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PRINCIPLES OF TRANSPORTATION

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By G. Lloyd Wilson

PRINCIPLES OF TRANSPORTATION
By Emory R. Johnson, Grover G. Huebner and G. Lloyd Wilson

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PREFACE

THE business of transportation, as distinct from the mechanism by which the service is performed, is discussed in this volume, such consideration being given to equipment and facilities as is necessary to an understanding of the rapid development that is taking place in the agencies of transport by rail, highway, ocean and air. Most of the former books on transportation economics that have been written for college and non-academic students have stressed public policy and government regulation more than business practice and principles. This volume emphasizes the services rendered by carriers in the different fields of transport. Government regulation is neither neglected nor unduly minimized, but has been given what is believed to be its proportionate share of the discussion as a whole.

The most distinctive characteristic of the present volume is that it for the first time brings within one book an account of the services of all four kinds of carriers, those by railroads, highways, waterways and airways. The volume has been made large enough to make possible a fairly comprehensive treatment of business practices and principles and of government policies of regulation in each of the four branches of transportation. To economize space the discussion has been made as concise as is consistent with clearness and adequacy of presentation.

During the past decade, and partly as a result of the lesson learned during the World War, systematic effort has been made not only to further the development of the several agencies of transport, but to bring about their integration into a coördinated system of transportation. It is realized that while rail, highway, ocean and air carriers have each a special work to perform, they can be of maximum service to the public and can develop under most favoring conditions when their facilities are coördinated. Effective government regulation has eliminated the danger of

oppression from monopoly. The public may now, without fear of evil consequences, benefit from the economies obtainable from railroad consolidation and may encourage the fullest coöperation of motor and air carriers with those by rail and water.

It will be helpful to the student to find the business of the four agencies of transportation discussed in one volume; and it will be observed that in the introductory chapter and at appropriate places throughout the treatise, particularly in the part dealing with highway and motor transportation, special consideration has been given to what has been accomplished and to what may wisely be done to coördinate transportation facilities into a unified system. This thought and purpose also give unity to a volume that deals, not with four distinct subjects, but with the several phases of one economic service.

E. R. J.
G. G. H.
G. L. W.

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PRINCIPLES OF TRANSPORTATION

CHAPTER I

INTRODUCTION

TRANSPORTATION facilities and services are ever changing. Possibly in no other field of economic endeavor have technical triumphs been more frequent or more far-reaching in their effects upon the costs and conditions of living. It would have seemed safe to assume that a century of railroad development would have resulted in a fully created mechanism not capable of being greatly improved; but, as a matter of fact, during the last twenty-five years, and particularly since the World War, betterments in railroad equipment and services have been more rapid than ever before; while, at the same time, two entirely new vehicles of carriage, the automobile and the airplane, have inaugurated a revolution that has already greatly modified the service of transportation and the organization of social life.

During the opening decade of this century the transportation question that received major attention was whether electricity was to supplant steam generally as the motive power. Electricity is superior to other kinds of power. It is flexible; it can be used in small or in large units; it can be simply and efficiently applied; and can be economically generated in large plants situated where cheap fuel or water power is available. From 1895 to 1910, suburban and interurban railways increased rapidly in number and total mileage and the large inroads they made upon the passenger traffic of the steam railroads seemed to point to the extensive substitution of electricity for steam power.

At the present time, however, there is little if any prospect of the general electrification of steam railroads in the near future. Indeed, the interurban electrics, which were so greatly

dreaded by the steam lines, twenty-five years ago, are now having great difficulty in maintaining a profitable existence. Many of the shorter electric lines have ceased to operate, while the stronger electrics, like the short-line and branch-line steam railroads, are hard pressed by the competition of the auto-bus and the auto-truck that have already transferred much local passenger and freight traffic from the rails to the roads.

The automobile has undoubtedly postponed the general electrification of steam railroads in the United States, and it should be noted that there are two other causes that have also tended to perpetuate the use of steam power. One factor has been the phenomenal and unexpected increase in the tractive efficiency and fuel economy of the steam locomotive. The mechanical achievements of designers and builders of locomotives, the steady improvements made in grades, tracks, and railroad equipment, and the adoption of better operating methods have kept the trainload on the steam railroad growing steadily larger while the fuel costs and other expenses per unit of service, with the exception of wages, have been lowered. Steam power has served the carriers so well that they have not been disposed to make the large investments necessary to reconstitute their equipment, tracks and other structures for electrical operation.

The World War temporarily checked the development of electrical transportation, even where it is certain ultimately to be adopted—in large city terminals, in tunnels and on the heavy-grade mountain sections. War conditions were especially burdensome to the interurban electric lines which derive their revenues mainly from local passenger traffic; while, on the other hand, the War gave a great stimulus to the use of the automobile, especially the auto-truck which was largely used in many parts of the United States to lessen the freight congestion of the overburdened railroads. The motorization of local transportation was probably hastened by the War.

The introduction of the railroad, a hundred years ago—the substitution of mechanical power for muscle to do the work of transportation on land—started an economic revolution. The railroad made possible the rapid settlement and the industrial development of continents. It brought about the terri-

torial distribution of production, each section growing or making the things it was best fitted to produce or manufacture; it built up large cities; wealth accumulated rapidly, and standards of living steadily rose. The economic revolution inaugurated a new social order capable of indefinite improvement.

To-day more rapid changes are taking place in social organization and economic life due to the automobile. This is especially true in the United States where the large majority of the world's automobiles are manufactured and used. Production has been increased, particularly in agriculture which is no longer limited, by costs of hauling supplies and crops from and to markets, to land within a few miles of a railroad. Horses are giving way to the tractor on the farm and to the automobile and the auto-truck on the highway. The automobile industry itself and the many others auxiliary to the construction, operation, and repair of cars already represent a total investment larger than the capital in railroads, car shops, and locomotive plants. The railroad is no longer second only to agriculture in the amount of capital investment and number of men engaged. The railroad now has the third place, being outranked by the automobile industries as a whole.

The most significant changes being caused by the automobile are not in production but in ways of living. The automobile has so shortened the distances that separate homes from places of employment that employees and their families may live under better conditions. The workingman's family can get about more, and have more enjoyment of the country, the mountains, the seashore. They can live more varied, less monotonous lives.

It is possible that the automobile is making the people of the United States unduly restless, too eager to be under motion merely for the pleasures that come from motion. Presumably, however, mobility of existence will increase intellectual activity and interests and thus raise the tone of society. This is an interesting subject for speculation, especially in view of the possible general patronage of airplanes in the not distant future. The airplane makes continents almost as small as counties were in the days of the horse-drawn vehicle. It is, however, too early to estimate the extent to which the airplane will actually be used

for travel, although it has already secured a definite place as a useful transportation agency.

The automobile is revolutionizing transportation in a more fundamental manner than is immediately apparent. It has started a change that will ultimately make mechanical and organized transportation general and universal. The services of carriers, instead of being limited mainly to the movement of persons and commodities over the relatively few arteries of traffic provided by railroads and waterways, will in time be brought to each man's door. The day is coming when each home, whether it be in the city or in the country, will be connected by organized transportation directly with other homes in all parts of the land, each farm and factory with other farms and factories. Society will be made a unit by a universal transportation system.

This will come about by the development now in progress of all agencies of carriage, carriers by rail, highway, air, and water, and their systematic coördination into a unified system of transportation. This goal is not to be immediately attained, but it is the one ever to be kept in mind in developing carrier facilities and in legislation and administrative action affecting their interrelations.

It is fortunate that the Transportation Act of 1920 establishes a new public policy as regards the relations of carriers to each other. Formerly the law sought to keep carriers apart and to compel them to compete, now it encourages them to coöperate, and railroads to consolidate. Legislation has not gone so far as it eventually will go in furtherance of the new policy, but it marks a long advance in the right direction.

The American public has always regarded the waterway as the competitor *par excellence* of the railroads, and the regulator of their charges. Latterly the inability of the inland waterways in the United States, other than the Great Lakes, to compete successfully with the railroads, even though rail carriers are prevented by government regulation from engaging in destructive competition against the waterways, has somewhat shaken the faith of the public in the value of rivers and canals as regulators of railroad charges; and the tendency now wisely is

to make the inland waterways parts of joint rail-and-water or water-and-rail routes over which through shipments may be made upon joint or through rates. Had this policy not been adopted, materially less traffic would now be carried upon rivers and inland canals in the United States.

