

EMPLOYMENT OUTLOOK IN RAILROAD OCCUPATIONS



Duties
Qualifications
Outlook
Earnings
Working Conditions

UNITED STATES DEPARTMENT OF LABOR

Maurice J. Tobin, *Secretary*

OCCUPATIONAL OUTLOOK SERIES

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BUREAU OF LABOR STATISTICS

Ewan Clague, *Commissioner*

BULLETIN No. 961

Cover picture shows brakeman signaling to engineer.

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UNITED STATES

GOVERNMENT PRINTING OFFICE

WASHINGTON : 1949

For sale by the Superintendent of Documents, U. S. Government Printing Office.
Washington 25, D. C. - Price 30 cents

Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington, D. C., June 30, 1949.

The SECRETARY OF LABOR:

I have the honor to transmit herewith a report on the employment outlook in railroad occupations. This is one of a series of occupational studies prepared in the Bureau's Occupational Outlook Branch for use in vocational counseling of young people in school, veterans, and others interested in choosing a field of work.

The study was conducted under the supervision of Helen Wood. The report was prepared by Miss Wood, Gloria Count, and Raymond D. Larson. Samuel Vernoff assisted in the field work; Sylvia K. Lawrence and George Gryder, in the library and statistical research.

The Bureau wishes to express its appreciation to the many officials of the trade-unions, trade associations, railroad companies, and Government agencies who have provided valuable information or read all or part of the manuscript.

EWAN CLAGUE, *Commissioner.*

HON. MAURICE J. TOBIN,
Secretary of Labor.

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EMPLOYMENT OUTLOOK IN RAILROAD OCCUPATIONS

Introduction

The railroad industry is one of the giants of American enterprise, with about 1½ million workers, nearly 2 million cars and locomotives, and a vast network of lines connecting all parts of the United States. Railroads are such an essential and accepted part of our national life that it is hard to realize they were as novel and exciting a century ago as supersonic jet planes are today. They made their first bid for public attention in 1830 when a small steam engine raced a horse car at Baltimore, Md. Unfortunately this engine, the "Tom Thumb," had a break-down and lost the contest. It is nevertheless remembered as one of the first American-built locomotives to transport passengers for hire, and the year 1830 saw the beginning of a great railroad era.

The first links in our railroad network were small separate lines only a few miles long. They were located in the Northeastern and Middle Atlantic States, where most of the people in the country lived. These early railroads were built outwards from big cities, in order to reach as large a surrounding area as possible and thus bring more trade into the city. By the early 1840's the different short lines had begun to form a network joining such cities as Boston and Buffalo, until then many days' journey apart. Railroad building west of the Alleghenies began during the forties and went on so rapidly that by the middle fifties both Chicago and St. Louis had through rail connection with New York. In 1869 occurred the most dramatic event in railroad history—the completion of the first transcontinental route by the joining of the Union Pacific line from the West and the Central Pacific line from the East at Promontory Point, Utah.

The new means of transportation had a tremendous effect in increasing trade and travel and

developing the western part of the country. According to a report written about 1850: "Twelve years ago the fare of a passenger from Chicago, Ill. (by lake and rail to New York City), 1,500 miles, was \$74.50. It is now about \$17. Twelve years since the cost of transporting a bushel of wheat from Chicago to New York was so great as effectually to keep the grain of that country out of the market. Now a bushel of wheat is transported the whole distance, 1,500 miles, for 27 cents."¹ The railroads thus made it possible for western farm products to reach the eastern markets and ports. To the West, they carried manufactured goods from eastern industrial centers, and they transported the stream of people migrating to frontier communities. Especially in the far West, they tapped many regions which were out of reach of waterways and which, without the railroads, might have remained unsettled and undeveloped indefinitely.

The era of rapid railroad building came to an end with the First World War. But railroad traffic went on expanding thereafter. Today—despite competition for business from trucks and busses, and automobiles, pipe lines, and air lines, as well as inland waterways—the railroads still have more freight and passenger traffic and employ more people than all other intercity transportation industries combined. They have more workers than are employed in automobile plants or in factories making all kinds of clothing and other finished textile products; half again as many as are engaged in all types of mining.

In an industry as large as this, thousands of job openings arise each year as workers die, re-

¹ See *Economic History of the American People*, by Ernest L. Bogart and Donald L. Kemmerer, New York, Longmans, Green & Co., 1942 (p. 335).

tire, or transfer to other fields of work. Openings occur in every State in the great number of communities of all sizes which are served by the railroads. The jobs are of many different kinds: Brakeman, fireman, telegrapher, clerk, apprentice or helper in a skilled trade, trackman, porter, and cook—to give a few examples from a long list. These jobs are so varied that people with widely different interests and personalities can find satisfactory positions in railroading.

New workers entering railroad employment must expect to start at the bottom of the ladder. The longer they stay with the company the greater will be their job security and the better their chance of picking a work assignment they like. To many, railroading is a lifelong career, to which they are bound not only by their weekly pay envelopes but by the fascination of helping to speed trains, passengers, and cargo to their destinations all over the country.

The Railroad Industry

This country now has more than 700 railway companies—the smallest with less than a dozen employees and only one or two miles of road; the largest with over 100,000 workers and great branching systems of road covering more than 10,000 miles.

Seven out of eight employees in the railroad industry—about 1,300,000 in 1948—work for the group of roads known technically as class I line-haul railways. There are 132 companies in this group, each with over \$1,000,000 of revenue a year and with lines connecting two or more cities or towns. One out of every three railroad employees works for one of the six largest companies—the Pennsylvania, the New York Central, the Atchison, Topeka and Santa Fe, the Southern Pacific, the Baltimore and Ohio, and the Union Pacific.

Besides the class I roads, there are two other groups of railroad companies. Scattered over the country are about 350 smaller line-haul railways. But these railways together employ only around 1 percent of the workers in the industry. There are also more than 200 separate switching and terminal companies, many of them owned by the big line-haul roads. These two-hundred-odd companies include switching railways (“switching” is moving cars about in the yards as needed when trains are being made up or broken up), union stations, bridge and ferry companies, and other types of concerns. A few of them are large; most are very small. Altogether, they have about 4 percent of the industry’s work force.

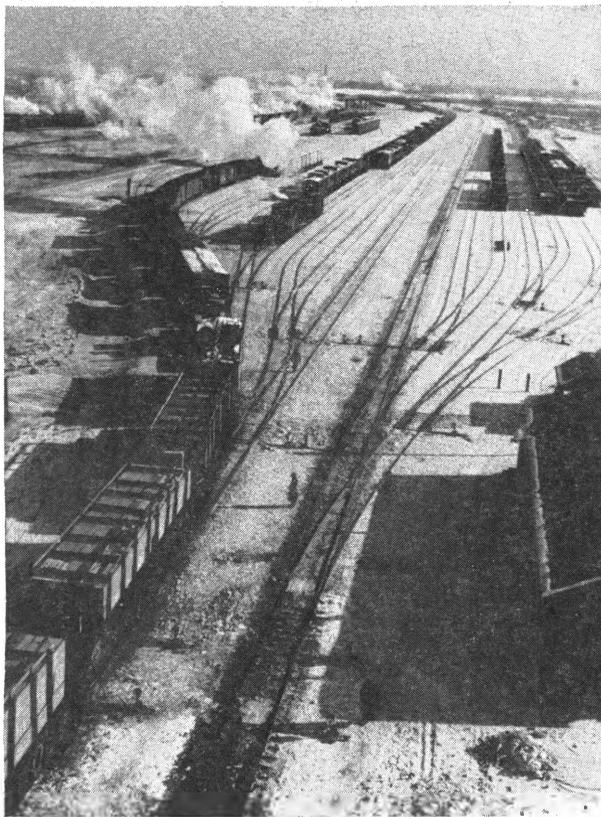
The railroad industry includes a few other closely related services, in addition to the types of companies mentioned so far. The Railway Express Agency is well known to everyone who has sent or received express packages. Equally

well known is the Pullman Company, which operates sleeping and parlor cars. These two companies, which are both owned jointly by a large number of railroads, employed about 105,000 workers in 1947.

To outsiders, transporting passengers may seem the railroads’ most important function. The railroader knows, however, that freight business brings in far more revenue. In 1947 four-fifths of all class I railroad revenues were from freight and only about one-tenth from passenger travel. The remainder came from mail, express, and various other sources.

Coal is the largest single item of railroad freight. To roads serving the coal-mining regions, it is all-important as a source of traffic. Railways in other parts of the country, however, rely in the main on different types of commodities. Those with lines reaching into logging regions, for example, naturally depend on forest products for much of their freight business; those in metal-mining areas count on ore; roads in industrial regions transport large quantities of manufactured goods. Livestock, wheat, fruits and vegetables, and other farm products are also important items of freight on many roads.

Railway lines spread over the country like a giant web, connecting every State and city and thousands upon thousands of towns and villages. Chicago is the hub of the Nation’s railroad network. Here, the great eastern and western systems meet, and connections are made also with routes to the North and South. However, there were more railroad workers living in the New York City metropolitan district than in the Chicago district in 1940 (69,000 compared with 66,000). Other areas where more than 10,000 railroad



Classification yard in which freight cars are sorted out and made into trains.

workers lived in 1940 were: Pittsburgh, Philadelphia, St. Louis, Minneapolis, San Francisco-Oakland, Los Angeles, Boston, Buffalo-Niagara, Cleveland, Kansas City, Kans.-Kansas City, Mo., Baltimore, Detroit, and Cincinnati.

These 15 major centers, with their large stations and yards and company main offices, were the homes of about 335,000 railroad workers in 1940.² But twice this number of employees lived elsewhere, many of them in small communities. Some of the big shops (where heavy repairs are made on cars and locomotives) and therefore many shop workers are in other localities. Altoona, Pa., for example, has the largest shops in the country, although it is a relatively small city. Small stations and yards, switch towers, and other railroad facilities and the workers who operate and maintain them are scattered all over the country.

The States where the largest numbers of railroad employees lived in 1947 were Pennsylvania, Illinois, New York, Ohio, and California. These 5 States have about two-fifths (600,000) of the country's railroad workers. Pennsylvania, with about 150,000 workers, is the leading railroad State. Even Rhode Island, the State with the fewest railroaders, has about 2,500 of these workers.

The Railroad Workers

It takes a great variety of workers to keep the trains running. Locomotive engineers, track laborers, car repairmen, telegraphers, machinists, and clerks are but a few of the occupational groups employed by a big railroad.

Chart 1 shows how many people were employed in these and a number of other occupations on class I roads in 1948.³ The occupations shown in the chart were chosen from the much longer list of all railroad jobs because of their importance to people considering a career in railroading. They include the largest railroad occupations and several smaller ones in which employment prospects are particularly favorable or which are of special interest for other reasons.

² This is the latest available data on employment, by metropolitan districts. Employment in the industry as a whole was about one-third greater in 1948 than in 1940.

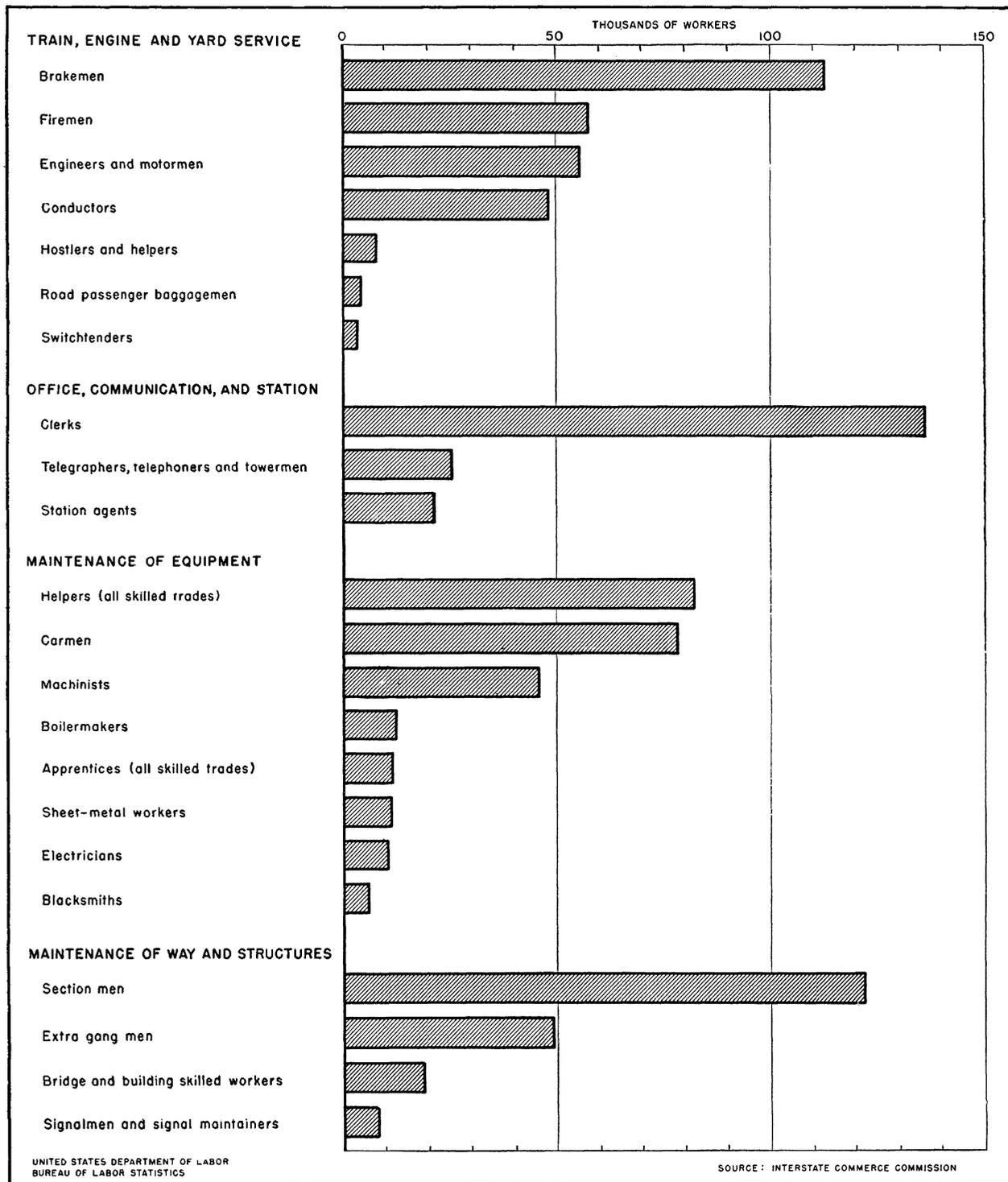
³ The numbers of workers employed in 1948 in each of the occupations shown separately in the Interstate Commerce Commission reports are given in appendix A, p. 48.

The train, engine, and yard service workers are the men who operate trains on the road and make up and break up trains in the yards; a few do related work. Communication, station, and office workers are another large group, some of whom have much to do with the operation of the trains. Maintenance-of-equipment workers, a third major group, are responsible mainly for keeping freight and passenger cars and locomotives in good running order and for building new rolling stock. Employees in the maintenance-of-way-and-structures department have to keep the track and roadbed in good condition and repair bridges, stations, and other buildings.

Other railroad occupations, not listed in the chart, range from top executive and professional positions to unskilled laundry and cleaning jobs. Practically every road has a president, vice president, general manager, secretary-treasurer, other officials, and their assistants. Big roads also have

Chart 1—Brakemen, Clerks, and Section Men are Largest Groups of Railroad Workers

Employment in Selected Occupations on Class I Railroads, 1948



staffs of lawyers, engineers, and accountants and other professional groups. In addition, they have sizable numbers of foremen, truckers, cooks and waiters, stenographers and secretaries, crossing and bridge flagmen, claim agents and investigators, watchmen, stationary firemen and engineers, telephone operators, and a great variety of other occupational groups.

Practically all the workers in train and engine service occupations and maintenance jobs are men (except for some women who work as cleaners). Clerical occupations have the highest proportion of women workers, but even in these groups men predominate.

At present, Negroes are not often found in skilled jobs. There are a few thousand Negro brakemen and firemen in the South and some Negro helpers in the shop crafts, but very few have been promoted to higher-grade positions. On the other hand, most of the workers in serv-

ice occupations such as cook, waiter, and porter are Negroes.

What sorts of jobs are there with switching and terminal companies and small line-haul railroads? The answer varies greatly from one company to another, depending partly on the size of the company but even more on whether it is a passenger terminal, a bridge or ferry company, or a small switching or line-haul road. Practically all the types of workers found in class I roads are employed by some of these different companies.

With the Pullman Co., the main occupational groups are porters and attendants, coach cleaners, craftsmen, clerks, and parlor and sleeping car conductors. Many jobs in the Railway Express Agency are similar to those in railroading. The largest occupational groups working for this company are clerks, express messengers, express handlers, truck drivers, agents, and guards.

Employment Outlook

What is the employment outlook in railroading? Will competition from trucks and pipe lines cut into the railroads' freight business? Will airlines, busses, and private automobiles take a larger share of passenger travel? How would a decline in general business activity affect railroad traffic? And how would changes in the amount of traffic affect employment? What will happen as more and more Diesel-electric locomotives are introduced and other improvements in equipment are made? Are there likely to be lay-offs and waiting lists for jobs, or are there bright prospects of openings for newcomers?

These questions head the list to which one needs answers in attempting to forecast employment prospects with the railroads, but there are many other problems which must be considered also. The easiest way to understand the complex factors which will influence future employment opportunities is to see what has happened to traffic and employment in the past. This section therefore starts with a brief review of the trends in freight and passenger traffic up to the present time and then discusses the prospects with regard to future traffic. Next follows an examination of how em-

ployment has been related to traffic in the past and what its future trends are likely to be if the analysis of traffic prospects proves to be correct. Finally, there is a discussion of the number of openings likely to arise each year owing to deaths, retirements, and transfers to other industries.

Freight and Passenger Traffic

Past Trends

A bird's-eye view of the ups and downs in railroad freight business between 1919 and 1948 is given in chart 2. This chart shows the amount of revenue freight carried each year, measured in ton-miles⁴ and expressed as index numbers (1919=100).⁵ The trend in industrial production during the same period is also shown.

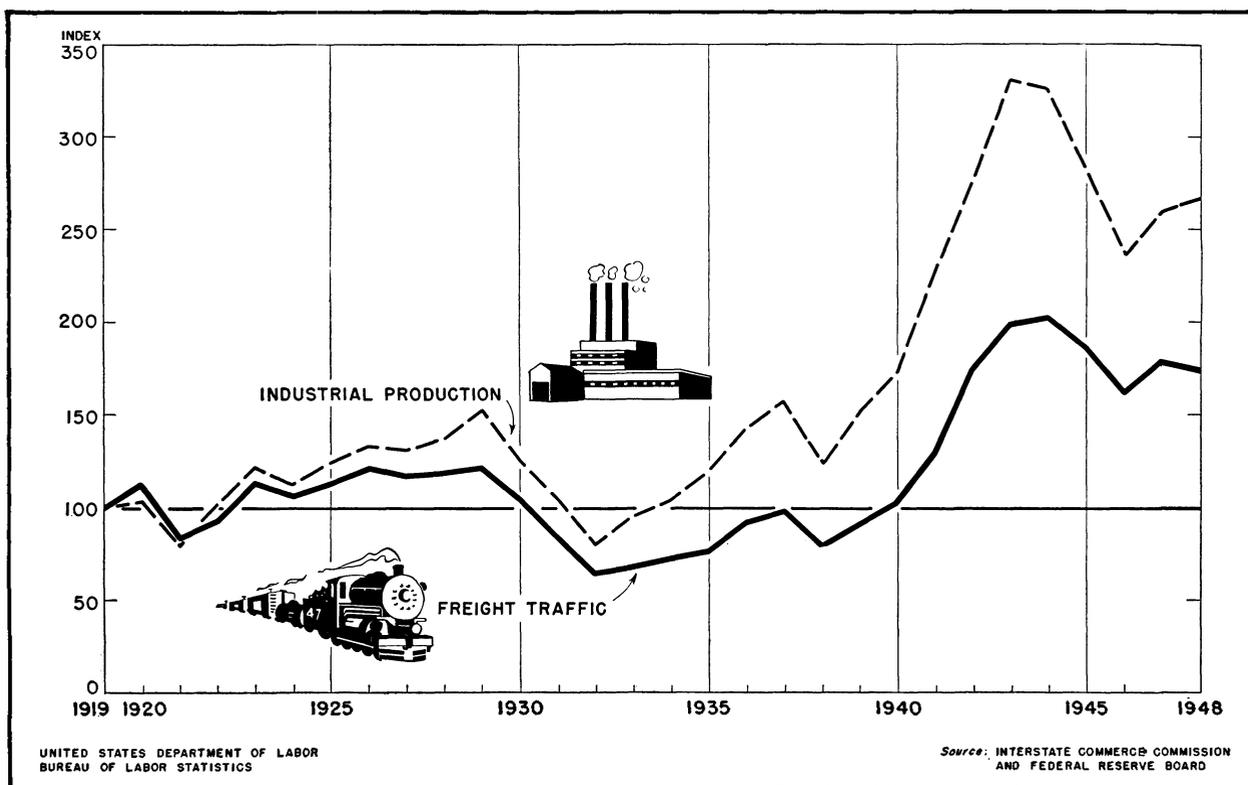
One has only to glance at the chart to see how

⁴ The measure of freight traffic used throughout this report is ton-miles. One ton of freight carried 1 mile represents 1 ton-mile. Thus, 100 tons of freight transported 1 mile or a single ton carried 100 miles would each count as 100 ton-miles. The statistics are for class I, II, and III line-haul railroads.

