errors and punctuation errors have been corrected after careful comparison with other occurrences within the text and consultation of external sources.

The Table of Contents has been expanded to include the seventeen sections under the 'Statistics' chapter at page 291.

Except for those changes noted below, all misspellings in the text, and inconsistent or archaic usage, have been retained. For example: employes, employees; pay roll, pay-roll; reconnoissance; asperse.

Pg 15, 'would built' replaced by 'would build'.
Pg 19, 'incontestible' replaced by 'incontestable'.
Pg 38, column headings, copied from the earlier similar table on pg 36, have been added to this table for clarity.
Pg 42, 'transhipment' replaced by 'transshipment'.
Pg 97, 'Oamha' replaced by 'Omaha'.
Pg 97, 'remainding' replaced by 'remaining'.
Pg 133, 'uniformily' replaced by 'uniformly'.
Pg 177, missing Table Footnote '(a) January to July, only.' added.
Pg 181 Footnote [F], '89 and 95' replaced by '89 to 95'.
Pg 200, 'correst' replaced by 'correct'.
Pg 205, 'leachlike' replaced by 'leechlike'.
Pg 210, 'inocuous' replaced by 'innocuous'.
Pg 226, 'parlimentary' replaced by 'parliamentary'.
Pg 272, 'is practical' replaced by 'its practical'.
Pg 295, '(m = 1,000.)' replaced by '(m = 1,000; d = decrease.)'.
Pg 298, 'phenomenonally' replaced by 'phenomenally'.
Pg 316, 'direct charges' replaced by 'Indirect charges'.
Pg 316, '$250,635.34' replaced by '$240,635.34'.
Pg 318, Table 11th row, 'XII' replaced by 'XI'.
Pg 331, 'arbitraters' replaced by 'arbitrators'.

Pg 335, 'desponding' replaced by 'despondent'.
Pg 357, Table note (b), 'Bureau 99' replaced by 'Bureau in'.
Pg 357, Table note (b), 'December, in 10' replaced by 'December, is'.

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