Until after the Government had taken over the operation of the railroads during the World War, competing rail carriers were not allowed to consolidate. To do so violated the antitrust law. Nor were they permitted to make competitive rates by common action, although such rates were subject to regulation by the Interstate Commerce Commission. As far as the law could bring it about, competing railroads were required to work against each other, instead of coöperatively, as regards rates, arrangement of competitive services, and division of traffic. Practice did not altogether square with the letter of the law, because the conditions that prevailed at the time of the enactment of the law, particularly as regards the state and Federal regulation of the railroads, had so changed that the statutes concerning the interrelations of carriers were no longer based upon sound principle.

Now that the auto-bus and the auto-truck have made the highways important avenues of passenger and freight traffic, their proper relation to carriers by rail and by waterway has become a practical question of public policy. The Federal Government has not yet begun to regulate interstate highway transportation, but probably will soon begin. In the meantime, many, though not all, of the states have passed laws requiring motor common carriers to secure from the appropriate state commission a certificate of public necessity. In some states, the rates of motor common carriers may be fixed by the public service commission, but this is the exception rather than the rule. The public and the state authorities have thus far regarded the automobile as the competitor rather than as the complement of the railroads, and the tendency has been not to regard with favor granting to railroad companies the exclusive privilege of developing motor transportation in territory adjacent or tributary to the rail carriers' lines. At the same time, railroad companies, usually through subsidiaries, are being permitted to make in-

creasing use of motor busses and trucks in handling local traffic. It is quite safe to predict that the development of motor services by the railroads will proceed with accelerating rapidity, and that motor transportation by or for the railroads will be subject to such Government regulation as may be deemed necessary to protect the public interests and to safeguard the rights of motor carriers generally.

The fact that the different agencies of transportation bear a complementary as well as a competitive relation to each other is coming to be more generally understood. The experience of the United States during the World War did much to bring this about. From the entry of the United States into the War until the end of 1917, an Executive Committee of the railroad executives was given authority by the several railroad companies to unify the services of the rail carriers. The Committee accomplished much under difficult conditions, and had it received financial and administrative support from the Government it might have met the requirements of the situation as fully as they could have been met. The President, however, decided that it was necessary that there should be a greater unification of the operation of the railroads than the Executive Committee had brought about, so he took over the operation of the railroads, the main river and canal routes, and the business of the express companies. A single, unified transportation system was thus established, each part rendering such service as the Director General of the Railroads thought would contribute most to the common result. Coördination and integration, rather than competition, were insisted upon. The reasons given for this action and the success that resulted gave the public a new conception of the desirable interrelations of railroads with each other and with waterways.

By the Transportation Act of 1920 the railroads were returned to their owners, and the law not only authorized but sought to further the consolidation of the railroads into a limited number of large systems of relatively equal strength, as planned and approved by the Interstate Commerce Commission. As permitted by the law, the business of the several express companies was taken over by the American Railway Express Company,

jointly owned by the several express companies. The Interstate Commerce Commission was given authority to establish through routes and through rates by railroads and inland waterways; and the United States Government, as an operating carrier on the Mississippi and Warrior Rivers, has on several occasions called upon the Commission to establish such routes and rates.

Railroad consolidation under the Act of 1920 has not proceeded so successfully as was expected; and it would be inaccurate to say that the coördination of waterways and railroads has progressed further than to give the carrier on the inland waterways the power to compel the railroads to enter into arrangements for the exchange of through traffic carried on a joint through rate; but at least a start has been made towards regarding the inland waterways definitely as a part of an unified country-wide transportation system.

The adoption of the policy of Government regulation of the relation of carriers to each other, and of their services and rates, and the encouragement not only of railroad consolidations but also of the greater integration of the different agencies of transportation have often been interpreted to be the end of real competition of railroads with each other and of railroads, waterways, and highways with one another; to be the substitution of coöperation for competition. Such an inference or interpretation, however, ignores the everyday practice and experience of the large railroad companies which compete actively with others in service, each company seeking to hold traffic against its rivals and to build up the travel and tonnage of its own lines; it also takes no account of the psychology of men who as officials and managers have always sought, and will ever seek, to show as good results as possible for their own company and for the property under their administration. Competition among carriers has not ceased, but must now be carried on in the manner and within the limits prescribed by Government regulation, very much as sports and other contests must be conducted according to rules.

As a study, transportation is of fascinating import; a subject that of itself is large and complicated and that has a vital

relationship to the problems of industrial life, social welfare, and public policy. Much has been written about railroads and waterways, less about highways, and as yet comparatively little, that is not technical or engineering in character, about air transportation. The student of transportation needs to acquaint himself with the services of the several agencies of transport, and with the organization and methods they have developed for the performance of their services. When this knowledge has been acquired, a fruitful study can be made of the policy that the public should follow in regulating the railroads and other carriers.

The study of transportation is not without its burden of detail—services are of many kinds, rates are complex, public policy has many phases—but the burden will be lightened if the student will keep ever in mind that the several agencies of transport that he studies in turn—the carriers by rail, road, air, and water—are, or should be considered, interrelated parts of an integrated whole, each part rendering the service it is best fitted to perform. It is also believed that the student will be aided in keeping this concept in mind, and in holding to it as a guiding principle, by finding within a single volume an account of all four kinds of transportation.

PART I

RAILROAD SERVICES

CHAPTER II

THE LOCOMOTIVE AND POWER DEVELOPMENT

Transportation was once accomplished by the use of muscle; now mechanical power is employed. As in production, so in carriage and haulage, men have called to their aid steam, electricity and gas, all of which they are applying with ever increasing efficiency. For most countries, this is a mechanical age. Power is fundamental. The degree of ability of men to apply power economically and effectively to the work to be done determines the rate of their material progress.

Transportation is heavy work—the movement of passengers in large numbers and with speed, the carriage of freight in great quantity and long distances—and is especially adapted to mechanical performance. Indeed, in this economic service or task as much as in any other the machine can be made to labor for man, to lighten his burdens and to multiply many times the possibilities of his unaided performance. Power, as the motive force of transportation, has remade and is ever changing the structure of social and business life; it has made society dynamic. A study of transportation may logically begin with the mechanism by which power is made effective.

Power is usually applied to transportation by means of a locomotive, an engine on wheels. Usually the power is generated in this traveling engine, but in the case of an electric locomotive the energy comes from a central plant that supplies a current or charges a battery which provides the power that the locomotive converts into tractive force or "drawbar pull." The engine that provides the motive force may be a locomotive distinct from the cars hauled or it may be within and a part of the electric or "motor" car, bus, or truck that transports passengers or goods. There are several types of locomotives and engines, some of which are so frequently seen that their general characteristics

are well known, while other and newer kinds are not so well understood. It will be sufficient to refer only to the engines most used and to those now in the experimental stage of development, but which hold out greatest promise of bringing about economies and higher efficiency in transportation.

The steam locomotive does the haulage on railroads with the exception of such sections as have been electrified and of such branch lines as have been provided with gasoline or oil-electric cars to replace the steam engines formerly in service. The electric locomotive is the tractor of trains on the electrified sections of railroads which as yet include only a limited number of lines, terminals, tunnels, and mountain divisions. The electric railways, city and interurban and main line, are equipped with cars that carry their own motors. The gasoline engine is used in automobiles and airplanes—the vehicles of the highways and the airways. The large busses have gasoline engines that generate electricity that is applied as motive power. Some motor cars operated on the railroads have gasoline-electric engines while others have oil- or Diesel-electric engines. Several railroads are now using, in yard switching service, internal combustion oil or Diesel engines. This type of locomotive is, however, still in the early stage, and the same is true in a greater degree of the steam turbine locomotive of which a few are in operation in Europe. These several kinds of locomotives will be briefly discussed.

The steam locomotives, passenger and freight, which do most of the haulage upon the railroads, although of one genus, are of many species that have resulted from more than a hundred years of evolution. The Titans that rush along at high speed with 12 or more heavy Pullman coaches or take in tow a mile-long train of one hundred or more loaded freight cars are symbols of power. There is no better illustration of man's achievement in substituting mechanism for muscle for the heavy work of the world; and, though it has long seemed that the limit of development must soon be reached, improvements are being continually made. At no time, indeed, has the technical progress of the steam locomotive been so rapid as during the years since the World War. One mechanical triumph is following hard

upon another and in consequence the fuel costs are lowered while the drawbar pull grows stronger and the length and speed of trains become greater.

The main task of the passenger locomotive is to develop tractive power effectively and economically at high speed. The freight engine must haul much heavier loads, but at about half the average pace of the passenger train; it needs to be heavier and to have more driving wheels with less diameter that carry a larger per cent of the total weight of the engine and thus increase the friction of the wheels on the rails. The earlier or "American" type of steam locomotive had a four-wheel truck forward and four driving wheels. It had no truck behind the drivers and is described as the 4-4-0 type, the wheel arrangement being a common basis of classification. The earliest deviation from this general type of locomotive was made in designing more powerful engines for the freight service. There are now many kinds of passenger and freight locomotives. Those most generally used may be briefly considered.