⁵ Index numbers are ratios arrived at by dividing a figure for 1 year by the corresponding figure for the "base" year (in this case, 1919).

Chart 2—Railroad Freight Traffic Has Not Kept Pace With Industrial Production

Indexes of Industrial Production and of Railroad Freight Ton-Miles, 1919–48
(1919=100)



much railroad freight traffic is affected by changes in general business activity. In 1919 and 1920, immediately after the First World War, production was high in practically all industries, and the railroads were kept busy hauling raw materials to manufacturers and finished goods to the markets. In the depression year 1921, however, industrial production and freight traffic both fell off sharply. The prosperous years from 1922 to 1929 brought marked gains in production and gains almost as great in freight traffic, which changed to precipitous declines following the 1929 crash. Then during the period of business recovery after 1932, traffic mounted again but not as fast as production.

A second fact which the chart makes clear is that between 1920 and 1940 the gap between railroad freight traffic and industrial production gradually became wider and wider. This was the result largely of increasing competition from other

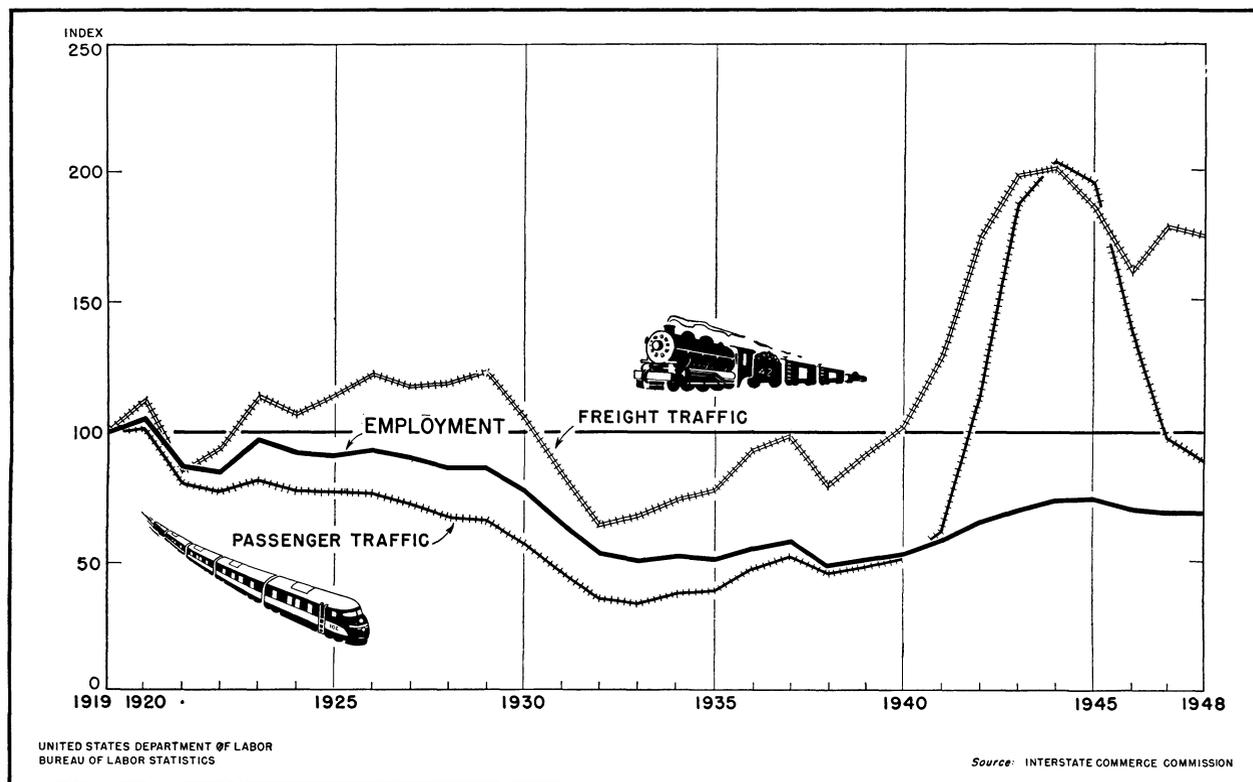
forms of transportation. Trucks made inroads especially in short-haul traffic. Pipe lines were found to be a more economical means of transporting petroleum products than railroad tank cars; their competition was the more serious because of the increasing use of gas and oil for cooking and heating purposes in place of coal, the mainstay of railroad freight traffic. The amount of freight carried on the inland waterways also tended to increase, at the expense of the railroads.

Despite all these developments the railroads kept the lion's share of the country's freight traffic. In 1940 they carried 61 percent of all intercity freight traffic while trucks had only 8 percent, oil pipe lines 12 percent, and the Great Lakes and inland waterways the remainder. In 1926, however, the railroads' share of the traffic had been 76 percent.

Chart 3 shows what happened to passenger

Chart 3—Railroad Employment and Freight and Passenger Traffic, 1919–48

Indexes of Employment, Freight Ton-Miles and Passenger-Miles
(1919=100)



business during this same period. As one would expect, passenger traffic⁶ tended to be high in prosperous years and low in depressions, but the relationship to general business activity was not as close as in the case of freight. Another interesting point made obvious by the chart is that passenger traffic declined during the 1920's, when freight was increasing. Throughout that decade the number of private automobiles in use grew by leaps and bounds, taking much passenger traffic away from the railroads. In the late 1920's and the 1930's competition from busses also became stiffer and stiffer—with the result that between 1926 and 1940 the railroads' share of commercial passenger traffic declined from 75 to 62 percent. Their total loss of passenger traffic was even greater than these figures suggest, since the growing number of people who used their own automobiles instead of traveling by railroad or some

other public conveyance are not included in the statistics.

Any one who rode on the crowded wartime passenger trains or watched the long lines of freight cars loaded with war materials rolling by knows what happened to railroad traffic during the war. In 1944 the railroads carried 741 billion ton-miles of freight, nearly twice as much as in 1940 and almost two-thirds more than in 1929, the prewar peak year. Passenger traffic rose even faster: Between 1940 and 1944 it quadrupled, reaching 96 billion passenger-miles, another all-time record.⁷

The transport job which had to be done in this country during the war was huge, and the railroads did the greater part of it. Trucks, busses,

⁶ Throughout this report passenger traffic is measured in passenger-miles. Each mile traveled by a passenger counts as 1 passenger-mile.

⁷ These statistics are for class I, II, and III line-haul railroads.

water carriers, and pipe lines also increased their traffic, but not nearly as much as the railroads. Though air-line traffic grew rapidly, it made only a very small dent in the total passenger transport problem; in the field of freight, air traffic was insignificant. Furthermore, many people who would previously have used their own cars in commuting to work or for long trips traveled by railroad instead.

After VJ-day, railroad freight traffic dropped sharply, because of the curtailment of war production. By the middle of 1946, however, industry was producing civilian goods in great quantities, and freight business began to increase again. During 1947, the railroads carried 11 percent more freight than in 1946, 75 percent more than in 1940, and only 11 percent less than in 1944, the peak wartime year. The volume of freight traffic continued to be great during 1948, though slightly less than in 1947. The railroads are still handling a somewhat higher proportion of the Nation's commercial freight traffic than before the war; in 1947 their share of total freight traffic was 67 percent and in 1948 probably about 64 percent, according to a preliminary estimate, as compared with 62 percent in 1940.

Railroad passenger traffic, on the other hand, has declined sharply and continuously since the end of 1945. Many factors have contributed to this—decreased military and furlough travel, greater use of private automobiles, and increased air-line traffic. Passenger traffic was less than half as great during 1948 as in the peak year 1944, but it was still about 73 percent greater than in 1940.

Future Prospects

In early 1949 (when this report was prepared), freight traffic was below the level of early 1948. This was due largely to the general slackening of economic activity and in small part to loss of traffic to competing transportation agencies. Traffic trends in the future will depend chiefly, as has freight volume in the past, on the general level of business activity.

Over the long run, assuming good economic conditions and railroad freight rates competitive with those of other agencies of transportation, freight business probably will remain at a high level. A growing labor force and rising produc-

tivity of labor will make for a long-run upward trend in industrial production and, consequently, in the total amount of freight handled by all transportation agencies. The share carried by the railroads is likely to decline slowly for some time, however, even under the favorable conditions assumed. Truck transport, which has special advantages for certain types of traffic, is expected to continue to expand, as inefficient prewar vehicles are replaced and additional trucks are added to the fleets. Airplanes, which at present carry an insignificant proportion of freight, may also take away a very small amount of business from the railroads. Pipe lines, too, are likely to increase their share of traffic. The long-run trend in railroad freight traffic will thus depend on offsetting factors—expanding industrial production as against the likelihood of moderate inroads by competing types of transportation.

Like all attempts to foresee the future, this analysis has validity only if the future behaves somewhat like the past. Any revolutionary change would upset these conclusions. The application of atomic energy to civilian uses, for example, would greatly reduce the use of coal, the largest single item of railroad freight. A major change in Government policy might alter the competitive situation of the different agencies of transportation.

Prospects for passenger traffic are less good than for freight. This branch of railroad business will probably decrease for some time, though the sharp downward trend of the last few years should give way soon to a more gradual decline, assuming that general economic conditions are good. The total amount of passenger travel in this country is almost certain to go on rising, but the railroads' share of this travel will probably continue to drop. Most of the business will probably be lost to private automobiles, but probably some also to busses and airplanes. Busses will compete mainly for short-distance coach traffic; air lines are likely to attract more and more long-distance travelers.

Any major decline in business activity would of course seriously reduce railroad freight and passenger business. How sharp the drop in traffic might be is illustrated by the experience in 1920 and 1921, when freight traffic dropped 25 percent and passenger traffic 20 percent. During

the great depression beginning in 1929, both kinds of traffic declined still more—by almost 50 per cent in 4 years.

Employment

Past Trends

Chart 3 shows railroad employment since 1919. One of the most important facts which can be seen from the chart is that the number of workers needed to handle a given amount of traffic has tended to decline slowly but steadily. From 1923 to 1929 employment dropped as did passenger traffic, while freight traffic—much the larger part of railroad business—was rising. The railroads had a bigger work force in 1932 than in 1940, although both freight and passenger traffic were greater in the latter year.

This reduction in labor requirements was made possible by many improvements in railroad equipment and methods of operation, including the introduction of more powerful locomotives which could haul longer trains at higher speeds; development of cars, rails, and other equipment which were more durable and needed fewer repairs; introduction of machinery in maintenance-of-way work; improved communication and signaling systems; and simplified accounting procedures. Some new jobs were created as a result of these innovations. But in every case the net effect was to decrease the number of workers needed to handle a given amount of traffic.

Chart 3 also shows, as one would expect, that railroads take on more workers in boom years when traffic is increasing and generally make some lay-offs when traffic drops. However, the gains in employment in good years have usually been less than the gains in traffic. The chart shows this for many past periods, and most plainly of all for the war period beginning in 1940, when the railroads handled unparalleled amounts of traffic with only a moderate increase in their work force. This was a remarkable feat. It was achieved by longer hours of work, using every available inch of car space, and cutting to the minimum the time when locomotives and cars were in the shops for repairs or standing idle in stations or yards. Every group of railroaders helped in this united effort. Shop workers, for example, contributed

through their skill in keeping worn and antiquated equipment operating.

Since 1945 employment has declined, but not as much as traffic. One of the reasons for this is that employees are no longer working so much overtime. Also, passenger trains are less crowded, and the average freight train has a slightly smaller load than during the war; nevertheless each train has to have a full crew. Moreover, at the end of the war the railroads expanded employment in some occupations, particularly in the maintenance departments. These and other factors have tended to decrease the amount of traffic handled per worker, as compared with the wartime record.

Prospective Trends

Railroad employment is likely to decline, but at a slow rate, provided the country steers clear of a major recession in business. Under this assumption, the outlook is fairly bright for freight traffic. As we have seen, passenger business is expected to decline for some time, but the level of employment in the industry depends mainly on freight business.

Reduction of the workweek from 48 to 40 hours will tend to temporarily arrest the downward trend in railroad employment. Beginning September 1, 1949, approximately 1 million “non-operating” railroad workers will go from a 48-hour week to a basic 5-day, 40-hour schedule. In many cases, additional employees will have to be hired when this change goes into effect.

Leverman-telegrapher throwing electrically operated switch.



Over the long run, the number of workers employed on the railroads will probably tend to decrease, even if general economic conditions are good. The gains in freight traffic would have to be large and continuous to make up for the trend toward employing fewer workers to handle a given volume of business. This trend has been very marked in the past. It is likely to be equally marked in the future, as the railroads install more and more Diesel-electric locomotives and other labor-saving equipment. The effect on employment will differ considerably from road to road and from occupation to occupation, however, as indicated in later sections of this report.

What would happen if there were a depression instead of continued business prosperity? During the prewar depressions of 1920-22 and 1929-33 employment fell off in about the same proportion as freight traffic (see p. 7). Future depressions would probably show a somewhat similar relationship between declines in freight traffic and employment. If employment were to drop as much as it did from 1929 to 1933, lay-offs would be heavy and there would be long lists of people looking for jobs on most roads. However, in the event of such lay-offs, there would be less hardship than occurred during the 1930's, because of the unemployment benefits since provided for railroad workers.

Opportunities for New Entrants

Young people will continue to find many employment opportunities in the railroad industry despite the expected downward trend in employment. The industry is so big that openings due to deaths, retirements, transfers to other industries, and other causes total a great many thousands yearly. The railroads take on very large numbers of new workers in good years.

In 1946, for example, about 400,000 workers without previous experience in railroading were hired by class I roads,⁸ although employment in the industry declined slightly during the year and

⁸ Statistics on new entrants and re-entrants for 1946 used here and elsewhere in this report are from unpublished data provided by the Railroad Retirement Board. "New entrants are employees with no previous railroad service (excluding service prior to 1937). Re-entrants are employees who returned to railroad service after an absence of at least one calendar year—data are based on a 20-percent sample."

thousands of GI ex-railroaders and other re-entrants were returning to their jobs. About 48,000 of these new entrants made up for workers who died or retired during the year. However, the great majority were hired either to meet peak seasonal needs for workers or to take the place of people who had left the industry. About two-thirds of the new entrants (278,000) were employed as track workers or in other laboring jobs; many extra workers are always taken on temporarily in these occupations during the summer, and the quit rate is typically high. The remaining 130,000 newcomers entered other railroad occupations, most of which ordinarily provide year-round jobs. Since employment in these latter occupations averaged about 1 million during the year, 1 new entrant was hired for about every 8 of these workers.⁹

Opportunities for newcomers in railroading are not limited to boom years such as 1946. Although in less prosperous years fewer new workers are hired, there are still thousands of openings resulting from deaths, retirements, and other types of turn-over. In 1940, for example, when the country had millions of unemployed, class I roads took on 48,000 new entrants in occupations other than track work and laboring jobs. But total employment in these occupations increased by 31,000 during the year, so only 17,000 could be counted as replacements. This was about 1 replacement for every 47 employees on the average monthly pay roll in the typically year-round occupations, a very much smaller proportion than in 1946.

If there should be a major business recession and therefore a sharp drop in railroad traffic and employment, the number of opportunities for newcomers would be drastically reduced. Lay-offs would be heavy, and furloughed workers have first claim on any job openings arising in their seniority districts. Even in bad years, however, conditions in the industry are likely to vary considerably from road to road and from one part of the country to another, and there will be some openings for newcomers.

⁹ The employment figure used in deriving this ratio was an average of 12 mid-month counts as reported to the Interstate Commerce Commission. If the number of new entrants is compared to the total number employed in these occupations during the year (1,225,000) as computed by the Railroad Retirement Board, the ratio is 1 new entrant for every 10 employees.

Labor Organization

Men going to work on the railroads will find that most workers in the industry belong to labor unions. They will also discover that wage rates, hours of work, seniority, apprenticeship, and many other matters affecting their jobs are established by contracts arrived at through collective bargaining between the unions and the railroad companies.

The organizations of railroad workers include some of the oldest and strongest unions in the country. One of them, the Brotherhood of Locomotive Engineers, dates back to the Civil War, when a group of engineers banded together in an association called at first the "Brotherhood of the Footboard." The conductors, firemen, brakemen, and most other important railway crafts also formed unions before 1900. During World War I these railroad unions grew rapidly, as did those in many other industries. They lost ground temporarily in the 1920's, following the unsuccessful shopmen's strike of 1922, but these losses have been much more than made up. The Railway Labor Act of 1926 gave railroad workers "the right to organize and bargain collectively through representatives of their own choosing," and by amendments enacted in 1934 provided penalties for interference with this right by the railroad companies. Since the mid-1930's, the proportion of employees covered by union contracts has risen greatly. Today, the vast majority of workers in the industry are covered by collective agreements.

To join a railroad union, a worker must be in a job within the union's jurisdiction, and must be of good moral character. Other requirements for membership vary widely from union to union. A number of railroad unions accept only men. A few admit only white persons; some admit non-whites to auxiliary locals. Those that have age requirements for admission specify minimum ages ranging from 16 to 21 and maximum ages ranging from 55 to 70; many railroad unions do not set any age limits.

The railroad unions have negotiated a tremendous number of separate collective agreements, as table 1 shows. About 3,000 contracts with class I roads and 1,500 with smaller roads and switching and terminal companies were in effect in mid-1948. Most of these contracts cover workers in

only one occupation or a group of closely related occupations on individual railroad systems. In the last few years, however, these contracts have been amended to incorporate general agreements on wages and vacation provisions covering virtually the entire industry.

Among the most important provisions in each agreement are the seniority rules. Once a worker gets a job with a railroad, these rules affect his whole career.

The general rule followed in filling jobs below the supervisory level is: "Where ability and qualifications are sufficient, seniority will prevail." As vacancies occur they are listed on a bulletin board. All qualified workers who are interested may "bid" for the job, which goes to the applicant who is highest on the seniority list. When layoffs have to be made the workers with the shortest service are furloughed (laid off with reinstatement rights), and furloughed employees are reinstated in order of their seniority.

Workers usually do not have seniority rights over an entire railroad system, but only within a seniority district specified in the union contract. For train and engine crews, the seniority district is generally the railroad "division" where they are located (such as the "Milwaukee division" and the "LaCrosse and River division"). This is true also for many telegraphers. In the case of maintenance-of-equipment workers, seniority rights are usually confined to one shop or locality. For maintenance-of-way laborers, they are generally

Number of labor agreements, by type of company and labor organization, June 30, 1948¹

Type of carrier	All unions	National unions	System associations ²	Local unions ³
Total.....	4,571	4,044	451	76
Line-haul railroads:				
Class I.....	3,068	2,748	266	54
Class II.....	634	544	88	2
Class III.....	113	96	15	2
Switching and terminal companies....	743	646	79	18
Railway Express Agency, Inc., and Pullman Co.....	13	10	3	-----

¹ Fourteenth Annual Report of the National Mediation Board, for the fiscal year ended June 30, 1948 (pp. 53-54).