Although the "American" (4-4-0) locomotive is still used for light passenger service on local and branch lines, the two prevailing present types of passenger engines are the "Atlantic" (4-4-2) for trains of usual weight, and the "Pacific" (4-6-2) for the heavier trains and for sections having steeper grades. The Atlantic locomotives now in service are neither small nor light; the engine and tender together will ordinarily weigh over 400,000 pounds; the weight on the drivers will be about 140,000 pounds and the tractive power will be from 30,000 to 35,000 pounds. The Pacific type is heavier and may with tender weigh 475,000 to 500,000 pounds, of which 200,000 will be carried by the six driving wheels.

The Pacific type of locomotive, as it had developed up to 1927, is well represented by the 20 engines, named after the Presidents, placed in service that year by the Baltimore and Ohio Railroad to haul its express trains between New York City and Washington, D. C. The average speed maintained on the run of 224 miles is 45 miles per hour with stops at nine stations. While most trains have less than ten coaches, the locomotives are designed to handle ten to twelve, with sufficient

reserve power for extra speed to make up for possible delays. The engines without tender weigh 326,000 pounds, with tender 540,000 pounds; the drivers carry 201,000 pounds and the tractive power is 50,000 pounds. The driving wheels are 80 inches in diameter; the boiler pressure is 230 pounds to the square inch, and the speed attainable is 80 miles an hour. The engines are equipped with steam superheater and with feed-water heater —appliances which will be described presently. These locomotives are referred to, not because they are exceptional types, but because they are good examples of those regularly employed in the heavier, high-speed passenger service.

The power requirements for the heaviest passenger service are not very different from those demanded by the fast through freight trains, and to meet the needs of these services the Mountain type of locomotive (4-8-2) is used to some extent. An engine of this design with its tender will weigh about 600,000 pounds of which nearly 270,000 pounds will be carried by the eight driving wheels. The drawbar pull will probably be about 53,000 or 55,000 pounds.

The freight locomotives most largely used are of four types. Except for especially heavy freight service and for hauling fast trains, the Consolidation (2-8-0) is generally employed. Its weight with the tender is about 425,000 pounds. The driving wheels of this and other freight locomotives are usually a little more than five feet in diameter—twelve to twenty inches less than the diameter of the drivers on passenger engines. The greater part of the weight of the engine is carried on the drivers, there being only one two-wheel truck. The tractive power is from 50,000 to 55,000 pounds.

For heavy freight trains a more powerful locomotive, the Mikado (2-8-2), is preferred. Its greater heating surface and greater weight (about 500,000 pounds) bring its drawbar pull up to 60,000 to 65,000 pounds. A still heavier and stronger freight locomotive is the Decapod (2-10-0) which weighs with tender about 600,000 pounds, carries over 350,000 on its ten drivers and has a tractive power of 90,000 pounds.

To haul freight trains up mountain grades locomotives even more powerful than the Decapod are desirable, but until re-

cently it has not been deemed practicable to join more than five driving wheels with a connecting rod—five drivers making a maximum possible rigid wheel base. A locomotive with greater tractive power was constructed by placing two distinct, but articulated engines under one boiler. This is the Mallet or Articulated locomotive, usually of the 2-6-6-2 type, although Mallets of 2-8-8-2 and 2-10-10-2 types have been built. Indeed, Mallets have been constructed with three articulated engines each with eight driving wheels (2-8-8-8-2). These extremely large articulated engines are the most powerful of all types, but they are unavoidably heavy because of the duplication of operating parts, and are not especially economical of fuel.

Probably the locomotives having the greatest tractive power of any yet constructed are the ten articulated (2-8-8-2) engines put in operation in 1927 by the Denver and Rio Grande Western for operation on the long steep grades over the Tennessee Pass in Colorado. The tractive power is 131,800 pounds. The fire box is 18 feet 2 inches long and 9 feet wide and has a grate area of 136.5 square feet. The steam pressure in the boiler is 240 pounds per square inch. The total weight of the engine is 649,000 pounds of which 559,500 pounds are carried on the 16 driving wheels. The tender has capacity for 18,000 gallons of water and 30 tons of coal, and weighs 343,500 pounds. The engine and tender thus weigh 993,000 pounds.

The engine of a locomotive regularly has two cylinders, one on each side. For a time it was thought that double expansion—the use of the same steam in a second cylinder—would increase efficiency and reduce the fuel used per unit of service. Double expansion has been provided in many locomotives, especially in Mallet engines; but the added weight of operating parts and the greater cost of maintenance have so largely offset the economies of compound engines that they have not been generally preferred to those having single expansion.

Recently heavy passenger and freight locomotives have been constructed with three instead of two cylinders, and it is claimed that several advantages result from the introduction of the third cylinder—a more uniform torque, larger tractive power per weight on drivers, greater starting power, and a

reduction in fuel per unit of performance. It is probably too early to decide whether or to what extent these and the other gains claimed for the three-cylinder engine are nullified by the increase in weight of parts and in maintenance costs.

The Union Pacific Railroad in 1926 put in service an exceptionally large locomotive with three cylinders. This engine was unique because it was the first one to have six pairs of coupled drivers. Its wheel arrangement is 4-12-2. The connecting of six driving wheels had hitherto been deemed impossible because the rigid wheel base became too long to permit the negotiation of curves. In the "Union Pacific Type" of locomotive the front and rear pairs of drivers can move laterally independently of the other drivers and the rigid base extends only through four drivers. The total weight of engine and tender is 782,000 pounds. The engine weighs 495,000 pounds of which 355,000 pounds are carried by the drivers. The tractive power is 96,650 pounds.

Heavy locomotives for mountain grades are often equipped with a "booster" engine which may be connected with the four-wheel trailer truck under the fire box or may be a part of the tender. The booster is operated to help the locomotive up heavy grades and can add about 20 per cent to the tractive power.

The largest locomotives require fire grates too large for satisfactory hand stoking. To secure the best results the coal, in coal-burning engines, needs to be crushed to small particles and to be evenly distributed over the grate, the area of which may be a hundred square feet or even more. The fireman on the heaviest engines, instead of using a shovel, now operates a mechanical stoker which reduces the pieces of coal to small size, conveys the fuel from the tender to the fire box and distributes the coal evenly over the grate. The mechanical stoker in addition to making larger engines feasible, also makes possible longer continuous locomotive runs at higher sustained speeds and permits the use of lower grades of coal than would be practicable if the stoking were done by hand.

The present power efficiency and fuel economy of steam locomotives are in large part made possible by two other appliances, one for the superheating of the steam, the other for the heating

of the feed water before it enters the boiler. The prevailing type of superheater is a device whereby the steam generated in the boiler passes through pipes within the fire flues and on into the steam chests. The superheating of steam increases cylinder performance and reduces the amount of steam required, and hence the weight of steam that must be generated, to accomplish a given amount of work. Locomotives of the present tractive power would not be possible without the superheater. Moreover, the superheater reduces operating costs. Eugene McAuliffe states that:

> Locomotives equipped with the superheater and functioning properly, properly drafted, fired and operated, have repeatedly shown a saving in water consumed of 20 to 25 per cent, and in coal consumed of 15 to 20 per cent when compared with saturated steam locomotives.[1]

The feed-water heater uses a part of the highly heated exhaust steam to raise the temperature of the feed water before it enters the boiler, "thereby relieving the fuel in the fire box from heating the cold feed water from an average of 60 degrees fahrenheit up to 220 degrees and saving about 10 to 14 per cent of fuel."[2]

As a result of these and other mechanical devices the steam locomotive has so greatly increased in size, weight on drivers, and tractive power, and has so reduced fuel requirements that its efficiency has been nearly doubled, as measured in ton miles of transportation per unit of fuel consumed. Fuel economy, however, though of importance, is only a partial measure of the benefits derived from increased locomotive power efficiency. Power development has made it possible for the tracks, yards, and terminals to accommodate a greater volume of traffic. The earning power of the entire railroad plant is augmented; and the advantages accruing to the carriers are handed on to the public in the form of better and less costly transportation services.

The technical improvements of the locomotive, such as automatic lubrication and mechanical stoking, have made possible more economical methods of operation. The present-day loco-

[1] Eugene McAuliffe, *Railway Fuel*, p. 303.

[2] Statement made by the late Julius Kruttschnitt, Chairman, Executive Committee, Board of Directors, Southern Pacific Company.

motive can be kept in service more continuously, and longer runs are possible. The total work to be done can thus be, and is being, performed with fewer locomotives. In 1926, the Class I railroads in the United States had 2,040 fewer locomotives than they had in 1920, but the total tractive power of the smaller number of engines was 10 per cent greater, and the average tractive power per engine had risen 15 per cent.

The economy of the long runs that are now possible is manifest. For illustration reference may be made to the long run of 735 miles being made on the St. Louis-San Francisco Railway between Kansas City, Missouri, and Birmingham, Alabama. In June, 1927, special trains made this run, being hauled through without change of engine by heavy locomotives of the Mountain type. From July 25 to August 4, 1927, a freight engine of the Mikado type made two round trips over this run, 2,940 miles, without drawing its fire. During the 217 hours, 281 tons of coal were burned, an average of 101.6 pounds per 1,000 gross tons one mile. The average coal consumption for all locomotives in the United States during August, 1927, was 118 pounds per 1,000 gross ton miles. Upon completion of this severe test the locomotive was in good condition and the fire box, boiler, and flues were readily cleared of accumulations and put in readiness for further service.

The real measure of the efficiency of present-day locomotives as regards speed is not to be found in the spectacular fast runs of passenger express trains, although they attract much attention. Such a run was that on the Pennsylvania Railroad, June 11, 1927, from Washington, D. C., to New York City: 224.5 miles, in 3 hours and 7 minutes, an average of 72 miles an hour including a stop of four minutes at Wilmington, Delaware, and a change from a steam to an electric locomotive at Manhattan Transfer outside of New York City. Over half the distance was covered at a speed of 85 miles an hour. While such speed is marvelous, it is the acceleration of the movement of the great volume of freight that is of most benefit to the public. In August, 1927, the average speed of freight trains in the United States reached 12.6 miles per hour. This seems like a slow pace, but it is the highest average reached in the history of

American railroading and represents a notable achievement. The major operating problem of American railroads is to keep the mighty currents of freight traffic moving continuously and at a rising rate of flow.

Power in the form of an electric current is the most flexible, the most readily applied, and has many advantages for the railroad service. Electric is preferable to steam power because: (1) It does away with the smoke nuisance caused by the railroads in city terminals and with the smoke and gases in tunnels and snowsheds; (2) it increases the traffic capacity of large passenger terminals such as New York, Philadelphia, and Chicago; (3) it is much more efficient for mountain grades, making possible longer tunnels at lower summit levels, heavier trains, and greater speed over the grades, thus enlarging the volume of traffic that can be handled over the railroad line; and (4) it eliminates the fire hazard to which forested mountain districts are subjected by coal-burning locomotives.

The electrification of the New York City terminal is complete. The Pennsylvania Railroad will soon complete the electrification of all its passenger services in the Philadelphia district, but electrification is not yet planned by the two other railroads serving the city. The electrification of passenger services is only partially worked out for Chicago. These are the only cities in which general passenger service electrification has been installed or has been started. With the exception of Manhattan Island, electricity is not employed for switching of freight cars in yards and between yards and in—city terminals and private sidings.

Hereafter railroads will not build a tunnel under a river or through a mountain without providing for its electrical operation. The Great Northern's long tunnel under construction in the Cascade Mountains and its approaches will be electrified. The longest sections of railroad that have thus far been electrified are those on the Chicago, Milwaukee and St. Paul Railway. This road is electrically operated from Seattle over the Cascade Mountains for a distance of 209 miles, and for another stretch of 440 miles over the Rocky Mountains between Avery, Idaho, and Harlowton in Montana.

The general electrification of railroads in the United States and the substitution of electric for steam equipment is not probable, although the superiority of electric power is undoubted. The rapid improvement during recent years of the steam locomotive in power and efficiency, and the extensive use of oil instead of coal for firing engines in the western part of the United States, where oil is to be had and where coal is expensive, have lessened the incentive to adopt electric operation. The main reason, however, why general electrification of steam railroads is not to be expected in the near future is that few if any railroad systems would be able to earn adequate net returns on the amount of their present capital plus the large additional sum required to electrify lines and terminals and to provide new equipment. Moreover, if and when electrification is undertaken, it ought, obviously, to be installed throughout the country, if possible, in order that the several railroad lines may continue to be parts of a closely coördinated nation-wide transportation system.

The electric locomotive has become large and of great tractive power. Its efficiency for heavy mountain grade work was well illustrated by the experience of the Virginian Railway in 1925. This company had the problem of getting coal-laden trains up a 2.07 per cent grade 15 miles long. It formerly used a heavy road locomotive and two still heavier pusher engines to take a train of 5,500 tons over the grade at a speed of 7 miles an hour. When the line was electrified it was possible to haul a 6,000-ton train up the grade at 14 miles an hour with one electric road engine aided by one electric engine as a pusher. Thus two locomotives took the place of three and did the work twice as well.

In the summer of 1927 the Great Northern Railway began operating powerful electric locomotives on the electrified part of the section of its line through the Cascade Mountains in Washington. The new Cascade tunnel, 7¾ miles long, being constructed on this section of the line is on a lower level than the tunnel now used. The new and longer tunnel made possible by electrification enables a reduction in the maximum grade from 2.2 per cent to 1.6 per cent. The electric locomotives to

be used on the 72-mile section including the approaches and the tunnel weigh 260 tons each, of which 409,800 pounds are carried on the twelve driving wheels. Each locomotive has six traction motors—three groups each with two motors. The tractive effort at the continuous rating is 60,500 pounds, but a tractive power of 120,600 pounds can be exerted. The speed of the locomotive at continuous rating is 18.6 miles an hour, but with a light load the engine may be speeded up to 45 miles an hour. The locomotives are examples of the latest development of those designed for heavy mountain grade work.

Many railroads have begun running gasoline-electric cars on branch lines. Some motor rail cars have the direct drive, but the electric drive is preferable for such cars as well as for the large motor busses that are already being operated in large numbers on city streets and suburban roads. The railroad motor car can be operated at much less expense than the steam locomotive and trains can be run and the service can be more frequent and flexible.

It is possible that an entirely new type of railroad locomotive may become a successful competitor of the steam locomotive within a few years. This is the Diesel engine, an internal combustion engine which derives its power from the gases released by the burning of the fuel within the cylinder; the fuel consisting of a fine spray of oil that is forced under high pressure into the cylinder where it ignites, forming the gases whose expansion provides the power. This engine, named after its inventor, is being rapidly adopted for marine service, because it is compact, no boiler room being required, and because it consumes substantially less fuel than a steam engine of like power, and because it increases the space available for cargo. The Diesel engine is readily adapted to stationary work, but its high cost, its weight, the complexity of its parts, and the cost of maintenance have made its practical application to railroad service technically difficult.

A Diesel locomotive was first operated in the United States in 1924. The locomotive had 300 horse power and weighed 120,000 pounds, or 400 pounds per horse power which is more than twice the steam locomotive's weight per horse power. A Diesel

locomotive of 1,000 horse power weighing 275 pounds per horse power was built in 1926, and in 1927 it was announced that designs had been completed for locomotives to weigh only 185 pounds per horse power. The weight handicap promises to be overcome.

There are four possible advantages in favor of the Diesel locomotive: (1) When properly designed it is practically smokeless and thus is especially desirable for switching use in terminals. (2) It can be put into service quickly, just as an electric locomotive can, there being no time required for getting up steam. (3) In contrast with electrification, there is no special expense for installation. Like the steam engine, the Diesel locomotive is a self-contained power unit. (4) The great economy in fuel cost: the thermal efficiency at the rail of the steam locomotive is said to be from 5 to 9 per cent, *i. e.*, less than one-tenth of the theoretical power derivable from the heat resulting from the fuel consumed in the fire box is actually obtained. The electric locomotive using current supplied by an efficient power plant and distributive system, has tractive power equal to 10 to 12 per cent of the energy released in the burning of the fuel; while the thermal efficiency of the Diesel locomotive is 22 to 25 per cent.[3]

Nearly all Diesel locomotives (and rail cars of which several have been built) have electric drives, *i. e.*, they are Diesel- or oil-electric engines. The direct drive is not practicable, and mechanical gearing is hardly possible because of the severe stresses on the gear teeth. Hydraulic gearing is being experimented with, but for the present, at least, electric transmission of engine power into torque is preferred by most designers and builders of Diesel engines.

In 1927 there were more than fifty Diesel locomotives and rail cars in service or under construction.[4] The Diesel-electric engine seems especially well adapted to use on rail cars that are being put into service in increasing numbers, to take the place of steam locomotives and trains on branch lines where traffic

[3] William Arthur, "Diesel Traction for Locomotives," *Railway Age*, Vol. 83 (July 16, 1927), pp. 99-102.

[4] *Ibid.*

is light and automobile competition is taking business away from the railroads.