² A system association is one representing the workers on a single carrier or system of carriers.

³ A local union is one which confines its activities to one region of the country. It is not affiliated with a national union, but it may hold a Federal charter from the American Federation of Labor.

limited to one district. For clerks, they may apply to an operating division or district, or, in some cases, an office or department. Dining-car employees, on the other hand, frequently have system-wide seniority rights.

As previously mentioned, other important subjects covered in the contracts include rates of pay and hours of work, as well as vacations and many other conditions of employment. These subjects will be discussed in the sections which follow.

Earnings and Working Conditions

Hours of Work

On September 1, 1949, the standard workweek for most "nonoperating" railroad employees will be cut from 48 to 40 hours. This change, the result of an agreement between the railroads and the unions representing nonoperating workers, will make the basic workweek for the majority of railroaders the same as in other major nonagricultural industries. The Fair Labor Standards Act of 1938 established a basic 40-hour week in industries engaged in interstate commerce but specifically exempted railroad workers.

After the 40-hour week becomes effective, many nonoperating employees will still work more than 40 hours a week, with time and one-half for work beyond 40 hours weekly or above 8 hours a day. In the railroad industry there are many positions requiring long periods of training which must be manned around the clock, 7 days a week. It will not be possible to immediately reduce the working hours of all employees in these jobs by hiring new, untrained workers.

Other nonoperating workers, mainly dining-car cooks, waiters, and Pullman porters, have no set workday or workweek but instead have a standard number of hours per month. The new agreement effective September 1, 1949, specifies 205 hours per month for dining-car employees, as compared with 240 hours under the old schedule. However, straight-time rates will be paid for hours between 205 and 240 a month; premium pay at the rate of time and one-half will be given for work beyond 240 hours. Pullman porters are not covered by the agreement, but in the spring of 1949 their union was negotiating for the same basic 205-hour month.

The new work schedule does not apply to "operating" employees—train and engine crews and yard workers. They will continue to work under the present arrangements. For train and engine crews in road freight and passenger service, the

rules governing the length of the workday are complex. They also differ from one occupation to another. In general, when the worker has "run" a specified number of miles or done a certain number of hours' work—whichever happens first—he is considered to have completed a "basic day's work"; additional pay is given for any extra work beyond that point. Train and engine crews in yard service and other yard workers are generally paid time and one-half for any work beyond 8 hours in a single day, though they do not receive premium pay for work on the sixth or seventh day in the week.

Because the shippers and traveling public must be served continuously, many stations are open 24 hours a day and trains, roundhouses, and other facilities operate at all hours. Hence, in a good many occupations, some employees must work at night. The employees affected include engineers, firemen, conductors, brakemen, hostlers, telephone and telegraph operators, shop workers, clerks, and many others. Rates of pay for night work are no higher than for day work.

Earnings

With so many different occupational groups employed—ranging in skill from common laborers to craftsmen and professional and administrative employees—rates of pay in the industry vary widely. Wage rates depend not only on the degree of skill and length of experience required to perform a job satisfactorily but also on the amount of responsibility for safe and efficient railroad operations involved in the work and on many other factors.

Earnings data for many occupations are presented in later sections of this report. For operating employees, the rates given are those in effect when this report was prepared in the spring of 1949.

For most nonoperating employees the hourly

wages cited are those the workers will receive after they go on a 40-hour week in September 1949. The rates include the 7-cents-an-hour increase granted (retroactive to October 1948) by union-management agreement signed in the spring of 1949. In addition, a 20-percent increase will be given in all hourly and daily rates (exclusive of the general increase of 7 cents an hour) in order to provide 48 hours' pay for 40 hours' work. Non-operating workers will thus earn about 26 percent more per hour in September 1949 than they were making in September 1948.

Pensions, Other Benefits, and Vacations

Railroad workers are provided "valuable benefits on very favorable terms," under the Railroad Retirement Act and the Railroad Unemployment Insurance Act.¹¹

When they reach 65 years of age, all railroad employees become eligible to retire on a pension, the amount of which depends on their earnings and length of service. The average monthly amount paid to annuitants is now about \$84, which is much more than the average amount received by workers retiring under the social security system.

If railroad workers have had 30 years' service, they may retire at 60 (on full pension if they are women, on a lower pension than they would get at 65 if they are men). Provision is made also for payments of annuities to disabled employees after 10 years of service and for payment of death benefits or annuities to the survivors of insured workers. The amount of the annuities paid to a retired or disabled employee depends only on his earnings and length of service; the amount of

death benefits or annuities depends also on the composition of the worker's family. Employers and employees contribute equally to the financing of these pensions and benefits.¹²

When a railroad worker becomes unemployed he has protection at that time also—more generous protection than is given workers in other industries by most State compensation laws. After an initial waiting period of 14 days, he is entitled to receive benefits ranging from \$1.75 to \$5 a day, depending on how much he has been earning. The same benefits are paid for workdays lost because of sickness or injury, whether or not the injury had any connection with the employee's job. The maximum number of days for which a worker may receive either unemployment or sickness benefit is 130 a year. Both types of benefits are financed wholly by contributions from the railroad companies.

Vacation and holiday policies are fixed by union contracts. Train and engine crews are allowed 7 days' paid vacation a year after 1 year of service. Most other employees receive 5-day paid vacations after their first year on the pay roll and 10-day vacations after the fifth year, although clerks and telegraphers are allowed 5, 7½, and 10 days' paid vacation after 1, 2, and 3 years of service, respectively. Each year must include at least 134 days of compensated service. As a rule, railroad workers have no paid holidays, but if they are required to work on legal holidays they receive one and one-half times their regular rates.

All railroad workers receive certain free transportation privileges, which become more liberal as years of service with the company increase.

How to Enter Railroad Work

Anyone interested in a career in railroading should stop and consider, "Do I have the proper qualifications?"

Good physical condition is required for most jobs; applicants generally have to pass physical examinations before they are hired. The stand-

ards with regard to vision and hearing are particularly strict in the case of applicants for train and engine service jobs and certain other occupations where good sight and hearing are essential for safety. Color blindness is an absolute bar to employment in any type of work involving interpretation of signals.

A high-school education is desired for most occupations; specialized technical education is needed for a few jobs. In addition, employers

¹¹ U. S. Railroad Retirement Board, *The Monthly Review*, March 1947, p. 68.

¹² During 1949, 1950, and 1951 the companies and the workers will each pay a 6-percent tax on wages (up to \$300 a month). Thereafter the rate will be 6¼ percent.

notice an applicant's general bearing and neatness of appearance, particularly if he is seeking a job which will involve meeting the public, and look for reliability as an essential characteristic of every railroad employee. The duties of many railroad workers are such that they cannot be under constant, direct supervision by company officials. And they all play a part in keeping the railroads operating safely and efficiently. They must be clear-headed and dependable at all times, able to stand on their own feet and to think straight in emergencies.

All prospective railroad workers need also a real interest in railroading to achieve success. The railroader often expresses this idea by talking about how his work "gets in his blood." This is one of the reasons why there are so many "railroad families," with son, father, and grandfather working for the same company. The roads frequently give preference to job applicants with the necessary qualifications who have relatives employed by the company.

Workers entering the railroad industry practically always have to start at the bottom of their particular occupational ladder. It is general railroad policy to fill vacancies farther up the ladder by promoting men already employed by the company. Even top executive positions are usually filled by men with many years of railroad experience.

Further information on the qualifications needed for many different occupations—as well as on duties, lines of promotion, employment prospects, earnings, and working conditions—are given in following sections of this report. The information given refers to the country as a whole, however. To find out about opportunities in a par-

ticular locality, an applicant might go to the nearest office of the Railroad Retirement Board; these offices are located in about 100 cities throughout the Nation. Some railroads have centralized employment offices in principal cities. Applicants may also go to the nearest railroad station and ask for the name and address of the official to whom they should apply. In general, the officials to whom workers should go to apply for jobs are as follows:

<i>Occupation</i>	<i>Apply to—</i>
Fireman.....	Road foreman.
Brakeman.....	Division superintendent, trainmaster, or yardmaster.
Hostler.....	Roundhouse foreman or master mechanic.
Switch tender.....	Yardmaster.
Pullman conductor or porter.	Pullman Co. employment office.
Dining-car cook or waiter.	Superintendent of dining-car department.
Telegraph operator....	Superintendent of telegraph or chief dispatcher.
Towerman.....	Signal supervisor, division superintendent, or chief dispatcher.
General-office clerk.....	Central employment office or individual offices, such as auditor's office or station agent's office.
Redcap.....	Stationmaster or terminal superintendent.
Carman, machinist, boiler maker, electrical worker, sheet-metal worker, or blacksmith.	Shop or roundhouse foreman or master mechanic.
Track laborer or roadway-machine operator.	Section foreman, track supervisor, or roadmaster.
Bridge and building mechanic.	Bridge and building foreman or division master carpenter.
Signal worker.....	Signal foreman, signal supervisor, or signal engineer.

Railroad Occupations

DUTIES, QUALIFICATIONS, OUTLOOK, EARNINGS, WORKING CONDITIONS

Train, Engine, and Yard Service

A whistling locomotive and the men who wave their greetings from it are, to many people, symbols of the railroad industry. The man on the right-hand side of the cab is the engineer. On the left is his assistant, the fireman. Together these two make up the engine crew. They work very closely with another team known as the train crew, which includes the conductor and generally two or three brakemen. On a passenger train there may also be a baggageman and, if the train is expected to be crowded, an assistant conductor. Two other groups doing related work are the switch tenders, who are stationed at strategic points in the yards, and the hostlers, who handle locomotives in and around the engine houses.

Locomotive Firemen and Helpers

In 1948 about 58,000 locomotive firemen were employed on class I railroads. About half these men were on freight trains; over a third were in yard work—on the switching engines which move cars around as required in serving various industries, and in making up and breaking up trains and classifying cars—and the remaining seventh were in passenger service. Besides the firemen on class I roads, there are a few thousand who work for smaller line-haul railroads, for switching and terminal companies, or in such industries as coal and metal mining, quarrying, and iron and steel manufacturing, where large companies often have their own plant railways for use in transporting their products to the nearest railroad line.

The occupation of fireman got its name in the day when all locomotives burned coal or wood and had to be stoked by hand. On an engine of this kind, the fireman has the extremely heavy, hot job of shoveling coal from the tender into the firebox, taking care to distribute it well so that the fire will burn properly. Over two-thirds of the locomotives now in use, however, are mechanically stoked, oil burning, or electric, and hand-fired locomotives are becoming fewer. This development

has meant a revolutionary change in the work of the fireman. Physical labor has been reduced; on an oil-burning or mechanically stoked engine the fireman (or "helper") regulates the flow of fuel by operating certain valves. On the other hand, higher-speed trains and complicated modern locomotives have increased the responsibility and skill involved in much of the fireman's work.

Every fireman or helper has to be prepared to take over at any moment in case the engineer should suddenly become sick or disabled. The fireman's ability to take emergency charge of the train may be all that saves it from disaster. He also has to watch the engine gages and must be able to detect engine trouble at once; on Diesel locomotives, this work requires greater mechanical knowledge and skill than on old-style steam engines.

Keeping a look-out for obstructions on the track and for the frequent wayside signals, which indicate whether the train may proceed at full speed or whether it must stop or slow down,¹³ is another important part of a fireman's job. He, as well as the engineer, is held responsible for any accident due to failure to obey signals. While rounding curves the fireman is expected to look back for such things as hotboxes and dragging equipment. On freight trains, he also has to watch the rear end of the train for signals conveying orders from the conductor; members of the crew generally give these signals by hand or with a lantern or flag, since freight trains do not have the mechanism for signaling the engineer which is installed on passenger trains. Radiotelephones, which make it possible for the conductor in the caboose to talk with the engineer in the locomotive cab, have been installed on a few trains and will be used increasingly.

Qualifications and Lines of Promotion

Applicants for fireman jobs have to pass medical examinations, with very rigid standards as to eyesight and hearing. On most roads they must be

¹³ See p. 31, footnote 19, for a brief description of railroad signals.

at least 21 years of age and not more than 27. A high-school education or its equivalent is required by most railroad companies.

A new fireman must make trial trips for a brief period lasting only 10 days or even less on some roads; as much as 3 weeks on others. After this, he begins on the "extra board," which is a list of workers who take assignments in order as men are needed. He may remain on extra work for several months or longer before he obtains a regular assignment. On roads which do not have separate seniority lists for yard and road service, firemen may progress from yard to freight service and eventually to passenger work, where hourly pay is highest. Some men, however, prefer to remain in yard service, because a "yard bird" has the chance to live a more regular home life.

A fireman may qualify as an engineer in 3 or 4 years, but ordinarily he has to have much more seniority than that to bid successfully for an engineer assignment. Before the war, a fireman often had to wait 10 to 15 years to become an engineer. After that he was likely to spend several years on the engineers' extra board, working irregularly, and might have to go back to firing again if traffic fell off in his division.

While on the job, the fireman should be constantly absorbing the knowledge and obtaining the skills which will make him eligible for a locomotive engineer's job and fit him to take the engineer's place in case of emergency. There are many different types of locomotives, ranging from small hand-fired switching engines to giant 4-unit Diesels; a fireman is expected to graduate as an engineer able to operate any locomotive in service on his road. As a rule, he must take progressive examinations on engine machinery, air brakes, fuel economy, time tables, train orders, and other operating rules at specified intervals. If he fails to pass after several tries, he may be dismissed.

Outlook

There will probably be moderate numbers of openings for newcomers in "firing" jobs every year except when business conditions are very bad. In this large occupation several thousand men quit, are promoted, or leave for other reasons each year and must be replaced. During 1946, 7,400 new entrants were taken on as firemen by class I roads.

Over the long run, employment will probably tend to decline in this occupation. Increasing use of powerful new Diesel engines will cut down employment of firemen, because the same amount of traffic can be hauled with fewer engines and engine crews, especially in mountainous areas where the extra "helper" engines can be eliminated. The resulting decreases in the numbers of firemen needed are expected to come about slowly on many roads, somewhat faster on others. On all roads using Diesels, however, there would be a great change in job prospects if the efforts being made by the firemen's union to secure the employment of a second fireman on multiple-unit Diesels should be successful.

A major decline in business activity would mean a marked drop in the number of firemen needed. In addition, firemen would be bumped by engineers who had to go back to firing, and many firemen at the bottom of the seniority lists would have to be laid off. Thus, the burden of a reduction in employment of engine crews is borne entirely by the firemen, unless lay-offs are so heavy that all firemen on a particular seniority list have been furloughed.

Earnings and Hours of Work

Yard firemen had a basic daily rate of \$11.29 on the lightest locomotives used in yard work in early 1949. On heavier locomotives their rates were higher; the average rate was about \$11.58. They have a basic 8-hour day, and for work beyond 8 hours they are paid one and one-half times their regular hourly rates.

In road service, both hours worked and miles run play a role in determining the earnings of firemen. The combination of these two factors has led to the popular, although not exactly accurate, characterization of the system of wage payment for road engine-and-train-service employees as the "dual" basis of pay system. This system, which has evolved over many years, is comparable in some respects to piecework and incentive wage systems used by many manufacturing companies.

All road firemen have basic daily wage rates which vary with the weight and type of locomotive and class of service. In early 1949 in freight service, daily rates started at \$11.07 and ranged up to around \$14 for work on some of the heavi-

est locomotives in use. In passenger service, firemen were assured earnings of at least \$11.08 a day, and basic daily rates went above \$11.50 on some of the biggest locomotives in service.

Men who run more than 100 miles in 1 day get additional mileage pay. A fireman gets overtime if the average speed of his train is less than his "speed basis"—which is 12½ miles an hour for freight firemen, 20 miles an hour for passenger firemen.¹⁴ Primarily because of extra mileage on fast runs in passenger and through-freight service, and because of the long hours of work in local and way-freight service, where trains have to make many stops and have low average speeds, the men frequently earn more than their basic daily rates.

How does this pay system work out in practice? Suppose, for example, that a freight fireman's daily rate is \$12. If this man's run is 100 miles and he finishes it in 8 hours or less, he gets \$12. Had he made a longer run at higher speeds—covering, say 125 miles in 7 hours—he would have been paid for 125 miles of work at the rate of 12 cents a mile (his daily rate divided by the basic 100 miles), or a total of \$15. He would receive no more if the run took up to 10 hours, illustrating why men performing service on fast trains have higher earnings for every hour on the road than those on slower ones.

The amount road firemen may earn in a month is generally restricted by "mileage limitations," agreed upon by the unions and the railroad companies. If a fireman reaches the top mileage limit, he lays off for the balance of the month while another man takes over his assignment.

Men with regular runs have the best chance of reaching the maximum mileage allowed. Conversely firemen on extra boards, where the junior men start out, tend to have less work and lower incomes than those with regular assignments. The amount of work for firemen also varies from one season of the year to another on many roads; on northern ore-carrying roads, for example, there is likely to be less work in winter than in summer whereas on roads serving Florida, traffic is heaviest in winter.

¹⁴ For firemen, as for other road-service employees, the speed basis is computed by dividing the number of miles by the number of hours constituting a basic day's work. In the case of freight firemen, this would be 100 miles divided by 8 hours; in the case of passenger firemen, 100 miles divided by 5 hours.

Since trains run at all hours of the day and night, firemen often have to do night work. This is true for many senior men with regular assignments as well as for those who are on extra boards. Extra work has the further disadvantage of involving very irregular hours. Men on extra boards are on call at all times and must work whenever and wherever they are needed.

Road service often requires firemen to be away from their home stations overnight. When away from home, they pay their own living expenses.

Working Conditions and Hazards

Intense heat from the firebox, swirling cinders and dust from the open cab windows, great noise, and treacherous footing—these are part of the daily working environment of men on hand-fired locomotives. In winter, the fireman is exposed to extreme changes of temperature. He has to move from the intense heat of the firebox to the cold draft of the cab seat, where he has to lean out of the window and watch for signals. He may also have to go from work at the open firebox into the wintry outdoors, when coal or water has to be taken on. In summer, outside temperatures of 80°, 90°, or more take the place of cold winds and drifting snow, raising the temperature in the cab to the sizzling point.¹⁵

The surroundings in the cab of a Diesel-electric locomotive are very different. There is of course no firebox. The ride is likely to be less bumpy and, since doors and windows can be closed, there is much less draft, fewer flying cinders, and less noise. However, the greater speed of the new locomotives means that there is greater nerve strain in watching for signals.

As to the danger of accident involved in firemen's work, those on passenger trains are injured more frequently than most other groups of railroad workers. There are only a very few other railroad occupations in which fatal injuries are as frequent as among passenger firemen. The accident risk is less in freight service, particularly local and way freight, and still less in yard work.

¹⁵ Characteristics, Duties, and Requirements of Railroad Employment (mimeographed), available from Railway Labor Executives Association, 10 Independence Ave. SW., Washington 4, D. C. (pp. 14-18); and *Railway Age*, December 15, 1945 (p. 968).

Labor Organization

Workers in this occupation are covered by union contracts on all major railroads. They are represented mainly by the Brotherhood of Locomotive Firemen and Enginemen; in some cases, by the Brotherhood of Locomotive Engineers.

Locomotive Engineers

The engineer of a 6,000-horsepower modern locomotive drives a machine capable of pulling as much gross weight as 100 of the biggest trucks.¹⁶ His machine can pull over 1,000 tons of trailing load at a speed of 100 miles an hour in passenger service, or over 4,000 tons at 50 miles an hour in freight service. The man operating such an engine or even an older-type locomotive with half the power, obviously carries great responsibility for life and property.

An engineer is held accountable for the efficient and safe operation of his engine. Before each run, he carefully inspects the locomotive and checks the supply of fuel, water, sand, and other items needed for the trip. En route, he operates the throttle, air brake, and other controls and watches to see that the track is clear, noting the position or color of every signal and checking his reading of it with the fireman to make sure he has observed it accurately. He must obey signals instantly. If he should delay in applying his brakes when approaching a "stop" signal, for example, his engine might go thundering into the rear of a train ahead.