The steam turbine is a compact engine that has been installed in many ocean vessels and in numerous stationary power plants. The turbine locomotive is a possibility. One is being operated on the government railways of Switzerland. American railroads, however, have not experimented with turbine locomotives. In their present state of development they are heavy, costly to build, and expensive to maintain. The future prospects of the steam turbine locomotive are less promising than those of the Diesel-electric.

Much attention is being given to the development of economical rail cars for light railroad service. British manufacturers are building railroad cars with steam engines for operation on the railroads in Egypt and in many other parts of the world. As the result of some years of laboratory work the International Harvester Company, at Chicago, brought out, in 1927, a steam "locomotor," a passenger and baggage car 73 feet in length carrying its own steam power plant. The engine develops steam under a pressure of 600 pounds to the square inch and with 200 degrees of superheat. "The fuel used may be any ordinary grade of distillate readily procurable in the open market. Tests . . . show a fuel consumption of one gallon of distillate, at a cost of about 5½ cents, for 1½ miles of operation." [5]

There are thus three distinct types of rail cars competing for favor; the gasoline and gasoline-electric car of which many are now in service; the Diesel-electric car of which there are several in operation; and the steam locomotor, largely used in foreign countries, where gasoline is expensive and coal and oil are the cheaper fuels. It will be interesting to observe which type will come to prevail in the United States.

The extent and rapidity of the technical development of the application of power to the work of transportation have been far greater than could have been predicted a score of years ago, and there is apparently no limit to possible future progress. While the steam locomotive has become marvelously powerful and efficient, the technical achievements of the recent past are

[5] *Railway Age*, Vol. 83 (Oct. 15, 1927), pp. 717-719.

a prophecy of future mechanical triumphs. The electric locomotive and car are presumably in the earlier stages of evolution; while the Diesel-electric, and the steam locomotor are in the very beginning of their development. In Europe experiments are being made with steam turbine locomotives. This is a period of experiment and rapid progress in power efficiency. What types of power mechanism will eventually prove best for the several kinds of transportation service cannot be foretold, but one may be certain that the locomotives and rail cars of the future will be superior to those of the present.

REFERENCES

The new types of locomotives and rail cars are described and illustrated currently in the *Railway Age* as they are put in service. By consulting the indices of the *Railway Age* for the last three years the reader can secure detailed information.

McAULIFFE, E., *Railway Fuel.* Chaps. xx, xxi and xxii deal respectively with Locomotive Appliances, Trends in Locomotive Design, and Progress in Locomotive Utilization (1927).

CHAPTER III

FREIGHT CAR EQUIPMENT: DISTRIBUTION, INTERCHANGE AND DEMURRAGE

ALTHOUGH freight service improvements and operating economies have been influenced in important respects by the power developments discussed in the preceding chapter, they are also dependent upon the effective utilization of the freight car. Indeed, the translation of power improvements into service improvements and economies takes place through the medium of the freight car and the freight train. So close is the relationship between freight service and car service that during times of car shortage or inadequate freight service the two terms virtually become synonymous in the minds of shippers. Normally, of course, the freight service as a whole includes not only such part of it as is directly traceable to the freight car, but all of the freight train services and special freight services that will be discussed in subsequent chapters.

The General Freight Car Situation

The general car service situation throughout the country has undoubtedly improved since 1920. Its adequacy cannot be measured in terms of a single statistical unit, but a general survey of recent occurrences can readily be made. The number of freight train cars in service, exclusive of private freight equipment has increased from 2,388,000 in 1920 to 2,404,000 in 1926; their average capacity has advanced from 42.4 to 45.1 tons, and an increasing amount of attention is being given by the railroads to providing special and general equipment that will be adapted to business needs and railroad operating economies. Specialized equipment, however, continues to be provided in part by shippers and private car lines, 283,279 private freight cars, mostly specialized cars, being reported in

August, 1926. Unusual efforts have also been made to reduce the percentage of unserviceable freight cars, so as to make a maximum number available during periods of gradually increasing volume of traffic.

The average number of miles per car per day has always been surprisingly low but an effort, rewarded by some degree of success, has been made to increase it to 30 miles or more. The monthly average has in recent years varied from 19.5 miles per car per day in April, 1920, to 34.7 miles in October, 1927. During 1927 it varied from 26.9 to 34.7 miles. These figures, which disclose much concerning the daily performance of freight equipment must, however, be interpreted with full allowance for the fact that they include idle cars, serviceable as well as unserviceable, and that the number of surplus cars for which no orders are received from shippers undergoes seasonal fluctuations.

The average number of revenue tons per loaded freight car of all classes of steam railroads, due partly to greater car capacities, partly to certain increased carload minimum weights and partly to voluntary coöperation on the part of shippers, has advanced from 18.14 tons in 1905 to 26.7 and 24.96 in 1920 and 1926. Average net tons per loaded car of Class I roads advanced slightly from 27.0 in 1925 to 27.2 in 1927. Car service improvement based upon heavier carloadings necessarily fluctuates somewhat according to the number of surplus cars available throughout the country. The relatively heavy loadings in 1920 were accomplished largely as a result of car shortage. More recent carloadings should be viewed in the light of an existing surplus of freight cars.

In 1926 loaded car miles comprised 63.7 per cent of the total car mileage reported by Class I railroads. Little has been accomplished by the carriers in their efforts to increase the relative proportion of loaded car mileage because traffic movements are not well balanced. The preponderant tonnage movements from the west to the east and from the south to the north are in line with the normal flow of commerce and necessitate the moving of empty cars to loading points. The car service rules of the railroads, moreover, require the return of freight

cars to owners' rails. This is the prevailing system of interchanging cars, and is to be contrasted with the possible pooling of freight cars in the future.

The results of freight car service as a whole, or its effectiveness in meeting the requirements of agriculture and industry, may be measured roughly by the volume of freight traffic actually moved and by current statistics of car shortage and surplusage. The railroads have, since 1923, carried record volumes of freight traffic without a general car shortage such as usually occurred in the past during periods of heavy tonnage. Ton mileage for the country as a whole advanced from 215,878,000,000 in 1906 when a very severe car shortage occurred to 416,256,000,000 in 1923 when a surplus of idle cars was reported during eight months of the year. Since then there has always been a general surplus, although 391,945,000,000 ton miles moved in 1924, 417,418,000,000 in 1925, and 447,444,000,000 in 1926. These records of traffic volume may be compared with 413,699,000,000 ton miles in 1920 when a net car shortage prevailed throughout practically the entire year.

Car shortages have frequently been caused in the past by a sudden, unforeseen growth in the total volume of railroad traffic and by the seasonal bunching of much traffic during the late summer and in the fall and early winter months. They have been intensified by imperfect performance of freight cars during periods of heavy traffic, due to terminal congestion, unequal distribution of cars, the use of freight cars for warehousing and merchandising purposes, failure to load and unload cars promptly, inadequacy of motive power, undue preference to freight calling for long hauls, and insufficient attention to time of transportation in comparison with tonnage. Individual lines have also at times failed to equip themselves with a sufficient number of cars. During the War one of the basic causes of car shortage was the abnormal flow of export traffic toward certain ports and the absence of sufficient ocean tonnage to receive this freight upon its arrival at the seaboard. Adequate storage facilities were not available at the ports, because most export freight, moving in carload lots is normally

transferred direct from railroad car to steamer or to the waterfront for shipment in the near future. Car shortage has been due partly to traffic inequalities and partly to the faults of the carriers and those of the shipping public.

Carriers, shippers, and consignees alike came to realize the seriousness of alternate periods of car shortage and surplusage. Idle cars are a financial burden to the railroads and in the long run must also influence the general level of freight rates; car shortages disrupt commerce and industry and are generally regarded by the public as a mark of failure. Shippers and carriers therefore decided to coöperate more closely than in the past, both individually and in an organized way through shippers Regional Advisory Boards which have been established in most parts of the United States. Shippers are coöperating by providing prompt information as to present and future car and freight service requirements, and by paying more attention to prompt loading and unloading and to heavier carloadings. The railroads are coöperating by mobilizing cars at shipping points in advance of immediate needs, to meet the demands of the seasonal peak load; by giving attention to expedited freight services as well as to heavy trainloads; and by utilizing motor trucks instead of freight cars in their local freight services and within their terminal areas to an increasing extent. They have also conferred greater powers upon the Car Service Division of the American Railway Association relative to the relocating of cars by transferring them from one railroad or territory to another for the purpose of meeting traffic requirements. They have made extensive freight terminal improvements and many of them have made substantial additions to their motive power and freight car supply.

Distribution of Freight Cars

The first step in the distribution of freight cars to shippers is the apportionment of available equipment among the several operating divisions of each railroad system. This function is frequently placed in charge of a Chief Car Distributor who receives current information concerning car requirements from the division car distributors or chief dispatchers of the operating

divisions, who in turn compile it from telegraphic statements or reports made to them by the railroads' station freight agents. The Chief Car Distributor, or other general official administering the apportionment of cars among divisions, must, however, look to the future as well as meet present car demands; he must attempt to reduce empty car mileage and waste in the use of freight cars, and he must if possible expedite both the return of cars from connecting lines, and the prompt repair of cars that have been sent to the company's shops.

Within each operating division the available freight cars are distributed on the basis of orders received from shippers on prescribed forms. With these orders before him the freight agent requests the desired cars from the division car distributor or chief dispatcher. If the entire number requested is not available an equitable division must be made among the shippers. The Interstate Commerce Act does not require railroads in interstate commerce to provide all cars ordered from day to day, but it provides that they must in general furnish a safe and adequate car service and it prohibits unfair discrimination. Car distribution is subject to general supervision by the Interstate Commerce Commission, and the Commission (sec. 1, par. 21) has also been authorized, after holding hearings, to require a carrier "to provide itself with safe and adequate facilities for performing as a common carrier its car service as that term is used in this act. . . . Provided, That no such authorization or order shall be made unless the Commission finds, . . . as to such extension of facilities, that the expense involved therein will not impair the ability of the carrier to perform its duty to the public." The full extent, however, to which the Commission has been empowered to require carriers to purchase or construct cars has not thus far been determined. Most of the state railroad and public service commissions likewise are authorized to supervise car distribution in such a manner as to prevent unjust discrimination. Some years ago, however, several states enacted "reciprocal demurrage' laws which penalized the railroads when they failed, within a prescribed number of days, to furnish cars ordered by a shipper up to a fixed maximum number.

Car distribution in the bituminous coal industry differs from

the usual practice in that it is based upon prearranged daily "mine ratings." In this industry unfair discrimination in car distribution is felt almost immediately because the production of the mines is largely governed by the current supply of cars, comparatively little bituminous coal being produced for storage at the mines. The Commission in 1924 tentatively approved a plan under which mine ratings are determined by the carriers on the basis of (1) physical capacity, (2) past performance, (3) labor supply, and (4) other factors that may affect the production and shipment of coal. Special mine-rating plans, differing from this general plan, however, were tentatively approved for certain bituminous regions such as those in Indiana and Colorado. Car distribution to coking plants is similarly based upon daily ratings.

The Interstate Commerce Commission in 1924 also approved the general car distribution rules of the bituminous carriers, with the exception of the rules applicable to their so-called "assigned cars." During periods of car surplus the ratings of mines are unimportant because the carriers' distribution rules then grant to each mine all the cars requested by it. When a shortage occurs each mine is entitled to receive only its prorata share of available equipment as determined on the basis of prearranged mine ratings, and then it may become highly important to particular mines as to how many cars are included in the supply available for general distribution. Many railroads regularly assign certain railroad fuel cars to particular mines from which they obtain fuel on time contracts, and a second group of assigned cars consists of coal cars privately owned by coal mines or industrial concerns. The practice has been, to include such cars in the available supply, subject to the important proviso that in case of severe shortage a car owner shall be entitled to the use of his cars. The Interstate Commerce Commission in 1924 concluded that railway fuel cars and private coal cars "should be counted and charged against the mines at which they are placed in the same manner and to the same extent that unassigned cars are counted and charged." The Commission in this way attempted to enforce the Interstate Commerce Act as it was amended in 1920. The only assigned

cars recognized by the Commission are such cars as it may itself assign to coal mines to meet emergencies. The decision of the Commission was appealed to the courts but on May 31, 1927, its validity was upheld by the United States Supreme Court.[1]

Freight Car Service and Interchange Rules

As freight cars are interchanged between connecting lines, car service is an interline problem as well as one that concerns each railroad system. Under the prevailing system of interchange, railroad freight cars are returned to their owners who receive compensation for their use by connecting lines. Three codes of rules, formulated, amended and administered by the American Railway Association have been quite generally adopted. Each code, when adopted by a carrier, is embodied in an agreement in which it promises other subscribing carriers to abide by the terms of the governing code of rules.

The Code of Car Service Rules is chiefly of importance because it contains the carriers' rules governing the return of interchanged cars. These rules are of importance to shippers as well as carriers because they affect the distribution of freight cars. Empty freight cars may not be delivered to shippers indiscriminately and without reference to the destinations of their shipments. This Code also contains rules concerning the delivery of cars to connecting lines, the making of necessary detours, the charges to be paid for the use of interchanged passenger cars, empty movements of tank cars, costs incident to interchanged passenger cars, costs incident to the transferring or rearranging of loading at junction points, and the marking of private freight cars. Other rules prohibit the interchange of cars containing refuse and the placing of advertisements or placards upon cars by shippers, and rules requiring the adoption of the National Code of Demurrage Rules, and the light weighting and marking of freight cars in accordance with the carriers' Code of Interchange Rules are also included.

The Code of Per Diem Rules specifies the amount of compensation that each carrier shall receive for the use of its freight

[1] U. S. *v.* Berwind, White Coal Mining Co., *et al.*, 274 U. S. 564, May 31, 1927.

cars by connecting lines. Formerly a mileage charge was usually paid, but since 1902 the basis of compensation has been a per diem charge, the present standard amount being one dollar per car per day. When, however, "per diem is not reported to the car owner within four months from the last day of the month in which it is earned, the rate shall be increased fifteen cents per car per day for each six months or fraction thereof that report of such per diem is thereafter withheld; provided that the aggregate increase in the rate shall not exceed sixty cents per car per day." The purpose of the per diem charge is to cover the cost of car ownership or equipment investment and also to act as an inducement to connecting lines to return foreign cars to their owners. Detailed regulations are included in this code as to the reporting of interchanged cars and per diem, and the settlement of the amounts due.

Both of these codes are administered by the Car Service Division of the American Railway Association. This division may, for example, permit departures, and exempt cars of any type, from the rules governing home routing; and it has been authorized to order the transfer of cars from one territory or district to another when necessary to meet traffic conditions "with due regard to car ownership and requirements." A Per Diem Rules Arbitration Committee is also provided for the interpretation of the Per Diem Rules, and the adjustment of disputes and interpretations of the Code of Car Service Rules are recommended to the Transportation Division of the Association by a Committee on Car Service.

Both of these codes of rules are subject to public regulation by the Interstate Commerce Commission. The Commission has been authorized to require the filing of car service rules and their publication in tariffs,[2] and also, after holding hearings, to establish reasonable car service rules and prescribe the compensation that shall be paid for the use of foreign cars. To meet emergencies, moreover, the Commission may suspend existing car service rules and practices, prescribe emergency rules without regard to car ownership, order the relocation of freight cars and grant preference or priority in the movement of traffic.

[2] This power as to tariff publication has not been exercised to date.

The Code of Rules Governing the Condition of, and Repairs to, Freight Cars for the Interchange of Traffic, commonly known as "Interchange Rules" or "Master Car Builders' Rules," was originally formulated by the former Master Car Builders' Association. Since 1919, however, when this organization was consolidated with the American Railway Association, it has been generally administered by the Mechanical Division of that association. The Code contains many specific rules, the general purpose of which is to make car owners responsible for repairs necessitated by ordinary wear and tear; to place responsibility with the handling line for damage occurring through unfair usage or improper protection, and to provide a definite means of settlement; and to provide an equitable basis for charging such repairs and damages.

Mention should also be made of the Car Record Office maintained by each railroad somewhere as a part of its business organization to facilitate the interchange of cars and to maintain records showing the location of cars. The record department of this office keeps separate records showing the location and movement of home and foreign cars, computes the per diem that the companies owe to each other, and renders per diem reports to car owners. The functions of its mileage department are to keep mileage records of private freight cars and interchanged passenger cars, compute the amounts due on such cars, and render the reports necessary for settlement. The special treatment of private freight cars [3] and passenger cars is due to the prevailing practice of paying for their use on the basis of mileage charges instead of per diem.

Car Demurrage Rules and Charges

In order to reduce unnecessary detention of freight cars by shippers and consignees for loading, unloading, forwarding directions, storage or other purposes, the railroads have found it desirable to publish and enforce car demurrage rules and impose demurrage charges. The rules now in effect on most railroads are known as the National Car Demurrage Rules. They

[3] Including numerous refrigerator cars, etc., owned by refrigerator freight lines which are subsidiaries of railroad companies.

apply to all cars except (1) cars under load with railroad company material for the use of and consigned to the carrier in whose possession the cars are held; (2) cars under load with livestock, but not including cars held for or by livestock shippers for loading, and also not including cars used for shipping live poultry; (3) empty cars placed for loading coal at mines, mine sidings, coal washeries, or coke at coke ovens, and such cars under load at such places, provided special car distribution rules in lieu of demurrage rules are in effect; (4) private cars on private tracks when the ownership of the car and track is the same, and "empty private cars stored on railroad or private tracks, including such cars sent by the owner to a shipper for loading, provided the cars have not been placed or tendered for loading on the orders of a shipper."