While on the road the engineer instructs the fireman, as necessary, regarding the steam pressure which should be maintained in the boiler, train orders, operating rules, and other subjects. At the end of the run he checks the engine again and makes out a report on any mechanical defects (such as sticking brakes) which need attention. In addition he states the reasons for any unscheduled stops or delays.

Most locomotive engineers—about 56,000 in 1948—are employed by class I roads. A few work for small railroads and other types of companies. On the major roads engineers are divided among the different types of service in about the same proportion as firemen (see p. 15).

¹⁶ States with the highest maximum limits permit truck and load gross weight of about 35,000 pounds.



Engineer operating controls of modern Diesel-electric locomotive.

Lines of Promotion

When a fireman is promoted to engineer he starts out on the engineers' extra board, and later, gets a regular assignment. The usual line of advancement is from yard work to road freight service and, finally, to passenger service, except on lines which have separate seniority lists for yard and road service. On these railroads yard firemen become and remain yard engineers, while road firemen move directly to "extra" work as engineers in road service. The men with greatest seniority, who have their choice of the available jobs, are frequently found on the new Diesel locomotives. Some "old-timers," however, prefer to remain on the older steam engines where the work is more exciting and not "too easy." A few engineers in road service may work up to supervisory positions such as road foreman of engines and other positions.

Outlook

Openings for new engineers are filled by promotion of qualified firemen on a strict seniority basis. During the war the great increase in traffic and the loss of some engineers to the armed forces led to much faster promotions than in the prewar period, when firemen usually had to wait many years for an engineer assignment. With the drop in traffic and the return of servicemen since VJ-day, promotions have slowed down. They will

probably continue to be slow over the long run, since employment of engineers is expected to have a downward trend. Nevertheless, turn-over will probably create a few thousand openings each year.

Men who accumulate enough seniority to become engineers have much job security, as long as they are able to pass the strict physical examinations required at regular intervals. If they fail to measure up to the physical standards at any time, they may be restricted to certain types of service (which may pay less than their previous assignments) or, in some cases, they may be removed from service altogether. Also, if traffic should decline substantially, some engineers with regular runs would have to go back to extra work, extra engineers would be likely to have less work and lower earnings, and some of the junior men would be bumped off the engineers' extra board and have to become firemen again.

Earnings and Working Conditions

Yard engineers are paid on a daily basis like yard firemen. Earnings of engineers in road service are based on the same system of wage payment as those of road firemen (see p. 16).

In each class of locomotive, of course, the rate of pay for the engineer is higher than that for his fireman. In early 1949, engineers had a basic daily rate of \$12.97 on the lightest locomotives used in yard work, as compared with \$11.29 for firemen. On bigger yard locomotives daily wage rates were higher. Engineers, like other yard employees, have a basic 8-hour day, and for work beyond 8 hours they are paid one and one-half times their regular hourly rates.

Basic daily rates for engineers in freight service started at \$12.97 and ranged up to around \$16 on some of the biggest locomotives in early 1949. In passenger service, engineers had assured earnings of \$12.97; the highest rate was around \$13.50 on a few giant engines. Engineers frequently operate trains over greater distances than their basic daily mileages and thus increase their earnings for the trip. In local and way-freight service, they, like firemen, may have very long working hours with pay for overtime under some circumstances (see p. 16).

Engineers on extra boards work very irregularly, at any hour of the day or night when they happen

to be needed. They are also likely to have less work and lower earnings than men with regular assignments.

Primarily because of extra mileage in passenger and through-freight service and because of long hours of work in local and way-freight service, the men frequently earn more than their basic daily rates. Like other members of train and engine crews, engineers have to pay their own living expenses while on duty away from their home bases.

Engineers are injured somewhat less frequently than firemen in the same type of service.

Labor Organization

Union contracts covering locomotive engineers are in effect on all major roads. On most roads the engineers are represented by the Brotherhood of Locomotive Engineers. But on some they have chosen the Brotherhood of Locomotive Firemen and Enginemen, or, occasionally, still another union as their collective bargaining agent.

Brakemen

The occupation of brakeman is by far the largest one in the train and engine service group. (See chart 1.) In 1948 about 113,000 men were employed in this occupation on class I roads; a few thousand more worked for switching and other companies.

Yard brakemen (often known as switchmen or yard helpers) assist in making up and breaking up trains, riding on the cars to control them as they are shunted about the yards. They apply hand brakes to stop the cars, couple and uncouple cars and air hose, and throw track switches, besides handling other duties. About one of every two brakemen is engaged in this type of work.

The men in road freight service are the next largest group: they include over two-fifths of all brakemen. Freight trains usually carry at least two brakemen and sometimes more. One of them, the rear brakeman or "flagman," rides in the caboose. It is his job to protect the end of the train from being run into during stops or delays. When a stop occurs between stations, he goes back along the track on foot and signals by waving a flag or "starting the fireworks" (putting a lantern or fusee by the track or placing a torpedo



Flagman signaling to protect rear of train which has stopped.

on the rail, where it will explode when an oncoming locomotive hits it). The "head" brakeman rides in the locomotive cab. During stops, the head brakeman attends to the work of picking up or setting off cars, detaches the engine from the train for the purpose of taking on coal and water, and inspects the head of the train. He protects the head end of the train by flag when necessary under emergency operating conditions. Other duties of freight brakemen include keeping a sharp lookout for smoke from hotboxes or other signs of trouble on the train, signaling from one end of the train to the other (as shown in the picture), setting hand brakes, and throwing switches.

Passenger brakemen (often known as trainmen) perform many of these same tasks, look after the needs of passengers, and may help to collect tickets and assist the conductor in other ways. Less than 1 out of 10 brakemen is in passenger service, a smaller proportion than among firemen, engineers, or conductors.

Qualifications and Lines of Promotion

Applicants are usually required to be at least 21 years of age (only 18 on some roads) and not older than 28 or 30. Physical and educational requirements are similar to those for firemen. (See

p. 15). Student brakemen make 3 to 10 trips under the instruction of a brakeman or conductor. After this brief period, they usually start out on the extra board, although it takes a long time to learn the job thoroughly. From the extra board, they move to other assignments in the same way as firemen.

To qualify as conductors, brakemen need at least 2 or 3 years' experience. They must pass written and oral examinations covering signals, timetables, brake systems, operating rules, and other subjects. On some roads those failing to pass examinations after several tries may be dismissed. Promotions are made according to seniority rules as openings occur, and a man may have to wait 10 years or more for his first assignment as conductor. Brakemen may also bid for baggageman jobs and, on many roads, may transfer from yard work to road freight service and eventually to passenger work—which is generally considered the most desirable, since it is cleaner and less strenuous and usually means shorter working hours. Occasionally men prefer to stay in yard service, however, to avoid the many nights away from home which may be necessary on road freight and passenger runs. A few others wish to stay in freight service, where they do not have to "dress up" in uniform and cater to the passengers.

Outlook

There are likely to be many more opportunities for newcomers in brakeman than in fireman jobs, not only because the former occupation is much the larger of the two but also because the proportion of jobs left vacant each year owing to turn-over is higher among brakemen than among firemen. In 1946 about 18,000 new entrants were hired as brakemen by class I roads, compared with 7,400 hired as firemen.

As with firemen, employment of brakemen will probably decrease over the long run, although reductions in hours worked may at times have a counteracting effect. Introduction of improved methods of handling yard traffic, including radio-telephone communications between yardmasters and crews, will reduce the number of yard brakemen needed to handle a given amount of traffic. Longer trains with heavier loads, made possible by the use of improved locomotives and cars, will reduce the number of road brakemen needed to

handle a given amount of tonnage. Decreases in employment are likely to come about slowly, however, provided that general business conditions remain good. But if there should be a major decline in business activity large numbers of brakemen would have to be laid off, and employment of brakemen would drop sharply; in addition, many would be bumped by conductors who had to go back to braking.

Earnings and Working Conditions

Yard brakemen on most roads had a basic daily wage rate of \$12.06 and a daily earnings guarantee of \$12.26 in early 1949. They have a basic 8-hour day, and for work beyond 8 hours they are paid one and one-half times their regular hourly rate.

In road service, earnings of brakemen are determined in the same manner as those of road firemen and engineers. (See p. 16.) For brakemen in through-freight service, basic daily wage rates in early 1949 were \$10.64 on eastern roads and \$10.59 on western roads. In local and way-freight service the rates were \$11.07 and \$11.02, respectively. Men who run more than 100 miles in 1 day get additional mileage pay.

Brakemen in passenger service had a basic daily wage rate of \$10.49 in the East and \$10.45 in the West in early 1949. Those on eastern roads were guaranteed that their total earnings would not be less than \$10.79 for any workday and not less than \$314.70 monthly. On western roads, the guaranteed amounts were \$10.75 and \$313.50, respectively. In passenger service, additional mileage pay does not begin to accrue until after men have run 150 miles in a day (a longer basic mileage than in freight service).

A brakeman gets premium pay for overtime if the average speed of his train is less than his "speed basis," which is $12\frac{1}{2}$ miles per hour in freight service, 20 miles per hour for passenger brakemen.¹⁷ As in the case of engine crews, extra mileage in passenger and through-freight service and long hours of work in local and way freight service frequently enable men to earn more than their basic daily rates.

¹⁷ The speed basis for brakemen and conductors is computed by dividing the number of miles by the number of hours constituting a basic day's work. In the case of freight train crews, this would be 100 miles divided by 8 hours; in the case of passenger train crews 150 miles divided by $7\frac{1}{2}$ hours.

The newer brakemen, who are on extra work, tend to have lower earnings than men who have secured regular assignments. They also work very irregular hours. Like other members of train and engine crews, brakemen have to pay their own living expenses while on duty away from their home bases.

Another important fact about brakemen's working conditions is that men in yard and freight service face a considerable accident risk. Yard brakemen are injured more often, per million man-hours worked, than any other major group of railroad workers; the accident rate among freight brakemen is not quite as high. Passenger brakemen are not injured as frequently as these two groups but, like most train and engine service workers, they have a much higher accident rate than railroad workers as a whole.

Getting on and off moving cars and locomotives is the most frequent cause of accidents in this occupation. Brakemen perform this dangerous maneuver many times a day—yard brakemen most often and passenger brakemen least. The chances of slipping and falling are multiplied when getting on or off trains on dark nights, in rain, sleet, or snow, or in subzero temperature. Brakemen also suffer many accidents while operating switches and hand brakes and coupling and uncoupling cars.

Labor Organization

Brakemen are highly unionized. They are represented mainly by the Brotherhood of Railroad Trainmen. However, the Order of Railway Conductors has organized freight and passenger brakemen on a few roads; the Switchmen's Union of North America holds the contracts for yard brakemen in certain instances.

Conductors

Every freight and passenger train has a "captain," the conductor. He is directly responsible for the safety of the train and its cargo or passengers, for carrying out all orders regarding the operation of the train, and for the work of all other members of the crew including the engineer. He must see to it that trips are completed on schedule, or as nearly so as traffic and other conditions permit. And he must make out the necessary reports on every trip.

The large railroad companies employed about 48,000 conductors in 1948, of whom about 20,000 worked on freight trains. A freight conductor's work begins before his train leaves the terminal. He has to assure himself that all members of the crew understand the train orders and that the train has been thoroughly inspected; he must also check the waybills, which tell the destination of each shipment. As he rides along in the caboose, he is required to enter on an appropriate form or in his train book the numbers of the cars, their contents, times of arrival and departure, delays, and such other information as the individual railroads may require. In many cases he has to make out a report which later serves as the basis for the company's audit and for the Interstate Commerce Commission's statistics on many aspects of railroad operation. He also keeps a lookout for signals and for train orders at stations¹⁸ and may spend part of the time riding in the small watchtower (or "cupola") on top of the caboose, from which he can observe train operations.

Passenger conductors numbered only about 7,500 on class I roads in 1948. Like freight conductors, they have to do preparatory work before the beginning of each run—making sure that all crew members are on duty, that the train has been properly inspected and is in good condition, and that all needed equipment is on board. In addition to these general responsibilities the conductor, sometimes assisted by a helper conductor, assistant conductor, ticket collector, or brakeman, collects tickets and cash fares, on which he makes a detailed report at the end of his run.

There are about as many yard conductors as freight conductors (about 21,000 on the large railroads in 1948). These men, who are frequently called yard foremen, have charge of the switching crews which take trains apart, sort out the cars, and assemble trains ready for departure (in accordance with switching lists given to the conductor by the yardmaster). The yard conductors have a key role in railroad operations, since inefficiency in a congested yard or terminal can throw an entire railroad system out of gear.

Lines of Promotion

Opening for new conductors are almost always filled by promoting qualified brakemen (or, in a

¹⁸For a discussion of signals and train orders, see p. 30.

few cases, baggagemen) in accordance with seniority rules.

Like other members of train and engine crews, conductors usually begin on the extra board and then move to regular assignments. On some roads a conductor's seniority is confined either to yard and road service while other companies have "universal" seniority. On the latter roads conductors generally move from yard assignments to freight service, and finally to passenger service. It takes many years to reach the top of this ladder, however. Promotion to still higher supervisory or administrative jobs is possible for a few experienced and exceptionally able men.

Outlook

Promotion from brakeman to conductor jobs is expected to be slow in the future, as it was before the war. In this and other respects, employment prospects for conductors are much the same as those for engineers, outlined on p. 18.

Earnings and Working Conditions

Conductors are paid on the same basis as brakemen (see p. 21), but they have, of course, higher wage rates. The basic day for conductors is the same as for brakemen. Yard conductors on most roads had a basic daily wage rate of \$12.91 and a daily earning guarantee of \$13.11 in early 1949. Like other yard workers, they have a basic 8-hour day, and for work beyond 8 hours they are paid one and one-half times their regular rates.

In the eastern part of the country, in early 1949, through-freight conductors had a basic daily wage rate of \$12.06 and local and way-freight conductors a rate of \$12.62; passenger conductors had a basic daily rate of \$12.64 and a guaranteed minimum of \$12.94 daily and \$379.20 monthly. Corresponding rates in the western part of the country were 6 or 7 cents less a day.

Conductors, like brakemen, often earn more than their basic rates (see p. 21). Men who are conductors usually have had many years of service and therefore are more likely to have year-round employment than brakemen. Extra-board conductors, however, like all other train and engine personnel on such duty, have very irregular working hours, and tend to earn less than con-



Passenger conductor signaling engineer that it is time to start.

ductors with regular runs. Conductors pay their own living expenses when away from their home bases.

Labor Organization

There are union contracts covering conductors on every major railroad. Freight and passenger conductors are represented mainly by the Order of Railway Conductors, though in some instances by the Brotherhood of Railroad Trainmen. Yard conductors on the other hand have been organized largely by the BRT, though on some roads by the ORC, the Switchmen's Union of North America, or a system association or local union.

Train Baggage men

Baggage men are part of the train crew on passenger trains which have baggage cars. They receive the trunks and other baggage checked by passengers and, on trains on which express messengers are not employed, handle articles sent by express, as they are loaded on at stations. They also handle mail bags, unless the train carries so much mail that there is a separate mail car. Dur-

ing the run, they sort and arrange the different articles, and they must see that each one is delivered at the proper station. Another duty is keeping records of the baggage, express packages, and mail bags put into and taken off the car. When a train has to stop on the road, the baggage man may be required to leave his car (which is always near the locomotive) and go forward along the track to signal and thus protect the front end of the train.

Baggage man jobs are generally filled by brakemen who choose to transfer to this occupation. The work is considered relatively easy, as compared with that done by brakemen. Frequently, the jobs are taken by older men or by those who do not want to assume the responsibilities of a conductor's position.

Outlook

Employment in this small occupation remains about the same from month to month and year to year. In 1948 about 4,100 baggage men were at work on class I roads, only about 200 more than before the war (in 1939) and slightly more than at the war's peak.

In the long run employment will probably remain very stable, assuming that general business conditions remain good. A few openings will arise owing to turn-over, but these will continue to be filled by workers in other train-service jobs.

Earnings and Working Conditions

Baggage men in Western Association Territory had a basic daily wage rate of \$10.62 and a guaranteed minimum of \$10.92 daily and \$318.60 monthly in early 1949. In Eastern Association Territory the corresponding rates were \$10.66, \$10.96 and \$319.80, respectively. As for other train and engine personnel in road service, their earnings are based on a combination of daily rates of pay and mileage rates plus certain allowances (see p. 16).

The Brotherhood of Railroad Trainmen represents the baggage men on most roads, although on a few they have been organized by the Order of Railway Conductors or some other union.

Hostlers

In the early days of railroading, when trains were beginning to take the place of horse-drawn

vehicles, a locomotive was often referred to as an "iron horse." Even today, places in an engine house into which locomotives are driven for servicing and light repairs are known as "stalls," and the workers who take the engines in and out of the stalls and attend to them as needed are called "hostlers," after the men who had charge of the horses at inns and stables in the days of stage coaches.

Hostlers' duties include taking locomotives to the coal dock or fuel-oil station for refueling after they have completed a run; supplying them with water, lubricating oil, and sand; and servicing them in other ways. They also deliver engines which are ready to start a new run, to the engine crews who will take them on the road.

An inside hostler handles locomotives inside and around the engine house or on special engine tracks. An outside hostler may take engines anywhere within the limits of the railroad yard; he may have to drive them from the station to the engine house or vice versa and must be acquainted with the signal systems used on the main tracks. Outside hostlers have helpers who assist them in watching for signals and in other tasks.

How to Enter

Some outside-hostler jobs are filled by men who began as helpers; some inside-hostler jobs, by men with experience as laborers in the engine house. More often, however, both types of positions are filled by men with experience as firemen, who have been disqualified from that occupation for some reason (often a limited physical disability) or who prefer a hostling job near home to a position as road freight or passenger fireman which will keep them away from home much of the time.

Hostlers have little chance for advancement to higher positions; in fact, hostling is often called a "fixture job."

Outlook

This is another small occupational group (in 1948 there were about 2,200 outside hostlers, 4,000 inside hostlers, and 1,500 outside hostler helpers on class I roads). What few job openings occur each year as a result of turn-over will be filled mostly by men with railroad experience. Over the years there is likely to be a slight downward trend in employment, even assuming continued high

traffic levels. Should there be a marked drop in traffic, employment would fall sharply in this as in most other railroad occupations.

Earnings and Working Conditions

Outside hostlers had a basic daily rate of \$11.97 in early 1949. The rate for inside hostlers was \$11.29 and for outside hostler helpers, \$10.68.

Hostlers are highly unionized, like most other groups of railroad workers. On the great majority of roads they are covered by the collective bargaining agreements of the Brotherhood of Locomotive Firemen and Enginemen.

Switch Tenders

The few thousand men in this occupation are employed in railroad yards to throw certain track switches. They are stationed near their switches and do not have to move about very much on the job.

Switch-tender positions are frequently filled by men already employed in the yard—often by disabled yard brakemen (or "switchmen"), since the occupation does not require as much stamina and agility as most yard work. Yard clerks sometimes take switch-tender jobs; from there, advancement to yard brakeman is possible.

Switch tender throwing switch in freight yard.



Outlook

In the foreseeable future, openings for newcomers in this small occupation will probably be in the hundreds annually as long as business conditions are good. It is expected that over the long run employment of switch tenders will decline more rapidly than employment in the industry as a whole, since hand-operated switches are being replaced increasingly by those controlled from a distance.

Earnings and Working Conditions

Switch tenders are among the lowest-paid workers in the train and engine group. Their basic daily rates were \$10.51 and \$10.71 in early 1949.

The Brotherhood of Railroad Trainmen represents switch tenders on most railroads. However, in a few cases the agreement covering them was negotiated by the Switchmen's Union of North America or some other organization.

Passenger Service on Trains

Travelers on today's trains expect many comforts and services. They take it for granted that meals will be available when they are hungry. Those traveling at night count on having clean, comfortable beds or reclining seats. On luxury trains they may ride in an elaborate club car where drinks and other refreshments are served, and in some cases even enjoy a movie, dictate to a public stenographer, or have their hair cut by a skillful barber.

This list of services tells a story of progress. Less than a century ago passengers on the few trains that ran at night had to sit up. Unless they carried lunches, travelers went hungry until the end of their journey or until they could get a quick meal at a station restaurant during a stop. The forerunner of today's sleeping cars was introduced in 1859; a few years later a dining car made its first run. Now there are not only about 8,000 sleeping cars and 1,500 dining cars but more than 3,000 parlor, club, observation, buffet, and other special types of passenger cars.

Almost all sleeping cars, including combination sleeping-club cars, are operated by the Pullman Company. This company also operates a number of parlor and other specialized passenger cars.

The railroads operate all the dining cars, and most of the parlor and business cars.

Pullman conductors, porters and attendants, and railroad dining-car cooks and waiters are auxiliary employees carried on passenger trains which provide sleeping accommodations, food, and other personalized services to travelers. This chapter discusses employment opportunities in these passenger-service occupations.

Pullman Conductors

On sleeping cars and other Pullmans, two men usually go around together to collect tickets. One of these is the railroad conductor or brakeman, who takes each passenger's railroad ticket. The other is the Pullman conductor, who collects the special ticket for the berth, bedroom, or other space which the passenger is occupying.

Besides collecting tickets, Pullman conductors are responsible for assigning space to passengers who come aboard without reservations or who wish to change their accommodations. They keep records of the tickets collected and space assigned. They also supervise the porters and other employees on the Pullman cars. Though employed by the Pullman Co., they are under the supervision of the railroad conductor during a run.

Qualifications and Lines of Promotion

Pullman conductors are recruited from many different sources. Clerks in company offices often transfer to such positions, temporarily or permanently. During the depression a number of college graduates were hired.

Prospective conductors must be able to read and write and to handle figures and simple book-keeping, and they must be adept in dealing with all types of people. Pre-employment physical examinations are required.

New conductors go through an instruction period of not more than 60 days (during which they are paid at the regular daily rate). After that they are on probation for 4 months and may be dismissed without a hearing within this probationary period. Experienced conductors with better-than-average ability may advance to minor supervisory positions; a few go on up the ladder to still bigger jobs. Also, Pullman conductors frequently transfer to clerical jobs in Pullman Co. offices.

Outlook

Few job opportunities will be available to newcomers in this small occupation, which employed only 2,500 men in June 1948. Like other groups whose employment depends mainly on first-class passenger traffic, Pullman conductors will probably decrease in number over the long run. Even during prosperous years only a small number of openings will result from turn-over.

Earnings and Working Conditions

Beginning Pullman conductors earned \$323.20 for a basic 225-hour month in early 1949. Pay increases are given at the end of the first, second, and fifth years of employment and again after 10 and 15 years of service. Workers with more than 15 years' service received \$356.20. Overtime for work over 225 and under 235 hours calls for straight-time rates; for work over 235 hours time-and-one-half rates.

The collective bargaining agent for Pullman conductors is the Order of Railway Conductors of America.

Porters and Attendants

Since the first sleeper was introduced in the middle of the last century, sleeping-car porters have become an American institution. Pullman travelers are familiar with most of the duties of these courteous, efficient men who strive to make passengers comfortable. Porters make up berths, keep the cars in order, see that the washrooms are clean and adequately supplied with towels, handle baggage, and look after the passengers' well-being in many other ways.

Parlor cars also carry porters who have these same duties—except, of course, making up berths. On club and other cars where refreshments are served there are "attendants," who prepare and serve beverages and food in addition to handling any needed porter work. Busboys assist the attendants on large club cars.

About 12,500 porters were employed by the Pullman Co. in June 1948, mainly on sleeping cars. In addition the company employed nearly 700 attendants and about 275 busboys. The class I roads also have a sizable number of attendants,

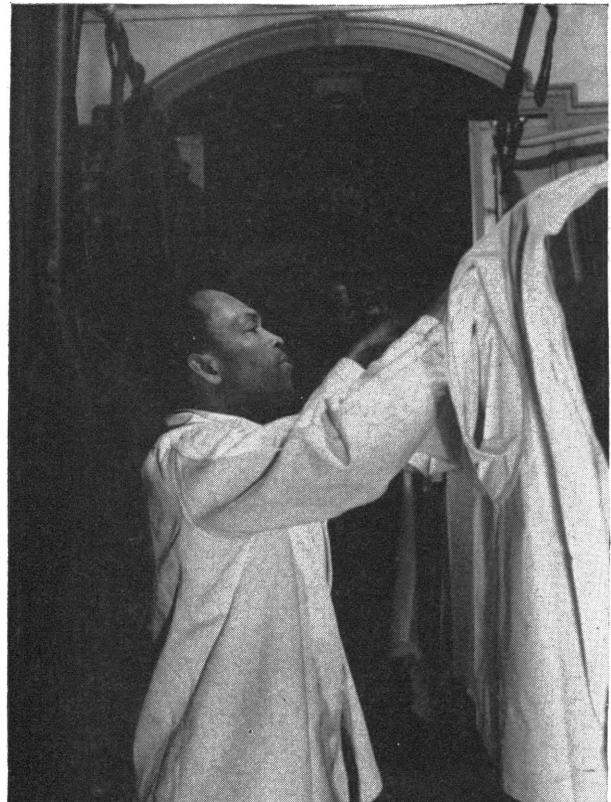
parlor-car porters, and other passenger-service workers; in 1948 they employed about 4,400 men in these types of work.

Qualifications, Training, and Advancement

Pullman Porters. Pullman Co. hiring requirements for porters call for men between 21 and 45 years of age who can read, write, and work elementary arithmetic problems. All prospective employees undergo character investigations. Porters must pass medical examinations before being hired and those who handle food are rechecked every 90 days thereafter; others are rechecked annually. Many Pullman porters have been recruited from among the friends and relatives of men already in service. Most of the men now hired are Negroes, although a few are Filipinos.

When a new porter is taken on he goes through a training period which usually extends over about 2 weeks. Part of the time is spent in instruction under a porter-instructor and part in road work under an experienced porter. After this training

Sleeping-car porter making up an upper berth.



period the employee is given regular porter work but is on probation for 6 months.

New porters are always put on the extra board at first. They then bid for regular runs and are assigned to them on a seniority basis. Experienced porters may bid for any "porter-in-charge" positions which open up in their districts. Porters-in-charge are employed on some trains which have only one or two Pullman cars and therefore no Pullman conductors; they collect Pullman tickets, sell space, and keep records, besides handling regular porter work. The positions are filled according to fitness, ability, and seniority.

Porters may advance to jobs as porter-instructors or porter-investigators. The company selects the workers it considers most qualified for these supervisory positions.

Attendants and Busboys. Experience as a busboy is generally needed to qualify for attendant jobs. For busboy positions, applicants should have an aptitude and interest in handling food. They must also be able to meet requirements with regard to health, character, and education similar to those for porters.

Busboys are generally promoted to attendant positions on the basis of seniority. It is possible to advance to such jobs as attendant-cooks on club cars which serve substantial meals.

Outlook

Opportunities for newcomers as Pullman porters, attendants, or busboys were not good in early 1949. As a result of the decline in first-class passenger traffic since the war, the Pullman Co. has had to lay off many workers. Most openings that arise in the next year or two, including any that may arise from a reduction in the basic working month, will probably be filled by reinstating furloughed workers or transferring men from one of the company's districts to another.

The number of porters, attendants, and busboys employed directly by the railroads has also been decreasing since early 1946. Nevertheless, a number of men without previous railroad experience have been taken on in these occupations. During 1946, for example, class I roads hired about 900 new entrants for attendant, porter, and related jobs. Much of this hiring has been to meet

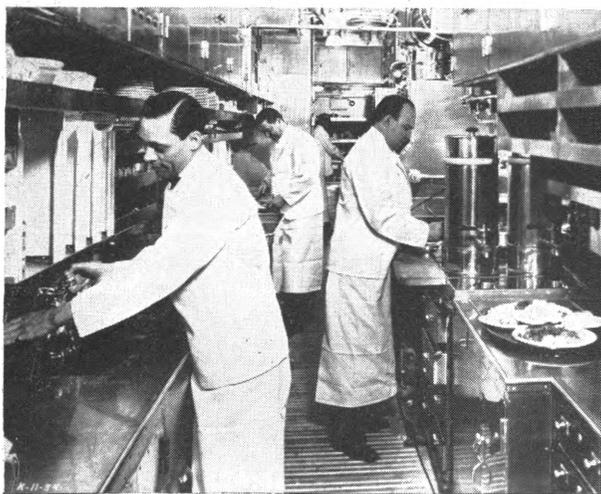
temporary seasonal needs for workers—notably, the expanded need for employees on runs to Florida and other southern States in winter and on those to northern vacation spots in summer. Even the largest railroad systems do not cover enough of the country to meet these seasonal needs by transferring workers from one region to another, as the Pullman Co. does to a great extent. As long as general economic conditions remain good, this situation is likely to continue. Some hundreds of new workers will probably find jobs with the railroads each year, but sometimes they may be laid off when the peak season is over.

In the long run, employment of porters, attendants, and busboys will probably tend to decline both with the Pullman Co. and with the railroads, even assuming continued business prosperity. Should there be a major depression, employment is likely to drop more sharply in these occupations, which are dependent on the amount of first-class passenger travel, than in many other types of railroad work.

Earnings and Working Conditions

Porters, attendants, and busboys who have regular jobs with the Pullman Co. will have their minimum guaranteed monthly wage based on 205 hours of work beginning September 1949 (until then the basic work month will continue to be 240 hours). Extra men have no such guaranteed wage, but the collective-bargaining contract stipulates that they should have "as nearly as possible, minimum earnings of approximately two-thirds of the basic month's pay." If men work more than 205 hours per month, they will receive straight-time rates for the first 35 additional hours; work beyond 240 hours will be paid for at time and one-half.

As of September 1949, the basic monthly rates for Pullman porters and attendants will range from \$235.90 to \$258.00, depending on the type of work and years of service. These rates do not include tips, which are heavy on some runs, light on others, and tend to vary with the type of work. The monthly rates are increased at the end of men's second year of service and at specified intervals thereafter—up to top figures about \$10 to \$20 higher than the beginning rates, after 15 years of service. Busboys will receive a flat rate of \$235.20 per month regardless of years of service.



Dining-car cooks work in small compact kitchens

Sleeping-car porters are provided sleeping accommodations on night runs and may catch a few hours' sleep after the passengers are checked in. The porter in the adjacent car "guards" the car of the porter released for sleep. Except under certain conditions, sleep of more than 2 hours is not counted as time worked. Employees may buy dining-car meals at approximately 60 percent of regular prices.

Labor Organization

Porters, attendants, and busboys employed by the Pullman Co. are represented by the Brotherhood of Sleeping Car Porters. Those working for the railroads are organized by the BSCP, the Hotel and Restaurant Employees' and Bartenders International Union, and the United Transport Service Employees of America.

Dining-Car Cooks

Dining-car meals are cooked in a compact and highly efficient kitchen at one end of the car. The number of cooks employed in this kitchen depends on the size of the car and the number of customers expected. On some runs one or two cooks may be enough; on others three or four may be needed.

Where four cooks are employed, the crew is generally made up as follows: First there is a chef who supervises the kitchen and instructs other members of the crew; he also roasts and carves meat and poultry, garnishes dishes, and takes in-

ventories of supplies. Next in line is a second cook who fries and broils meat, bakes muffins and rolls, dishes up meals, and does related tasks. A third cook prepares soup, vegetables, and coffee and works at the steam table. A man designated as fourth cook, or "helper," rounds out the crew. He is the vegetable peeler, dishwasher, and general clean-up man.

Practically all dining-car cooks work for class I railroads. In 1948 these roads employed only about 5,400 cooks, including some in restaurants as well as all grades of dining-car cooks above the helper level.

Qualifications and Lines of Promotion

Applicants with at least a grade-school education are preferred for jobs. All prospective cooks must pass very strict physical and medical examinations before being hired and are tested for communicable diseases every 90 days thereafter. On most roads only Negro men are hired at present, although some western and northern roads employ white cooks. Applicants with experience in food preparation are usually given preference.

New workers generally begin as fourth cooks. After 2 or 3 years' experience a man may be promoted to third cook, providing he demonstrates the proper skills and there is an opening. Many remain in this position for about 3 more years before becoming second cooks. Then it takes from 3 to 5 years to work up to the position of chef.

Outlook

This is a fairly small occupation and the number of workers employed in it has declined since the end of the war. However, the railroads take on a number of new cooks each year, except in very bad times. New recruits are hired to take care of temporary seasonal peaks in passenger traffic and to replace men who die, retire, or leave the occupation for other reasons.

For the long run a slow downward trend in employment of cooks is in prospect, owing to the continued decline expected in railroad passenger business. The new labor-saving kitchen devices and methods envisaged at present will probably not have much effect on employment; they are likely to ease the work rather than reduce the number of cooks needed. Use of precooked meals or instantaneous electronic cooking probably

would cut down the number of cooks required, but general introduction of such innovations is still a long way off.

The situation would of course be much worse if there should be a serious business depression and, therefore, a heavy reduction in passenger traffic. Under these circumstances it would be necessary to furlough many cooks.

Earnings and Working Conditions

Cooks and chefs working for class I roads will have average straight-time earnings of about \$1.30 an hour in September 1949. This figure is an average for all grades of cooks above the helper level. The earnings of individual cooks of course vary with the grade of job and other factors. In general extra workers have less employment and lower earnings than men with more seniority who have been able to get regular assignments.

Hours of work are long and often irregular. Sometimes a cook may work 18 or 20 consecutive days, or he may work a number of "long" days and then rest a few days. The standard work month will be shortened from 240 hours to 205 hours beginning September 1, 1949, but most cooks and chefs probably will work about the same number of hours as at present. For hours over 205 and under 240, straight-time rates will be paid; on most roads time and one-half rates will begin after 240 hours. When they are away from their home terminals, cooks are provided free meals and sleeping quarters.

The kitchens where dining-car cooks work are small and cramped. The work is done near hot stoves. It involves handling hot food and utensils and sharp knives. Even on a smoothly running train these working conditions involve risk of injury, and sudden jerks or swaying of the car multiply the chances of being burned or cut or of falling down. The risk of accidents faced by cooks is revealed by accident data for 1945 and 1946. In both years disabling injuries to cooks were more frequent, in proportion to man-hours worked, than to any other group of railroad workers except yard and freight brakemen. However, injuries to cooks are likely to be less serious than those to brakemen and other workers in train and engine service. In fatalities per million man-hours worked, cooks are well down on the list of railroad occupations.

Labor Organization

Dining-car employees are not as highly organized as most other groups of railway workers. The Hotel and Restaurant Employees and Bartenders International Union is the major union in the field. The United Transport Service Employees of America and the Order of Railway Conductors of America represent the cooks on a few roads.

Dining-Car Waiters

Anyone who has eaten in a dining car has a good idea of the difficulty of serving meals in the limited space of a swaying, jiggling car. It is hard, skilled work to maneuver loaded trays down the narrow aisle of the car and get food and drink onto the tables without mishaps.

Besides their main job of waiting on tables, dining-car waiters have other duties to perform. On a car with a full crew of six waiters these duties are usually divided as follows. Two workers serve as "pantrymen" and are responsible for the proper storage of food and the preparation of salads. The four others set the tables and have additional specific tasks. One takes care of the linen and water bottles. A second washes, cleans, and polishes the larger pieces of silverware, such as sugar bowls, ice tubs, and finger bowls. A third is responsible for the flat silver and the glassware. The remaining waiter keeps the floors clean. When the crew of waiters is smaller each man handles two or more of these duties.

Another type of work which some waiters do is to go through the coaches selling sandwiches, milk, and other items.

Qualifications and Advancement

Railroads give preference to applicants who are in their early twenties, fairly tall, and of pleasant appearance. Ability to read and write is a must, and previous experience as a waiter is an asset. Each man undergoes a character investigation before being hired. He is also given a thorough physical and medical examination. Throughout his employment he is tested for communicable diseases about four times a year.

Most dining-car waiters at present are Negroes,

though some northern and western railroads employ white waiters.

There is little opportunity for advancement for Negro waiters, since the stewards who are in charge on most dining cars are white men. A few Negro waiters become waiters-in-charge, who supervise the other employees on cars with a total work force of less than four including both cooks and waiters.

Outlook

Both the short- and long-run prospects for dining-car waiters are similar to those for dining-car cooks (see p. 28).

Earnings and Working Conditions

Waiters' wage rates are lower than those of cooks, but their earnings are supplemented by tips. When the amount received in tips is large, waiters are likely to earn more than cooks. When dining-car business is slack and tips are light, cooks generally earn more.

Average straight-time earnings for waiters will be around \$1.10 to \$1.15 an hour beginning September 1, 1949. Waiters generally get a 1-cent-an-hour increase for each year of service up to 5 years. Those who serve as pantrymen are paid a few dollars extra a month. Men selling sandwiches and other items in coaches receive a small commission on sales.

Dining-car waiters should be neat, cheerful, and efficient.



Waiters generally have the same basic month and overtime arrangements as cooks.

Waiters are organized mainly by the Hotel and Restaurant Employees and Bartenders International Union. However, they are represented on some roads by the United Transport Employees of America or the Brotherhood of Railroad Trainmen.

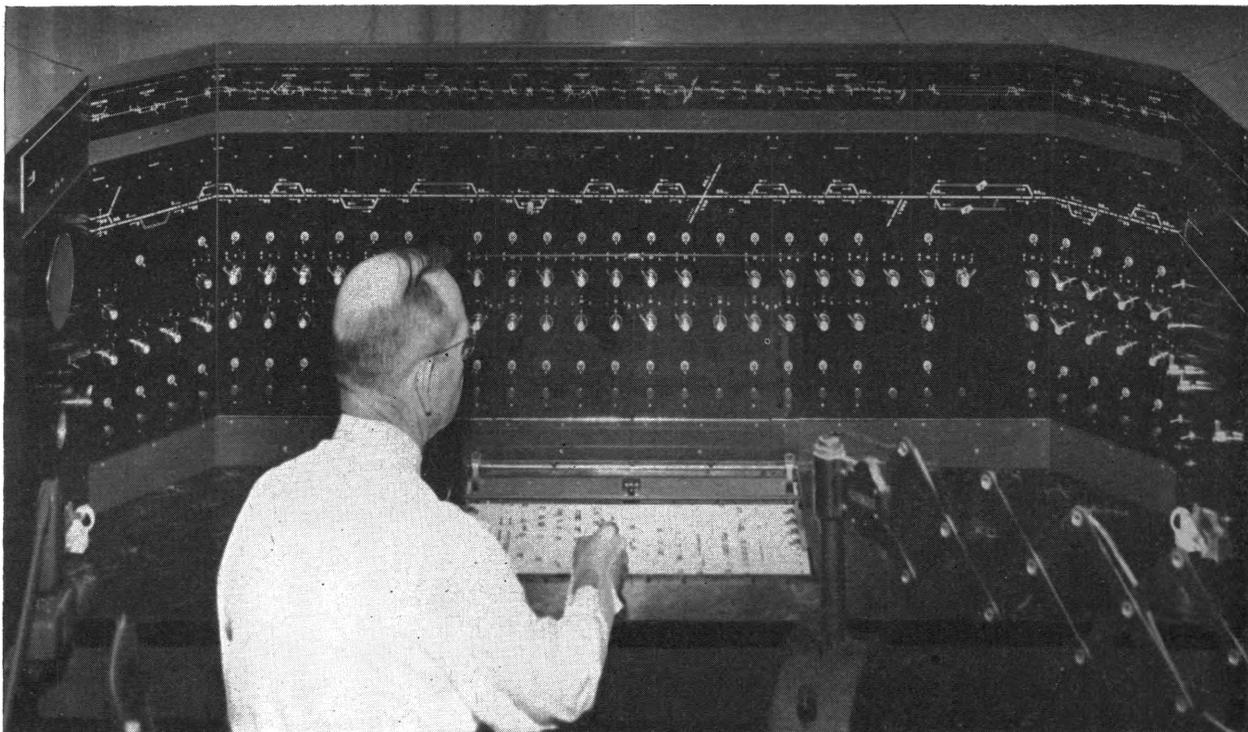
Communication, Station, and Office Work

If the only railroad trains were the regular ones listed in the freight and passenger timetables and these were always on time, directing the operation of trains over a railroad division would be a fairly simple matter. The officials in charge would only have to draw up schedules and rules of operation and give these to the train crews. Actually railroads have many extra freight and passenger trains besides those provided for in the timetables; also regular trains are sometimes delayed. These two factors greatly complicate the job of planning train movements so as to prevent collisions, and, at the same time, get all trains to their destinations as quickly as possible.