Definite rules are included concerning the computing of time for loading, unloading or other purposes, the serving of arrival notices, and the placing of cars for loading and unloading. Subject to these rules and to specified conditions under which an extension of time is granted before demurrage begins to accrue, the National Car Demurrage Rules permit a "free time" of forty-eight hours for loading or unloading and twenty-four hours for reconsignment, diversion, reshipment or in case a car is held in transit on the order of the shipper, consignee, or owner, or is held for other purposes specifically defined in the rules. After the authorized free time expires demurrage accrues at the rate of $2.00 per car for each of the next four days and $5.00 per car for each succeeding day.

Shippers and consignees may, however, enter into so-called "average agreements," under the terms of which demurrage is computed on the basis of the average time of detention to all cars released during each calendar month. Credits are used to offset debits. One credit is allowed for each car released within the first 24 hours of free time, and one debit is recorded for each of the first four days after the expiration of 48 hours. Excess debits are then charged at the rate of $2.00 per debit, but if the credits for the month equal or exceed the debits no demurrage is charged. In case a car has accumulated more than four debits, however, a charge of $5.00 per car per day is made for all

subsequent detention. These average agreements are usually advantageous only to shippers or consignees having special facilities for loading or unloading cars. After four debits have accrued on a car, Sundays and legal holidays, which are excluded in computing ordinary demurrage, are no longer excluded under the average agreement, and the usual extension of free time for adverse weather conditions and bunching of cars, except under special circumstances, is not permitted. Credits earned on cars held for loading, moreover, may not be used to offset debits accrued on cars held for unloading, and average agreements do not apply to cars held for reconsignment, diversion, reshipment, or in transit on order of the shipper or consignee or owner.

The National Car Demurrage Rules are at present applied widely but not universally. The rules themselves exclude several classes of traffic, and individual railroads at times publish separate demurrage rules designed to meet special local conditions. Some of the states, moreover, still have special demurrage regulations or statutes which modify the National Car Demurrage Rules in certain respects in their application to cars moving in intrastate commerce. They have also at times been supplemented by "track storage charges" at particular points where dealers, speculators, or others have used railroad cars for warehousing and merchandising purposes.

Demurrage rules and charges are published and filed in definite tariffs and their enforcement is in most sections of the country supervised by neutral or autonomous Demurrage and Storage Bureaus. Seven supervisory bureaus have been established by the railroads in defined territories in the United States and one in Canada. The station agencies of many railroads administer the rules and compute demurrage, subject to supervision by these bureaus, but some railroads have authorized the bureaus to take complete charge of their demurrage work at many points on their lines, the only duty of the individual carriers in connection with demurrage, in such instances, being the collection of the amounts shown in the bills received from the bureaus.

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CHAPTER IV

FREIGHT TRAIN SERVICES AND CAR LINES

THE operating economies resulting from efficient and economical motive power are made effective not only through the use made of the freight car, but also by means of heavier trainloads. Up to the limits of adequate locomotive power, increased trainloads result in operating economies. The average revenue freight trainload has in fact steadily increased. It advanced from 271 tons in 1900 to 476 in 1915 and 689 in 1926. Particular emphasis has been placed upon efficient motive power and favorable grades in the transportation of surprisingly large trainloads of heavy commodities such as coal and iron ore.

It has long been realized, however, that maximum trainloads must not be overemphasized to the exclusion of expedited freight services designed to facilitate the making of regular and prompt deliveries. This demand has of course been more pronounced in some industries than in others, but is becoming more and more general. Many railroads are speeding up their freight services both as a means of traffic development and as a part of their general plan to render improved freight services. In case of livestock traffic there is the additional urge of statutory requirements, and in case of both livestock and perishable traffic the relation between prompt delivery and the amount of loss and damage is a recognized factor.

Expedited Freight Services

The time required for freight transportation has been reduced partly by means of through car arrangements and partly by means of expedited train movements. The first important step taken was to forward carload freight through from shipping point to destination without transfer of loading at junction points. For some years there was no through traffic as it is

known at present, and as the railway network consisted of many small independent carriers, long delays and excessive transfer expenses occurred in the shipment of freight to distant markets. This situation resulted in the organizing of so-called "fast freight lines" which were independent companies that provided themselves with cars, and whenever track gauges permitted, forwarded shipments entrusted to them through to destination without transfer at junction points. Comparatively fast freight services were performed in this way by private freight lines that eliminated the delays otherwise occurring when interline freight was shipped. Later these private freight lines were purchased by the railroads and by 1875 they had almost entirely disappeared as independent transportation agencies.

Abuses had crept into the relations between certain fast freight lines and railroad managements, but the principal reason for the disappearance of the lines as private concerns was the increasing interchange of railroad-owned freight cars. The physical basis for this was created by the gradual adoption of a standard track gauge and a substantial degree of standardization in freight car construction. This was accompanied by the making of the necessary business arrangements under which freight cars could be interchanged. The three definite codes of rules referred to in the preceding chapter, now govern car interchange. In the shipment of carload freight the prevailing practice of the railroads became the interchange of the loaded cars, but the fast freight lines were in many instances retained by the railroads as parts of their own organization to facilitate traffic development and routing, and in some cases to serve as through freight accounting bureaus. After the railroads regularly interchanged carload freight the fast freight lines, however, lost their former position in the expediting of freight movements. Additional coöperative freight lines were in fact established by railroads, but they likewise were merely through routes and their primary purpose was to facilitate the joint solicitation of through traffic. Comparatively few of these cooperative freight lines are now in existence and the formerly independent freight lines that were later purchased by the railroads have also been largely discontinued, but the railroads

have in a number of instances organized freight lines for the operation and management of their refrigerator car services. Freight lines of this type are used in the performance of expedited freight service for perishable traffic and are in no way similar to the private and railroad fast freight lines that were so prominent during earlier years of railroad operation.

It soon became evident that the demand for expedited freight service could not be satisfied by the interchange of cars loaded with carload freight. Special reasons for fast services in the transportation of livestock, local as well as interline, were recognized by many railroads and urged by livestock shippers. Shrinkage of livestock while being transported, feeding costs and the humane handling of livestock, and the ability of shippers to reach central markets in time to realize favorable prices, all are factors which at an early date began to set livestock apart from other freight. A Federal statute of June 21, 1906, indeed, requires expedited and humane livestock transportation and a number of states have also enacted regulatory laws. In interstate commerce livestock must be unloaded at the end of 28 hours for feed, water, and rest unless the owner signs a release permitting it to be confined for 36 hours and his livestock is being shipped in cars equipped for feeding and watering without unloading. Some of the state laws require a minimum speed of a prescribed number of miles per hour, and other services such as preference in car distribution, telegraphic reports concerning stock car movements, and caboose facilities for caretakers. Expedited livestock transportation has, however, progressed beyond the requirements of the law. Livestock trains are sometimes given right of way over all other freight trains and may then be hauled at a speed approaching that of passenger trains, and in general an effort is made to expedite all livestock trains.

Fresh fruits, vegetables, meats, dairy products, and other perishable products are also provided with expedited freight services by every railroad. Perishables, especially when destined to distant markets, are hauled in private or railroad-owned refrigerator cars or other special equipment, and efficient icing services are maintained either by private concerns or by the

railroads. Steps have also been taken to provide fast freight services for perishables. Some of the carriers, as was formerly stated, have organized subsidiary refrigerator car lines such as the Pacific Fruit Express Company, the Santa Fé Refrigerator Dispatch and the Merchants Dispatch. Others do not maintain subsidiary fast freight companies but give preference to cars loaded with perishables, and some of them provide elaborate billing, placarding, and central control systems for expediting their movement. Much perishable freight is moved on scheduled trains, and some of these trains are especially intended for perishables.

Livestock and perishable traffic were first granted fast freight services because of the special needs of such traffic, but during later years an increasing number of railroads have established expedited freight services for many other classes of traffic and in some instances for all freight moving between certain points. The practice of moving most freight on "tonnage trains," which are operated when a desired amount of freight is available, is at many points giving way to symbol or scheduled freight trains that run at specified times. The resulting regularity of movement and promptness of deliveries constitute a real improvement in the railroad freight service. Another type of expedited freight service results from the granting of preference in train movement to certain classes of freight without, however, operating scheduled freight trains.