The key men in planning and directing train movements are the train dispatchers. The dispatcher must know at all times the location of all trains moving within his division or district. Usually, he receives reports regarding the location of trains by telephone or telegraph from wayside stations and towers. When a delay occurs or extra trains have to be provided for, he issues revised train orders—which may, for example, direct a train to shift to another track or, if the line has only one track, to wait on a siding for another train to pass.

How do these train orders reach conductors and engineers on the road? For the most part, they are sent by telegraph or telephone to operators in stations or towers, who convey the instructions to the train crews either by setting signals or by delivering written orders. Radiotelephone, which makes it possible for the operators to talk with the crew while the train speeds along, probably will be used more and more.

Another relatively new development, known as centralized traffic control (CTC), enables the operator to control train movements without need



Dispatcher operating centralized-traffic-control machine.

for written orders. CTC machines are sometimes operated by dispatchers, sometimes by towermen. As shown in the picture, the operator has in front of him a board with a map of the tracks controlled by his machine. Colored lights on the board constantly show him the position of all trains moving over these tracks. By turning the great number of different keys on the machine, he can set every signal and throw every switch in his district, thus directing trains miles away to stop, slow down, or proceed onto other tracks or sidings. As yet, CTC is found on relatively few miles of tracks, but is being installed steadily, especially on single-track lines with heavy traffic, where trains often have to be directed onto sidings so that others may pass.

Older and much more widespread than CTC are the block signals which most railroads have installed to protect trains from collisions during stops or delays between stations. Under the block signal system, railroad lines are divided into short sections or blocks, with a signal at the beginning of each. When a train enters a block the signal at the entrance to that block registers "stop," changing to "caution" as the train moves into the

next block, and to "proceed" as it gets still farther away.¹⁹ The majority of block signals are automatic: A train entering the block short-circuits an electric current flowing through the rails and thus sets the signal mechanism in operation. Such signals are a comparatively recent development, however. Manual signal systems, controlled by operators at the beginning of each block, are still in use on some lines, particularly where traffic is light; on other lines there are no block signals at all.

A picture of the work and employment prospects of telegraphers and telephoners and block operators is given below. Since many telegraphers and telephoners are in combination jobs involving work as a towerman, station agent, or clerk as well as the handling of communications, a discussion of these three station occupations is

¹⁹ The most common type of signal is a semaphore with an arm which moves upward from the horizontal (or "stop") to the diagonal and vertical positions and a light which changes from red to yellow to green. However, some railroads use "position lights," which are all of the same color but have different positions: and some signal posts have two or three semaphore arms. These more elaborate signals make it possible to convey more than three messages to the engineer of an oncoming train—as is necessary on routes where there are high-speed trains which cannot stop safely within the space of one block.

included in this section. Another well-known station job discussed in this section is that of red-cap.²⁰

Telegraphers and Telephoners

Telegraphers or telephoners are employed in most stations and in many towers. They are responsible for receiving train orders from the dispatcher and passing them on to train crews in written form or by signal indication, as well as for handling other types of communications with regard to the railroad's business.

To insure that the dispatcher's orders are given to the train crews correctly and are fully understood by them, the operator must follow strictly the established "operating rules." He must write down the order and repeat it to the dispatcher. Then he may hand it to the train crew, if the train is scheduled to stop at the station. Or he may attach the order to a hoop and hold this out by the track, so a member of the crew can catch it on his arm as the train passes (see picture). In addition, instructions governing train movements are often transmitted by setting signals.

Besides train orders, railroad telegraph operators handle messages regarding reservations, freight shipments, and many other matters. Some of them work in offices which relay messages to other telegraph offices all over the railroad system. In general, the men with the greatest speed and skill in sending Morse code are to be found in these relay offices. However, many of the operators in relay offices are printer operators who send messages by teletype or some other kind of printing telegraph machines instead of by Morse code; most relay work is now handled by such machines.

The block operators, stationed at the beginning of each block on routes with manual block signals, are also included in the telegrapher and telephoner group. These operators may have to communicate with the dispatcher about train orders and other matters and always have a telephone or telegraph connection with the men in adjoining blocks. When a train enters a block, the operator not only sets his own signal at "stop" but notifies the next man down the line to change his signal from "stop" to "caution" and the one beyond to



Telegrapher handing train order to fireman on moving train.

change his from "caution" to "proceed." On some routes the signals in adjoining blocks are "locked" together electrically, to guard against errors which might cause accidents. Under this "controlled manual system" an operator cannot change his signal from "stop" to "caution" until the next man up the line changes his signal to "stop" indicating that the train has moved into his block.

In 1948 the class I roads employed about 14,000 telegraphers, telephoners, and towermen (including printer operators, block operators, and all towermen regardless of whether or not they were required to do telegraphing or telephoning). In addition, there were about 900 chief telegraphers and telephoners and wire chiefs and 10,000 workers who combined telegraphing or telephoning with ticket selling or other clerical duties in stations. These figures do not include the station agents whose work involved handling of train orders and other messages by telegraph or telephone.

Qualifications, Training, and Lines of Promotion

Most young people entering railroad telegraph work start out as student-telegraphers. For this position the railroads desire young people not over

²⁰ See appendix A, p. 48, for a list of other communication, station, and office jobs and the numbers of workers employed in each.

21 years of age, preferably not more than 18. Sometimes girls are hired, but young men are generally preferred. The physical examination for telegraphers pertains particularly to eyesight and hearing: Applicants must have at least 20/20 vision in one eye and not less than 20/40 in the other (with or without glasses) and be able to hear ordinary conversation at a distance of 20 feet. A high-school education is required by almost all roads, and legible handwriting is necessary.

Most student-telegraphers receive 6 to 12 months of on-the-job training at a small station, under the supervision of the station agent or of an experienced telegrapher. They not only learn Morse code but are instructed in such subjects as train orders, operating rules, routes, rates, and accounts. Less often, beginners start by taking a course (which generally lasts 6 months) at a railroad telegrapher school and then spend 2 or 3 months "cubbing" at a station. For men with previous telegraphic experience the training period may be shorter. On many roads, trainees have to pass a written or oral examination on train and operating rules and a practical test on code speed and handling of orders to qualify for a telegrapher job.

Newly qualified telegraphers usually begin as extra workers and then bid for regular assignments. The men with greatest seniority have first chance at the shifts they prefer and at the various kinds of jobs within their seniority district (which, for most telegraphers, is the railroad division). They may bid not only on straight operator and block-operator jobs but also on towerman, telegrapher-clerk, and telegrapher-station-agent positions. Later on, they may work up to the position of train dispatcher or station agent in a major station and possibly to still higher positions. Some highly skilled operators obtain jobs in relay offices, where pay rates are comparatively high. From these positions, the usual line of advancement is to such jobs as wire chief and office manager. Occasionally a telegrapher may advance to chief clerk. Sometimes telegraphers transfer to entirely different types of work in the traffic or sales department of their company.

Outlook

There were openings for both students and experienced telegraphers and telephoners in early

1949 in many parts of the country. A critical shortage of telegraphers developed during the war, and in the first postwar years the railroads continued to have difficulty recruiting enough workers to maintain an adequate force of skilled telegraphers. Additional workers probably will be needed in the fall of 1949 to enable the railroads to put telegraphers on a 40-hour week.

Over the long run, the trend of employment in the occupation is expected to be downward, although the decline will probably not be sharp enough to cause many lay-offs provided that railroad traffic remains fairly high. Among the factors which have in the past reduced the number of Morse telegraphers needed and will continue to do so in the future are the use of telephone in place of telegraph in train dispatching and the introduction of teletype machines in relay offices. Workers in the telegrapher craft receive preference for telephone and teletype jobs, however, and these developments therefore tend to change the nature of the work done by some men rather than to eliminate positions. As CTC systems are introduced, they do cut out some telegrapher and telephoner jobs, but installations of CTC are likely to be spread out over a number of years. What the effects of radiotelephone will be upon railway communication jobs is not yet clear. Many railroad officials believe, however, that telegraphers or telephoners will always be needed regardless of radio.

The picture would of course be quite different if there should be a sharp decline in general business activity and therefore in railroad traffic. Under these circumstances, lay-offs would no doubt be necessary, as they were during the 1930's, and there would be few opportunities for new workers.

Earnings and Working Conditions

Clerk-telegraphers and clerk-telephoners will have average straight-time earnings of about \$1.57 an hour in September 1949. Wages vary greatly from one station to another and are based on factors such as geographical location and the amount and character of business transacted at the station. The wage rates for students are far below those for qualified telegraphers.

Employees in jobs involving only telegrapher, telephoner, or towerman duties will make about

\$1.61 an hour on the average in September 1949. Within this group also, there is wide variation in rates. Telegraph operators in relay offices have better-than-average pay, and there are many other differences.

The wage rates for chief telegraphers and telephoners and wire chiefs are naturally higher. In September 1949 these workers will have average straight-time earnings of about \$1.88 an hour.

Telegraphers and telephoners are represented by the Order of Railroad Telegraphers on nearly all major roads.

Towermen

Towermen are another group of workers who make a vital contribution to the safe and efficient movement of the trains. They operate switches and, sometimes, signals and may in addition handle train orders and inform the dispatcher of the exact times at which trains passed their tower.

Railroad towers overlook yards, the approaches to major terminals, and other places where two or more tracks come together or cross each other or where special care must be taken to prevent accidents. In some towers, switches are operated by pulling long levers which move rods leading to the switches. In the larger and more modern ones, however, signals and switches are operated electrically, and they are almost always "interlocked" so that they can be set only in proper sequence. These interlocking machines are a very important safety device; they make it next to impossible for towermen to make mistakes that might lead to collisions.

Towermen who merely operate the levers controlling switches in either mechanical or electrical towers are generally known as levermen. If they do telegraphing in addition to this work they are generally known as levermen-telegraphers, or towermen-telegraphers. In large towers where several men are employed a "tower director" is in charge.

Methods of Entry and Lines of Promotion

Towermen begin either as telegraph operators or in leverman jobs which do not require knowledge of telegraphy. At towers with the most

simple mechanisms, it may take only a week or so for the leverman to learn his work.

On some roads, towermen with telegraphic skills may bid for any positions on the telegrapher's roster for their seniority district; on others they have separate seniority lists. Advancement to tower director, train director, or dispatcher is possible.

Outlook

Additional workers probably will be needed in this relatively small occupation when the 40-hour week becomes effective in September 1949. Over the long run, the number of towermen employed is likely to decrease somewhat, owing primarily to further installations of centralized-traffic-control equipment. However, as we noted before, CTC installations will be made gradually. Given continued business prosperity, there is no reason to anticipate many prolonged lay-offs of towermen.

Earnings and Working Conditions

Separate figures on earnings are not available for towermen. The average hourly pay of the telegrapher, telephoner, and towerman group will

Leverman throwing mechanically operated switch.



be about \$1.61 in September 1949. In general, nontelegrapher levermen have lower wage rates than other towermen, except in some large interlocking towers.

The Order of Railroad Telegraphers represents levermen, other towermen, and train directors on nearly all major railroads.

Station Agents

A station agent is the railroad's official representative in all dealings with the public at his station. At a small, one-man station the agent has to do all the work himself: selling tickets, checking baggage, and calculating the charges on freight and express; keeping records; loading outgoing baggage, freight, and express onto trains and unloading items to be delivered to people in his community; even attending to the building and grounds. At most stations the agent also serves as telegrapher and telephoner, with responsibility for receiving and delivering train orders and other messages pertaining to the company's business. In general, the larger the station the more of the work is delegated to clerks, cleaners, and other employees working under the agent's supervision. Men who have worked up to agent positions in major freight or passenger stations have mainly administrative and supervisory duties.

About 21,000 full-time station agents were employed in 1948. Two-thirds of these men (14,000) were agent-telegraphers or agent-telephoners; the next largest group (5,000) had nontelegraph jobs at the smaller stations; while 2,000 had supervisory positions at major stations.

Qualifications and Lines of Promotion

Positions as agent in a small station or assistant agent in a larger one are filled, as a rule, by promoting experienced telegraphers who bid for the jobs. (For jobs in small nontelegraph stations, telegraphic experience is not required.) A wide knowledge of routes, rates, accounting methods, signals, and other matters connected with railroad operations is needed for all station-agent positions.

Agents may move up the ladder by going from smaller to larger stations. Another frequent line of promotion is from assistant agent to agent, and

possibly to station supervisor or inspector and station master.

Outlook

Employment is likely to be more stable in this occupation than in almost any other covered by the study, though it may decline slightly over the long run. There will be a limited number of openings in station agent jobs each year owing to turnover, but these will continue to be filled, in the main, by telegraphers already on the pay roll.

Since the early 1920's the number of agents has declined slowly but steadily, as more and more stations were closed. It was possible to eliminate many of those stations because automobiles enabled people to transport shipments farther to reach a railroad than they could in horse-and-buggy days.

The number of stations and agents may continue to decline, but at a slow rate. Most of the stations which could be easily eliminated have already been closed. Even if there should be a substantial decline in business activity and railroad traffic the number of stations and agents would remain about the same for a while, though some individual agents might be bumped by men higher up on the telegrapher seniority list who were displaced from other types of jobs. Should there be a depression, however, it is likely that additional stations would be closed.

Earnings and Working Conditions

Station agents in nonsupervisory jobs are sometimes paid by the hour, sometimes by the month; the much smaller group in supervisory positions are paid by the month. For both groups, pay varies with such factors as the location of the station and the amount and character of business done there. Where agents handle the business of the Railway Express Agency they receive a commission averaging 10 percent on the business transacted.

Nontelegrapher agents at smaller stations will have average straight-time earnings of about \$1.65 in September 1949. Agent telegraphers and telephoners will average less, about \$1.58 an hour. Supervisory agents at major stations will average considerably more, about \$2.19.

Most full-time station agents are represented by the Order of Railroad Telegraphers.



Station agents must have a thorough knowledge of routes and rates.

Clerks

An army of clerks—about 137,000—worked for class I railroads in 1948.²¹ Representing more than 1 out of 10 railroad workers, clerks outnumbered all other occupational groups except maintenance-of-way laborers.

The largest group of clerks (almost 111,000) were employed as ticket sellers, rate clerks, “percent clerks,” timekeepers, bill clerks, yard clerks, baggage-room clerks, and assistant cashiers, and in related jobs. The work of some of these people is familiar to everyone. It is the ticket clerk, with his fund of knowledge on routes, rates, and geography, who aids the passenger in planning his trip. People shipping freight have dealings with the rate clerks, who determine the charges

for shipments in accordance with complicated rate schedules. The percent clerk has the job of determining how much revenue is due his company when a passenger or shipment has traveled over more than one road. In small offices or stations one man may handle several different types of work, whereas in large offices with many clerks each one may be highly specialized.

A smaller group of clerks (about 12,000 in 1948) do more responsible or technical work. Some prepare the statistics on employment, traffic, equipment, and other subjects required by the Interstate Commerce Commission. Those designated as cashiers deal with the public in such delicate matters as the handling of uncollected freight bills and undercharges that may have been made by the road. Among the other types of workers in the group are “car distributors,” who arrange for the distribution of empty cars to points where they are most needed, and “joint facility account-

²¹ Secretaries, stenographers, typists, and similar occupations are not included. The numbers employed in these occupations in 1948 are shown in appendix A, p. 48.

ants," who have the job of calculating how much of the costs and revenues from joint facilities such as a union station should be allocated to each road.

Supervisory and chief clerks, who numbered about 14,000 in 1948, supervise other workers and are in charge of major and minor departments.

Qualifications and Lines of Promotion

Beginning clerical jobs are filled either by hiring newcomers or by promoting office boys, messengers, or, in some instances, laborers already employed by the company. Positions of higher grade are almost always filled by promotions from within.

Men are preferred for most jobs, but large numbers of women are employed in some clerical occupations. For applicants without previous railroad experience, the maximum age is generally 35; for those seeking to transfer to clerical positions from other railroad work, it is usually 45. A high school education is required by some roads, and clerical aptitude tests are given by a few. Training or experience in working with figures is helpful.

The line of promotion depends on the department in which the clerk is working. In many offices he may hope to advance to assistant chief clerk, chief clerk, and, conceivably, still higher administrative positions. Some clerks have a chance to move from routine beginning jobs to work demanding special knowledge of accounting or statistics, which may lead eventually to positions such as auditor. Clerks in traffic departments may become traffic agents; those in stores departments may advance to jobs such as buyer or storekeeper.

Outlook

This occupation is so large that thousands of vacancies arise annually through quits, deaths, retirements, and turn-over of other types. The number of vacancies filled is of course greatest in prosperous years. In 1946, for example, more than 14,000 new entrants were hired as lower-grade clerks.

Additional clerks will be taken on in positions which must be manned continuously when the 40-hour week becomes effective in September 1949. The shorter workweek and higher hourly pay

may, however, reduce turn-over and make it harder for newcomers to break in.

Employment in the occupation will probably tend to decline over the long run. Further mechanization and more efficient office procedures will make it possible for fewer and fewer clerks to handle a given amount of work. Since new machines are introduced gradually and much clerical work does not lend itself to mechanization, the total number of clerks needed will probably decrease slowly, however. Workers in the occupation should have reasonable expectation of steady employment, provided general business activity remains at a high level.

If there should be a major recession and a consequent sharp drop in traffic, lay-offs would no doubt be heavy among some groups of clerks, including ticket sellers, rate clerks, and others who are directly concerned with passenger or freight traffic. In the audit and accounting departments and certain other branches of the railroads, the amount of clerical work to be done and the number of clerks needed are much less affected by changes in the volume of traffic.

Earnings and Working Conditions

For clerks in lower-grade jobs, average straight-time earnings will be about \$1.55 an hour in September 1949. Senior clerks and clerical specialists will have higher wages—roughly \$1.82 an hour on the average. Supervisory and chief clerks will have still higher average hourly earnings.

The Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees represents the clerks on all major roads. On some roads ticket sellers are represented by the Order of Railroad Telegraphers.

Redcaps

Redcaps, whose main duty is to help passengers with their baggage, are employed at only a few hundred city passenger stations out of a total of 59,000 passenger stations in the country. The total number of redcaps employed in 1941 (the latest year for which information is available) was only about 4,300.²²

²² Redcaps in Railway Terminals under the Fair Labor Standards Act, 1938-41, Wage and Hour Division, U. S. Department of Labor, 1942 (p. 7).

Besides carrying baggage, with or without the aid of trucks, redcaps may be asked for information on such subjects as train schedules and the track on which a particular train will arrive or depart. They may also check baggage, purchase tickets, make telephone calls, and perform other services for travelers. Sometimes they do miscellaneous work around the stations, such as calling out the names of trains, stocking the timetable racks, and cleaning.

Qualifications and Lines of Promotion

Hiring standards for redcap jobs vary from company to company. As a rule, applicants are required to be at least 18 and not over 45 years of age and must be able to read and write. Applicants are given physical examinations principally to determine if they are strong enough to carry heavy baggage. Most men now hired as redcaps are Negroes.

A few men may advance to the positions of assistant captain and captain of redcaps in their station, usually after many years of service.

Outlook

Demand for porter service has dropped with the decline in railroad passenger traffic since the war. At some stations redcaps have been furloughed. These laid-off workers have the first chance at vacancies created by turn-over; so wherever there are furlough lists, newcomers have no chance of getting jobs. However, when redcaps go on the 40-hour week in September 1949, prospects will be temporarily improved, but it is unlikely that many newcomers will be taken on.

Over the long run employment of redcaps is likely to decline slowly. The number of jobs is of course closely related to the amount of passenger traffic, particularly Pullman travel. And it is the railroad's Pullman business which is likely to suffer most heavily from air-line competition. A limited number of openings will arise each year owing to turn-over, which is reported to be low in this occupation. Should there be a sharp decline in business activity, bringing with it a sudden slump in passenger traffic, there would probably be many lay-offs and newcomers would find it extremely difficult to enter the occupation.

Earnings and Working Conditions

Most redcaps will have a regular hourly wage of about \$1.16 in September 1949. In addition to their wages, they keep any tips which passengers give them over the regular charge for baggage. The standard fees are collected by the redcaps and turned in to their employers. The amount received in tips varies greatly, depending on the city, the station, the individual worker and many other factors. It is reported that earnings from tips have dropped at stations which increased the per bag fee from 10 to 15 cents. In general, "positions" at automobile or taxi entrances to stations are more profitable than those at trolley-car or foot-passenger entrances. Many companies assign the preferred positions to men with greatest seniority.

In most places redcaps are paid the regular rate for overtime work, but at some stations they get time and one-half for work above 8 hours per day or 40 per week. Redcaps who have worked at least 130 days during the previous year receive vacations with pay—5 days per year if they have had less than 5 years' service, 10 days if they have been with the company for 5 years or more.

Labor Organization

These workers are covered by union contracts at most large stations. They are represented by the United Transport Service Employees of America, and the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees.

Shop Trades

A cracked wheel or axle, a defective brake, a broken coupling—these and many other types of defects in a locomotive or car can thwart the best efforts of the train crews, dispatchers, telegraphers, and towermen to get the trains to their destinations safely and on time. Keeping the railroads' 1,750,000 freight cars, 57,000 passenger-train cars and coaches, and 44,000 locomotives in safe and efficient operating condition is the responsibility of workers in the maintenance-of-equipment department, which is one of the largest departments on every major road.

Under Interstate Commerce Commission regu-

lations, a locomotive must be inspected every 24 hours. If minor defects are found, the needed "running repairs" are made in the engine house (or, sometimes, on open tracks). Freight and passenger cars also are inspected frequently. Light repairs to passenger cars are generally made in the yards near passenger terminals; those to freight cars are made on "bad-order tracks" set aside in the freight yards for use in repairing "cripples." For major repairs, however, both locomotives and cars have to go to the "back shops," which generally have three parts—for work on passenger cars, freight cars, and locomotives. On a large railroad, the main shops are immense establishments, with buildings and tracks covering many acres. Some shops build new cars, besides doing overhaul, repair, and rebuilding work. In recent years the railroads have built about 20 percent of the new cars put into service and bought the rest from car manufacturers. Some railroads also build new locomotives in their shops.

The employees responsible for the building, maintenance and repair of cars and locomotives on the railroads are divided into six main "shop crafts." In descending order of size these are: carmen, machinists, boilermakers, sheet-metal workers, electrical workers, and blacksmiths. About 164,000 journeymen mechanics were employed in the six crafts in 1948. In addition, there were about 11,000 apprentices and 82,000 helpers.²³

Nature of Work

Carmen, of whom there were about 78,000 on class I roads in 1948, are engaged primarily in building and repairing railroad freight and passenger cars. They also do some work on locomotives and on smaller vehicles of various kinds, such as the motor cars used in transporting workers along the tracks. Because of the wide variety of jobs they may be called on to handle, most carmen are skilled in both carpentry and metalworking and can use many power machines as well as hand tools. However, the carman group also includes some upholsterers, car painters, and patternmakers, skilled only in their particular specialties.

²³ For a list of the other occupations in the maintenance-of-equipment and related departments and the number of workers employed in each, see appendix table, p. 48.

Carmen are usually assigned to some one branch of work. The largest number are employed in freight car shops and on repair tracks. A smaller group do passenger car (or "coach") work in the passenger car shops. Another group, designated as car inspectors, examine cars in the yards and stations for defects such as worn or damaged parts that might cause train accidents or delays. There is also a small group, called locomotive carpenters or tender repairmen, who are assigned to work in the engine houses and locomotive shops.

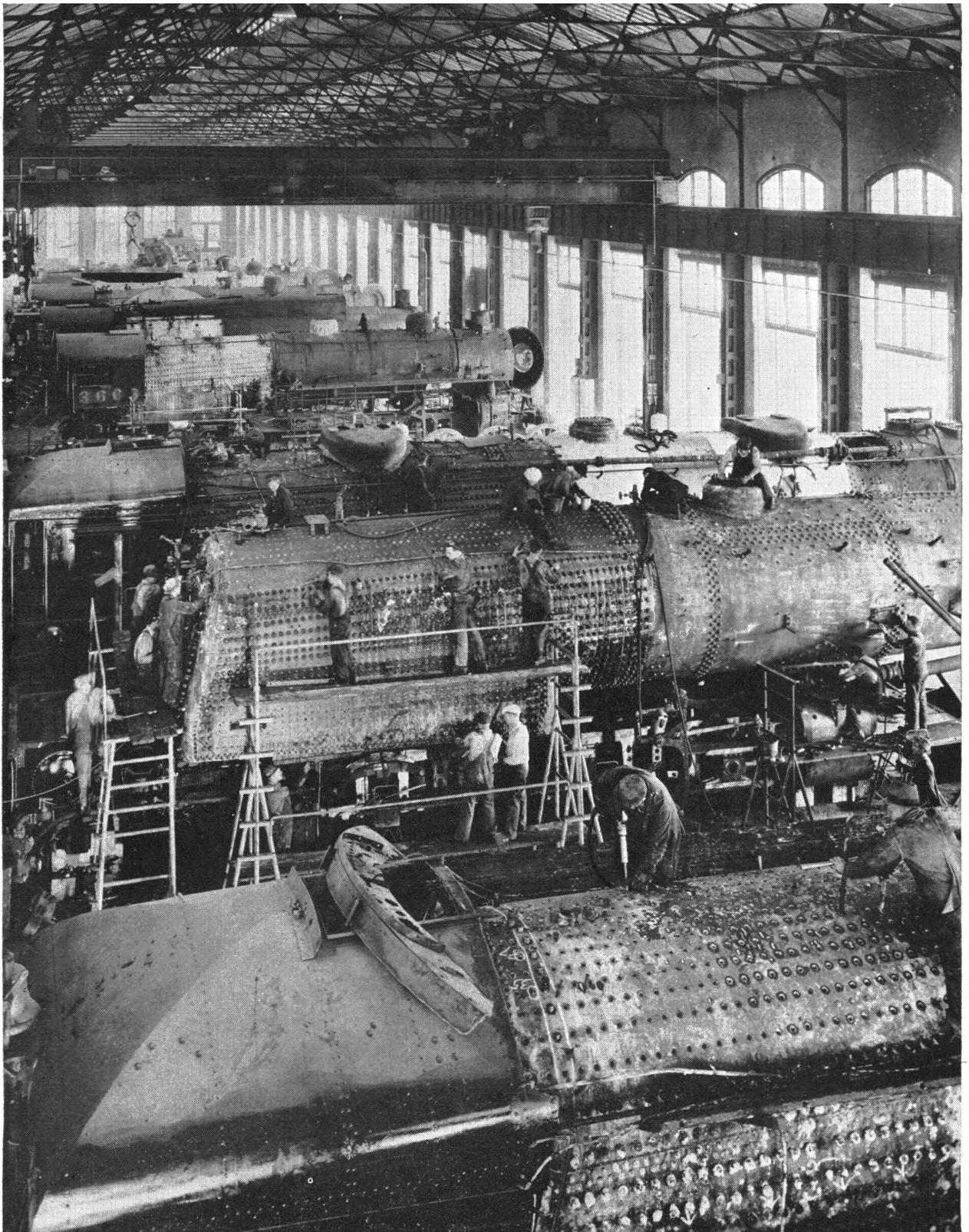
The other major shop crafts are found in many other industries as well as on the railroads. In general, railroad shopmen in these crafts do the same kinds of work as members of their trades who are employed elsewhere, but they must have special knowledge of railroad equipment.

Machinists are, next to carmen, the largest group of skilled shop workers, numbering about 45,000 on class I railroads in 1948. They assemble and dismantle machinery, make and repair parts, and do related work, mainly on locomotives though to some extent on cars and other equipment.²⁴ The boilermakers (of whom 12,000 were employed in 1948) also work mostly in locomotive shops, where they maintain and repair locomotive and stationary boilers, fireboxes, tanks, and other parts made of sheet iron or sheet steel. Sheet-metal workers (there were about 11,000 in 1948) install and maintain light sheet-metal parts and do pipe fitting on cars, locomotives, and other equipment. Electrical workers who maintain equipment (numbering about 11,000) install and maintain wiring and electrical equipment on locomotives, passenger cars, and cabooses as well as in the shops and other buildings owned by the railroads. Blacksmiths (who numbered 6,000) forge and fabricate parts for locomotives and other equipment; these include springs, side rods, and many other parts which are subject to great strain.

Qualifications, Training, and Advancement

The usual way of entering the shop crafts is to work either 4 years as an apprentice, or 2 years as a helper and then 3 years more as a helper-apprentice. Workers with related experience in other

²⁴ For a detailed discussion of machinists' work and employment opportunities in industry generally, see U. S. Bureau of Labor Statistics, Bull. No. 893, *Employment Outlook in Machine-Shop Occupations (1947)*.



Boilermakers and other craftsmen in locomotive repair shop.

industries may be able to qualify as journeymen in less than 4 years.

To become a regular apprentice, one must be at least 16 and not over 21 years of age; to become a helper-apprentice, not older than 30 or 35, although younger men are desired. The physical and educational requirements for either type of position are similar to those for many other railroad jobs (see p. 13). A few roads require candidates for regular apprentice positions to pass mathematical- and mechanical-aptitude tests. Most union agreements provide that preference shall be given to relatives of railroad employees, providing they meet hiring standards.

The railroad industry has one of the best systems of apprentice training in the country. Some of the industry's training programs date back over a half century. Definite standards for the training of apprentices are incorporated in the agreements negotiated by the shopmen's unions with the railroad managements.²⁵ Apprentices receive training in all branches of their respective trades and upon completion of their training receive a certificate from the carrier certifying that they are qualified journeymen.

Outlook

Employment will decline materially over the long run in most shop crafts. Increasing substitution of Diesel-electric locomotives for steam engines is expected to be a very important factor in this downward trend. The great majority of new locomotives now being bought by the railroads are Diesels. Not only do these locomotives require much less maintenance work than steam engines, but with the greater availability of Diesel-electric power, fewer locomotives will be required to perform the same service. This will of course result in reduced employment. The downward trend will be only temporarily offset when the 40-hour week becomes effective on September 1, 1949.

The craftsmen already most affected and likely to have the sharpest downward trend in employment are the boilermakers, who work primarily on the boilers of steam locomotives. Increasing dieselization also means less work for most of the other crafts. The rate at which employment will

decline in the locomotive department will vary greatly from road to road, depending on when and how fast Diesel-electric power is substituted for steam.

The amount of work for electricians, on the other hand, is expanding with the growing use of Diesel-electric power. Currently the number of workers in the occupation is at an all-time peak, and the number is expected to continue to grow, at least in prosperous years, owing both to dieselization and to the expanding use of electric and electronic train-communications equipment.

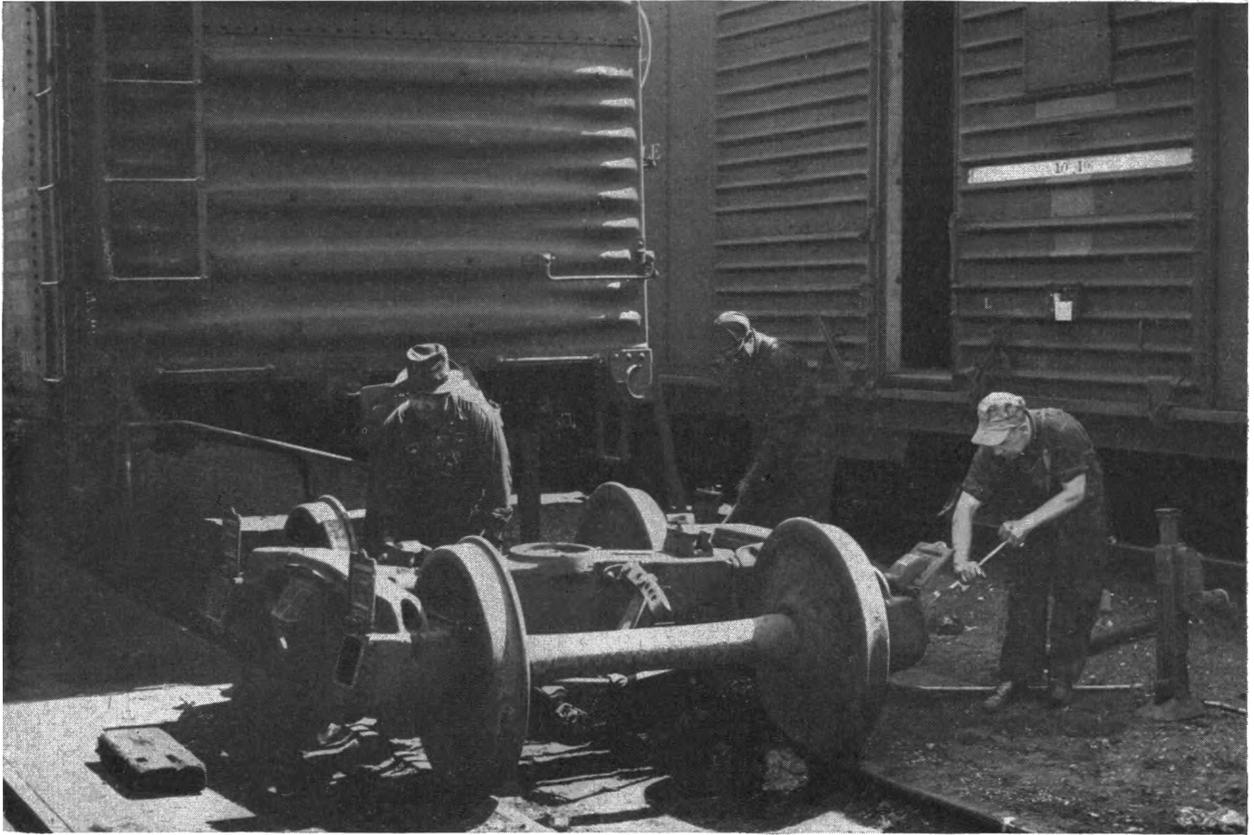
Carmen are not directly affected by dieselization. Employment of carmen was at a high level in the spring of 1949 and was expected to remain high for a number of years, unless there should be a major business recession. After the present backlog of maintenance and building work on cars has been reduced, however, employment in this craft is likely to contract considerably.

Should there be a serious decline in general business activity, lay-offs would no doubt be heavy in all crafts. In the past when railroad traffic and income have declined, maintenance work has been deferred as much as possible and cuts in employment have tended to be more drastic in maintenance departments than in other major departments of the railroads. Even when traffic is heavy and there is maintenance work needing to be done, some shop workers may be laid off temporarily if a road's maintenance budget is unexpectedly exceeded or there are shortages of materials or other unforeseen developments.

Even in shop crafts with declining employment, vacancies occur every year owing to turn-over. Whenever there are furlough lists, laid-off workers must be rehired before any newcomers can be taken on. In good years, however, there are thousands of opportunities for newcomers in the helper and apprentice classifications. Class I roads took on about 14,000 new entrants as skilled trades helpers in 1946. Opportunities for apprentices are less numerous than for helpers, who are a much larger occupational group. Only about 2,000 new entrants became apprentices to skilled craftsmen on class I roads in 1946.²⁶

²⁶ It is interesting to note in this connection that, while the ratio of apprentices to mechanics is generally 1 apprentice to 5 mechanics under existing agreements, the ratio of apprentices to mechanics employed on all class I railroads in the United States in 1947 was only 6.8 percent, i. e., approximately 1 apprentice to 15 mechanics.

²⁵ See *Apprentice Training in the Railroad Industry*, by Fred N. Aten, Railway Employees' Department, AFL., Chicago, 1948.



Carman and helpers prepare truck for installation on boxcar.

Earnings and Working Conditions

Passenger carmen and locomotive repairmen, machinists, boilermakers, blacksmiths, sheet-metal workers, and electrical workers have the same hourly wage rate. This rate will be generally \$1.74 an hour outside the South and \$1.73 an hour on southern roads in September 1949. The rates for freight carmen will be somewhat lower, \$1.65 an hour. In each craft, an additional 6 or 12 cents an hour is paid for special types of work; men doing autogenous welding, for example, receive 6 cents more than their basic rate.

Helpers in all crafts generally will have a basic wage rate of \$1.46 an hour. Helper apprentices will start at about \$1.46 an hour and, through increases granted every 6 months, work up to about \$1.58 an hour for the last 6 months of the third year. Regular apprentices will start at a lower rate, typically \$1.23 an hour, and also receive increases every 6 months, up to about \$1.52 an hour in the last half of the fourth year.

Most work on cars is done outside on uncovered tracks, and workers are on the job in all kinds of weather, even when it rains or snows. On some roads, the men themselves decide when the weather is too bad for them to work; they do not receive pay for time lost on this account. Major repairs on locomotives are generally made indoors.

These shop crafts are represented primarily by the following unions: Brotherhood Railway Carmen of America; International Association of Machinists; International Brotherhood of Boilermakers, Iron Ship Builders and Helpers of America; International Brotherhood of Blacksmiths, Drop Forgers and Helpers; Sheet Metal Workers' International Association; and International Brotherhood of Electrical Workers. In collective bargaining, these unions operate through the Railway Employees' Department, AFL, and have "federated" agreements with the railroads covering all six crafts. In a few in-

stances, shop workers have been organized by the Brotherhood of Railroad Shop Crafts of America, a system association, or some other union.

Maintenance of Way and Structures

If one locomotive engineer were fated to travel over all the track in the United States, he would have to cover more than 400,000 miles.²⁷ He would cross nearly 200,000 railroad bridges and go through 1,500 tunnels. Along the way he might stop for freight or passengers at any one of some 120,000 stations. And he would have to watch for thousands upon thousands of signals before his journey had ended.

To maintain these tracks and structures and so make the trips of all engineers possible, the class I roads employed about 267,000 workers on the average during 1948. The majority of these workers were employed in maintaining the track and roadbed. A much smaller group—the bridge and building men—take care of bridges, stations, and other structures. Maintaining the signal equipment is the responsibility of still another group, the signal force.²⁸

Trackmen

If for a single month no one repaired the railroad tracks, few trains would run. Derailed and broken cars and locomotives would mark where loosened nuts, cracked rails, and washed out roadbeds had caused wrecks. Fortunately, such scenes are rare. Railroads have an outstandingly good safety record, to which the roadway workers have made a great contribution. It is their job to inspect and repair tracks and roadways, day in and day out, in good weather and bad, so that the tracks which carry so much of the Nation's goods and so many of its travelers will always be straight and strong.

Until recent years almost all roadway work involved hard manual labor. Men with simple tools—picks, shovels, tampers, spike hammers—

had the Gargantuan job of building and repairing the tracks and roadways. Roadway maintenance still involves much manual labor, but crews of machine operators and helpers are gradually replacing the gangs of trackmen with shovels and picks which are a familiar sight on every railroad. Cranes and other lifting devices handle rails and heavy material. Mechanical multiple tampers do the work of at least a dozen men; spike pullers, power wrenches, ballast cleaning “moles,” bulldozers, and numerous other machines do work that formerly required tremendous muscular effort.

The regular, year-round track work force is organized into “section gangs.” These crews are made up typically of about five or six men and a foreman. They are responsible for day-to-day maintenance of sections of a railroad line which average 9 miles in length but may range from 2 miles to more than 30, depending on whether or not the line has more than one track and how heavy the traffic is. Either the foremen themselves or certain section men designated as “track walkers” make regular inspections, looking for cracked rails, weak ties, washed-out ballast, and other defects. Crews make the repairs under the supervision of the foremen.

About 25,000 section foremen were employed by class I roads throughout 1948. The number of section men employed ranged from 115,000 in mid-January to 136,000 in mid-July, the peak month. During the spring, summer, and fall, trackmen repair the ravages of the past winter and put their roads in good condition for the next. On some roads, the section gangs take on additional workers during the good-weather months to handle the heavier work load.

Besides the section gangs, many roads have “extra gangs,” which do big repair jobs and new construction work. Extra gangs are usually much larger than section gangs, sometimes numbering as many as 100 men. Employment of extra-gang men increases greatly during the summer months. class I roads employed 61,000 such workers in July 1947, compared with only 35,000 in January.

To operate the larger roadway machines, many roads have special crews which do no other type of work. Some crews run machines which spray chemicals on weeds along the roadway. Others

²⁷ Counting multiple tracks, sidings, and so forth. The mileage covered by railroad lines is much less—about 227,000 miles.

²⁸ For a list of the occupations in the maintenance-of-way and structures department and the number of workers employed in each, see appendix A, p. 48.

operate ditching machines over the entire length of the road. Crews also specialize in reclaiming rails and ties, welding rails, and cleaning ballast. Automatic hand tools such as tampers and power wrenches are frequently operated by members of section and extra gangs.

Qualifications and Advancement

Men applying for jobs as trackmen or mechanical equipment helpers need to be strong enough to do heavy work. Prospective track workers are given physical examinations; foremen must be re-examined periodically. Many roads require that applicants be between 18 and 45 years of age. As a rule, educational qualifications are less strict for trackmen than for most other railroad jobs. Some roads, however, hire promising men with a high school education as apprentice foremen.

Some trackmen may transfer to helper jobs on roadway machines or in the shops where these machines are repaired. Others may become foremen or assistant foremen, but this usually requires many years of experience. A few of the best qualified foremen may reach higher positions—track supervisor, division engineer, and division superintendent. Section men have a better chance of advancing to supervisory positions than those in extra gangs. However, the latter can often transfer to section work.

One of the entrance jobs for roadway machine operator is that of helper. Helpers, and sometimes men from roadway machine maintenance shops, are promoted to operator positions according to seniority, providing ability is sufficient. Seniority in this department typically extends over several divisions and sometimes the entire system.

Trackmen operating power wrench to tighten bolts on newly laid rails.



Outlook

Many thousands of track workers will be hired annually for an indefinite number of years, though further mechanization of track work will mean decreasing employment of trackmen. Large numbers of workers without previous experience in railroading are taken on each year to meet the expanded need for trackmen during the summer months and to fill vacancies due to the high turnover rate. In 1946, class I roads hired 78,000 new entrants as extra-gang workers and 79,000 as section men. The numbers taken on vary with the volume of maintenance and repair work, which in turn depends on the amount of business done by the railroads.

Mechanical-equipment operators and helpers will continue to take over more and more track work. In both the short and long run, there will be a number of openings in this occupation each year, owing both to expanding employment and turn-over. Mechanization of track work is expected to speed up after trackmen go on the basic 40-hour week in September 1949. It is likely that railroad companies will continue to add mechanical track equipment even in years when business is not good.

Earnings and Working Conditions

Trackmen are among the lowest-paid workers in the railroad industry. In September 1949, section men and extra-gang men will have average straight-time earnings of about \$1.22 an hour. On a yearly basis, however, the latter tend to be less well off than section hands, since the railroads generally have work for them only part of the year.

Portable steam equipment operators have higher wages. Their straight-time earnings will average about \$1.56 an hour in September 1949 and their helpers' earnings, about \$1.35. Section foremen and extra-gang foremen will average about \$1.51 and \$1.56, respectively.

Rates of pay vary from railroad to railroad and even from one part of a road to another. Time worked in excess of 8 hours a day or 40 a week will be paid for at time and one-half beginning September 1, 1949, and time in excess of 16 hours a day at double time.

Since section men work on only a few miles of

track they are usually able to live at home. Trackmen in extra gangs travel from place to place and often must live in camp cars or trailers, where they pay for their food and provide their own bedding. Men operating mechanical equipment frequently serve several divisions or an entire railroad system; they have to spend much time away from home, often living in camp cars.

Maintenance-of-way employees are highly organized. They are represented on almost every road by the Brotherhood of Maintenance of Way Employees.

Bridge and Building Workers

The bridge and building men are, like the carmen, an unusually versatile group of workers. One day they may be called on to repair a bridge; the next, they may work on a tunnel; the one after that, they may repair or build a station, water tank, coal dock, ferry pier, or any one of a variety of other structures.

The largest group of "B and B" workers are the "carpenters" or "mechanics." These men are all-round mechanics, able to do not only carpentry but also other types of construction work. About 14,000 of them were employed on class I roads in 1948. In addition the bridge and building force included some 2,500 painters; a total of about 2,000 masons, bricklayers, plasterers, and plumbers; and 1,000 structural steel and iron workers. Helpers and apprentices numbered about 8,000 altogether; foremen, about 4,000.

Method of Entry

New workers start out as helpers (or apprentices) and generally serve about 3 years before they can qualify as mechanics. As openings occur in skilled jobs they are filled by promoting the qualified helpers with greatest seniority. Journeymen with years of experience and exceptional ability may work up to positions as inspector, foreman, bridge and building supervisor, and even division engineer. The last mentioned position frequently requires special training.

Outlook

The employment outlook is good for skilled bridge and building men, and there are likely to

be a moderate number of openings in helper jobs each year, assuming favorable economic conditions. The shortage of workers, especially journeymen, which developed during the war, still continued through 1948. Since there was a particular need for foremen, men with better-than-average abilities who showed promise as prospective supervisors were desired. Additional men will be needed to make possible a reduction in actual working hours when the basic 40-hour week is established in September 1949.

After the large backlog of needed repair and improvement work has been reduced, employment will tend to decline slowly. A long-run downward trend is expected for such reasons as the increasing substitution of concrete, steel, and durable, treated lumber for untreated wood (which requires much more frequent repairs) and the greater use of power saws, drills, and other labor-saving equipment. However, turn-over is likely to create a few thousand vacancies each year. In 1946, class I roads hired 6,400 new entrants as helpers, but the shorter hours and higher hourly pay effective September 1949 may reduce turn-over rates and the number of openings. If there should be a depression, openings for newcomers would be few, since falling railroad traffic would mean heavy lay-offs of maintenance workers and waiting lists for jobs.

Earnings and Working Conditions

"B and B" carpenters will have average straight-time earnings of about \$1.53 an hour in September 1949. Hourly earnings will be slightly higher for painters (\$1.56), and still higher for ironworkers, masons, bricklayers, plasterers, and plumbers (about \$1.69). But even these last two groups will make a little less than most groups of skilled railroad shop workers.

Helpers of course will have considerably lower rates. In September 1949 their average hourly pay will be about \$1.38.

Bridge and building men often have to be away from home for days at a time. They generally live in camp cars, where they have to provide their own bedding and pay for their food.

The Brotherhood of Maintenance of Way Employees represents the bridge and building workers on most major roads.

Signal Workers

One of the first railroad signals was a round basket covered with a white cloth, which was hoisted high in the air. To engineers this "high ball" meant a clear track ahead. The term "high ball" is still used by railroaders to mean "All is clear," although this simple device has of course given away to a vast complex signaling system. The railroads have developed successively block signals, interlocking systems, and CTC (see p. 31). These are the chief apparatus of a modern signal system, but many other devices automatically reveal defects in tracks or structures and warn of impending dangers such as mountain slides.

Signal departments have the responsibility for maintaining, improving, and expanding signal systems. The craftsmen who carry out this complicated and important assignment are signalmen and signal maintainers. Working with them are assistants and helpers who, in addition to doing the less-skilled work, are in training to become full-fledged craftsmen. In 1948, class I railroads employed an average of 8,400 signalmen and signal maintainers, 2,500 assistants, and 3,300 helpers.

Signal maintainers inspect and repair railroad signals within a given territory. They see that the lights, switches, other controlling devices, and wires are in good condition and are functioning properly. The work requires a thorough practical knowledge of electricity and considerable mechanical skill.

The skills and knowledge required of *signalmen* are much the same as for maintainers. But instead of doing maintenance repair work, signalmen are primarily concerned with installation and construction. They work in gangs and travel from one part of the road to another, wherever there is construction work to be done.

Training and Advancement

In both signalman and signal-maintainer work new employees start as helpers, doing semiskilled work. After about 6 months to 1 year of training on the job (or longer, depending upon how often vacancies occur) most helpers advance to assistants. Four years' experience as assistant generally qualifies a man for a journeyman job. As openings in skilled jobs occur they are filled by promoting qualified assistants according to

seniority rules. On nearly all roads journeymen may transfer from signalman to maintainer jobs or vice versa. When lay-offs are made, workers in either type of work may bump those with less seniority in the other type.

Both signalmen and signal maintainers may be promoted to more skilled and responsible jobs, such as inspector or test man, leading signalman, or signal maintainer and foreman. A few men may advance eventually to assistant signal supervisor or engineer.

Outlook

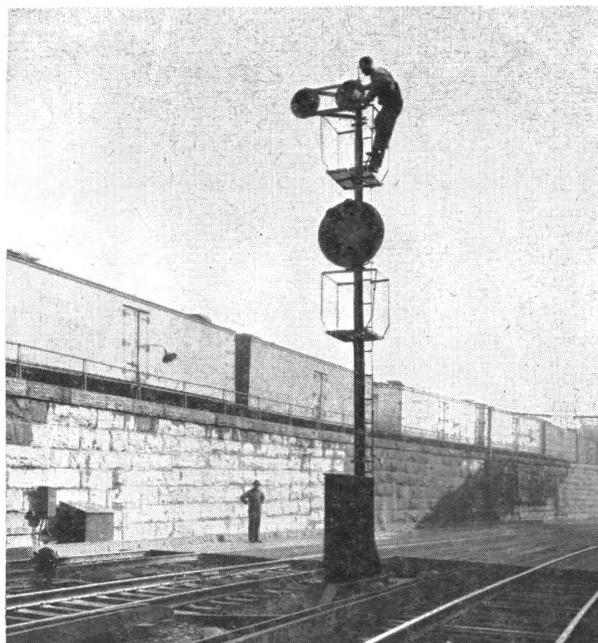
This is one of the few types of railroad work in which employment will probably tend to increase in both the short and the long run. In 1940 about 10,300 signal workers were employed. Several thousand men left for the armed forces; nevertheless, employment rose to about 13,000 by 1945. Since the end of the war, employment has continued to increase (to about 14,000 in 1948). It is likely that the number employed will rise still further, owing to the backlog of work and expected modernization of signal systems. Moreover, additional workers probably will be needed when this craft goes on a 40-hour week in September 1949.

Workers will also be needed to replace those who leave the occupation because of death or retirement, or for other reasons. In 1946, for example, class I roads hired 2,600 new entrants as signal workers, although the net gain in employment was very small during the year.

Signal workers probably will have an especially high degree of job security. In this group as a whole, employment not only has an upward trend but is less affected by changes in the general level of business activity than employment in most other railroad occupations. When railroad business declines, most signal-maintenance work must be continued, though the amount of new construction and installation work is likely to be reduced.

Earnings and Working Conditions

Signalmen and signal maintainers generally will have basic hourly wage rates of \$1.75 in the



Signal maintainer inspecting electric signal.

East and \$1.73 in the South and West in September 1949. Leading signalmen and leading signal maintainers will be paid an additional 6 cents an hour. Hourly rates for assistants generally will begin at about \$1.47 in the East and \$1.45 in the South and West. Rates are increased by 2 cents an hour after each 6 months of service. For the last half of the fourth year of apprenticeship the rate will be about \$1.64 in the East and \$1.62 in the South and West. Signal helpers will have a flat rate of \$1.46 an hour in the East and \$1.43 in the South and West in September 1949.

Maintainer work is fairly steady throughout the year. Signalmen are likely to have less work in the winter than in other seasons, except in regions with mild winters. Signalmen are away from home a large part of the time. On such occasions, the railroads provide camp cars but the men have to pay for their food and provide their own bedding. Signal maintainers are generally able to live at home; they ride back and forth within their territory daily.

These workers are represented on practically all roads by the Brotherhood of Railroad Signalmen of America.

Appendix A

Employment on class I railroads, by occupation, 1948¹

ICC division number	Occupational group	Number of employees ²	ICC division number	Occupational group	Number of employees ²
	All occupations.....	1,326,906		Other transportation—Continued	
	Transportation—train, engine, and yard service	299,034			
	Locomotive firemen and helpers.....	58,082	90	Gang foremen (freight stations and other labor).....	2,957
	Road freight firemen and helpers.....	28,880	91	Callers, loaders, scalers, sealers, and perishable-freight inspectors.....	15,413
126	Through freight.....	20,305	92	Truckers (stations, warehouses, and platforms).....	28,295
127	Local and way freight.....	8,575	93	Laborers (coal and ore docks and grain elevators).....	1,569
128	Yard firemen and helpers.....	20,735	94	Common laborers (stations, warehouses, etc.).....	5,130
125	Road passenger firemen and helpers.....	8,467	95	Stewards, dining-car supervisors, etc.....	1,875
	Locomotive engineers.....	55,811	98	Officers, workers, and attendants on vessels; shore workers.....	6,194
	Road freight engineers and motormen.....	26,795	99	Transportation and dining-service inspectors.....	827
122	Through freight.....	18,526	102	Bridge operators and helpers.....	1,019
123	Local and way freight.....	8,269	103	Crossing and bridge flagmen and gatemen.....	12,473
124	Yard engineers and motormen.....	19,691	104	Foremen (laundry) and laundry workers.....	610
121	Road passenger engineers and motormen.....	9,325		Professional, clerical, and general	219,647
	Brakemen.....	112,597		Clerks.....	136,948
120	Yard brakemen and yard helpers.....	53,669	7	Clerks (routine work).....	110,878
	Road freight brakemen and flagmen.....	49,687	6	Senior clerks and clerical specialists.....	11,676
117	Through freight.....	31,935	5	Chief clerks (minor departments) and assistant chief clerks and supervising cashiers.....	10,948
118	Local and way freight.....	17,752	4	Supervisory and chief clerks (major departments).....	3,446
116	Road passenger brakemen and flagmen.....	9,241		Professional and subprofessional assistants.....	8,374
	Conductors.....	48,349	3	Mechanical device operators (office).....	8,318
	Road freight conductors.....	20,301	8	Stenographers and secretaries.....	3,956
113	Through freight.....	12,776	9	Stenographers and typists.....	16,082
114	Local and way freight.....	7,525	10	Storekeepers, sales agents, and buyers.....	2,395
119	Yard conductors and yard foremen.....	20,552	11	Ticket agents and assistant ticket agents.....	1,255
111	Road passenger conductors.....	7,496	12	Traveling auditors or accountants.....	1,294
112	Assistant road passenger conductors and ticket collectors.....	3,246	13	Telephone switchboard operators and office assistants.....	4,734
	Road passenger baggagemen.....	4,094	14	Messengers and office boys.....	3,460
	Hostlers and helpers.....	7,637	15	Elevator operators and other office attendants.....	984
109	Inside hostlers.....	3,996	16	Lieutenants and sergeants of police.....	1,622
108	Outside hostlers.....	2,188	17	Patrolmen and watchmen.....	5,461
110	Outside hostler helpers.....	1,453	18	Traffic and various other agents, inspectors, and investigators.....	11,134
	Switch tenders.....	3,110	19	Claim agents or investigators.....	969
105	Yardmasters.....	4,541	20	Freight claim agents or investigators.....	445
106	Assistant yardmasters.....	1,567	21	Chief claim agents or investigators.....	145
	Other transportation.....	160,625	22	Miscellaneous trades workers (other than plumbers).....	901
	Passenger service.....	23,069	23	Motor vehicle and motor car operators.....	5,003
100	Parlor and sleeping car conductors.....	28	24	Teamsters and stablemen.....	7
101	Train attendants.....	4,349	25	Janitors and cleaners.....	6,160
96	Chefs and cooks (restaurants or dining cars).....	5,356	26	Maintenance of equipment and stores	365,142
97	Waiters, camp cooks, kitchen helpers, etc. ³	13,336		Carmen.....	78,338
	Telegraphers, telephoners, and towermen.....	25,032	57	Freight.....	57,250
83	Telegraphers, telephoners, and towermen.....	14,317	56	Coach and locomotive.....	21,088
82	Clerk-telegraphers and clerk-telephoners.....	9,788	61	Machinists.....	45,365
81	Chief telegraphers and telephoners and wire chiefs.....	927	55	Boilermakers.....	12,272
	Station agents.....	21,295	63	Sheet-metal workers.....	11,249
80	Station agents (telegraphers and telephoners).....	14,089	58	Electrical workers (maintenance of electrical equipment).....	10,982
79	Station agents (smaller stations—nontelegraphers).....	4,935	54	Blacksmiths.....	5,713
78	Station agents (supervisory, major stations—nontelegraphers).....	2,271	64	Skilled trades helpers.....	81,768
	Chief train dispatchers.....	993		Apprentices.....	11,315
76	Train dispatchers.....	3,154	66	Regular apprentices.....	9,097
77	Train directors.....	159	65	Helper apprentices.....	2,218
84	Station masters and assistants.....	424	50	General, assistant general, and department foremen.....	8,807
85	Supervising baggage agents.....	87	51	General and assistant general foremen (stores).....	336
86	Baggage agents and assistants.....	406	52	Equipment, shop, electrical, material, and supplies inspectors.....	2,361
87	Baggage, parcel room, and station attendants.....	9,062	53	Gang foremen and gang leaders (skilled labor).....	8,658
88	General foremen (freight stations, warehouses, etc.).....	372	59	Power-station operators, load dispatchers, and electric-crane operators.....	2,640
89	Assistant general foremen (freight stations, warehouses, etc.).....	210	60	Electric equipment operators (coal and ore elevator, car dumper, etc.).....	390

See footnotes at end of table.

Employment on class I railroads, by occupation, 1948¹—Continued

ICC division number	Occupational group	Number of employees ²	ICC division number	Occupational group	Number of employees ²
Maintenance of equipment and stores—Continued			Maintenance of way and structures—Continued		
62	Molders.....	532		Signal workers.....	14,241
67	Coach cleaners.....	12,064	46	Signalmen and signal maintainers.....	8,402
68	Gang foremen (shops, enginehouses, and power plants).....	1,319	49	Signalmen and signal maintainer helpers.....	3,330
69	Gang foremen (stores and ice, reclamation, and timber-treating).....	1,554	48	Assistant signalmen and assistant signal maintainers.....	2,509
70	Classified laborers (shops, enginehouses, power plants).....	25,533	27	Roadmasters, general foremen, and assistants.....	3,172
71	General laborers (shops, enginehouses, power plants).....	21,929	28	Maintenance-of-way and scale inspectors.....	1,155
72	General laborers (stores and ice, reclamation, and timber-treating).....	17,243	29	Bridge and building gang foremen (skilled labor).....	4,093
73	Stationary engineers (steam).....	1,678	35	Portable-steam-equipment operators.....	5,118
74	Stationary firemen, oilers, coal passers, and water tenders.....	3,096	36	Portable-steam-equipment operator helpers.....	672
	Maintenance of way and structures.....	266,959	37	Pumping-equipment operators.....	1,668
	Track men.....	171,607	38	Gang foremen (extra-gang and work train laborers).....	4,152
42	Section men.....	122,221	39	Gang foremen (bridge and building laborers, etc.).....	263
41	Extra-gang men.....	49,386	40	Gang or section foremen.....	24,523
	Skilled bridge and building workers and helpers.....	27,064	43	Laborers (other than track and roadway); gardeners and farmers.....	3,671
30	Carpenters.....	13,870	44	General and assistant general foremen, and inspectors (signal, telegraph, and electrical transmission).....	1,393
32	Painters.....	2,292	45	Gang foremen (signal and telegraph skilled-trades labor).....	1,546
33	Masons, bricklayers, plasterers, and plumbers.....	2,010	47	Linemen and groundmen.....	2,621
31	Ironworkers.....	991		Executives, officials, and staff assistants.....	15,499
34	Helpers and apprentices.....	7,901	1	Executives, general officers, and assistants.....	6,835
			2	Division officers, assistants, and staff assistants.....	8,664

¹ Derived from Wage Statistics of Class I Steam Railways in the United States, Statement No. M-300, Year 1948, Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Occupations discussed in the text are listed first in each group.

² The employment figures are averages of the 12 midmonth employment counts as shown in the M-300 report.

³ Includes some employees not in the passenger service category.

Appendix B

Suggested Readings

- Accident Bulletin.* Bureau of Transport Economics and Statistics, U. S. Interstate Commerce Commission, Washington. Published annually.
- Changes in Railroad Wages, 1943-44.* By Witt Bowden. (*In Monthly Labor Review*, U. S. Bureau of Labor Statistics, Washington, March 1944, pp. 611-627. Reprinted as Serial No. R. 1634.)
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Studies of employment trends and opportunities in the various occupations and professions are made by the Occupational Outlook Service of the Bureau of Labor Statistics.

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