The expedited freight services that have gradually been established since the early nineties are variously known as "preference," "manifest," "dispatch," "time," "arranged" or "fast" freight services. On some lines several distinct classes of expedited freight services are offered. The Southern Railway and the Illinois Central, for example, divided expedited freight into two groups, "manifest" and "time," the former having preference over the latter and both having preference over ordinary slow freight. The Frisco System distinguishes between "red-ball" and "green-ball" fast freight; the New York Central between "perishable" and "preference" freight; the Rock Island between "gold-ball," "red-ball" and "green-ball" traffic. The range of commodities entitled to expedited move-

ment varies on different lines. In some instances only perishable and the higher grade articles and merchandise are included; others include many low grade as well as high class articles, and some carriers have expanded their "time," "arranged" or otherwise designated scheduled train services to include all or nearly all classes of traffic moving between specified points.

One of the most recent general developments in the expediting of freight transportation is the establishment of an increasing number of through merchandise or package freight services. Through package cars may be moved in scheduled trains where such trains are operated, but their primary purpose is to expedite less-than-carload shipments by eliminating transfers at junction points. The general interchange of freight cars containing carload freight was referred to above as the first important step in expediting freight movement, but the prevailing practice in handling interline less-than-carload lots of merchandise continued to require their transfer from car to car at junction points. The first modification of this practice usually occurs when L. C. L. freight is loaded into straight cars the entire contents of which are consigned to the same destination, and in case of interline shipments, to arrange that such cars shall be interchanged without transfer of loading. Through package car services have however been extended beyond this initial step. Many railroads now operate merchandise or package cars regularly between specified stations when a prescribed minimum weight of L. C. L. freight is offered by shippers, and many package cars, both in local and interline traffic, are scheduled to run at stated times.

Special services performed in connection with expedited freight train services such as the icing of perishables and the feeding of livestock result in special charges in addition to the freight rate, but the general practice of the carriers is to perform their "time," "dispatch," "preference," "package car" and other expedited freight services without special charge other than the regular freight rate. Although operating expenses incurred in connection with such services may influence freight rates, expedited services of the kind here discussed are

regarded as parts of their line-haul service that are essential to the public and as effective means of developing traffic, rather than as special freight services for which special or additional charges should be imposed.

Shippers' Cars and Private Car Lines

In discussing expedited freight services mention was made of the independent or private fast freight lines that operated during the sixties and seventies, and also of private car lines that now own refrigerator cars and perform icing services. The private car system has long been a part of the railroad freight service and continues to be of importance at the present time.

During the earliest period of railroad operation the prevailing theory was that the carriers were to provide the roadbed and motive power, while the shippers or car companies provided the necessary freight cars and paid "tolls" for having them hauled over the carriers' tracks. This period of private cars lasted only a short time, but the independent "fast freight lines" which owned private cars and which later became so important in the shipment of interline traffic operated from about 1860 to 1875, a period of fully fifteen years. The present period of private car lines and shippers' private cars began about 1880, largely because of the demand for special equipment and of the failure of the railroads to provide such equipment.

The first important development of the present-day private car system took place in the construction of refrigerator cars for use in the fresh fruit and meat industries. Some carriers regarded the construction of such cars as a hazardous venture, and others pleaded lack of funds for the purchase of special equipment. The result was that a number of private refrigerator car lines were organized and in the meat-packing industry several of the large packing companies provided themselves with refrigerator cars. Competition became keen and the car lines of the larger packers made a regular business of providing refrigerator cars for fruits and vegetables as well as for packing-house products, and they also performed the necessary icing services. Later the railroads began to supply themselves with refrigerator cars. The principal refrigerator car lines now

providing cars primarily for fruits and vegetables are railroad-owned fast freight lines,[1] but private car lines continue to provide cars for use in these trades, and they remain of special importance in the meat-packing industry. The largest private refrigerator car lines are the Armour Car Lines and the Swift Refrigerator Line, but several other private car lines are providing cars for the transportation of packing-house products.

Private oil-tank cars also had their origin in the refusal of the railroads to provide tank cars for the transportation of oil in bulk. For some years the Union Tank Line Company, originally a subsidiary of the old Standard Oil Company, largely controlled the supply of tank cars, the smaller refineries being at a disadvantage because of the expense involved in tank car construction. The Union Tank Car Company continues to own by far the largest number of tank cars, but in later years many other private tank car lines were organized. Nearly all the large oil refineries and some of the smaller producers have provided themselves with private tank cars. Some tank-line companies have also been organized in other industries, such as the chemical, paper, turpentine, asphalt, tar, linseed-oil, fish-oil, cottonseed-oil, castor-oil, cocoanut-oil, palmolive-oil, powder, sugar, molasses, beer, salt, soap, pickle and vinegar industries.

A third group of private car lines provides livestock cars. These lines were for the most part organized not by livestock shippers desiring to ship their own products, but by independent concerns who make a business of leasing special equipment to the carriers or to shippers. Some private stock cars are used in the movement of ordinary livestock traffic, while others are designed for special purposes such as the shipment of race horses, exhibition livestock, and other valuable animals.

The private coal cars owned by coal-mining and industrial concerns, referred to in Chapter III constitute still another distinct group or type. Originally these cars also constituted special equipment, but, when the railroads during later years provided cars especially designed for the economical handling of coal, the principal advantage of the private coal cars to their

[1] Santa Fé Refrigerator Dispatch; Pacific Fruit Express Co.; American Refrigerator Transit Co.; Fruit Growers' Express Co.

owners was in the distribution of cars during periods of car shortage.

At present approximately 45 per cent of all refrigerator cars, 90 per cent of all tank cars, somewhat less than 3 per cent of all coal and coke cars and about 4.5 per cent of all livestock cars are owned privately. These relative proportions of private and railroad-owned cars, however, do not fully disclose the importance of the private car system to particular industries or groups of shippers. Private refrigerator cars are now of primary importance in the meat-packing industry, and remain a factor in fruit and vegetable shipments, refrigerator equipment for use in the dairy industries being provided more largely by the railroads. Private livestock cars are chiefly of importance in the shipment of special livestock of the kind referred to above, and private coal and coke cars are a car service factor in certain mining districts when a car shortage occurs. Other types of private cars include ore, box, poultry, and miscellaneous types of cars with which industries at times provide themselves. From the standpoint of management and ownership, private cars may be divided into two general groups: those owned by private car lines and those owned by shippers. The two groups, however, overlap because many private car line companies are affiliated with industrial concerns.

The standard business arrangement between the railroads and private car owners is based upon the principle that private cars are leased by the railroads and that car owners are entitled to a rental for their use. The former theory of turnpike tolls has been completely revised. Private car owners usually receive a mileage allowance from the carriers varying from 6 mills to 2 cents per mile for different types of equipment. These mileage allowances, subject to specific exceptions provided for in the tariffs of some railroads, are paid for both empty and loaded mileage within limits set by the carriers' rules for "equalization of mileage." Excess empty over loaded mileage must be paid for by the owners either by an equivalent loaded mileage during subsequent months or at rates specified in lawful tariffs plus the mileage allowances that were paid on the excess empty mileage. Special contracts or agreements are at

times entered into by private car owners and railroads. Under such agreements mileage allowances are also the customary payment received by the private car owner, but provisions of various kinds are inserted concerning the use, inspection, care, storage, weighing, marking, purchase and sale of private cars, and the making of repairs. When private cars are rented directly to shippers by car lines, the shippers are required to pay rental charges to the car lines, the shippers in turn usually receiving a car mileage allowance from the railroads.

There have been exceptional instances in which a refrigerator car rental charge is collected from shippers in addition to the mileage allowance received from the carrier, but the general practice is that the freight rates and other freight charges of the shipper are the same whether his shipments are made in private or in railroad-owned cars. A special icing charge is imposed in addition to the freight rates on products moving in refrigerator cars, and in case the icing service is performed by a private car line this special charge, although collected by the carrier, is paid to the car line. When the icing service is performed by the railroad the special charge is retained by the carrier.

The use of private cars is subject to regulation by the Interstate Commerce Commission. As early as 1906 the Commission was authorized to regulate the mileage allowances paid for the use of private cars owned or controlled by shippers, and to protect shippers against unjust discrimination in freight rates, demurrage, car distribution, icing charges and practices, minimum carload weights, and in other relations between the railroads and shippers whose traffic moved in shippers' cars or cars owned by private car lines. For a time it did not have jurisdiction over the financial arrangements between the railroads and independent car lines not owned by shippers, but the Interstate Commerce Act was amended in 1917 and 1920 so as to confer upon the Commission the power to regulate the "compensation to be paid for the use of any locomotive, car or other vehicle not owned by the carrier using it." The amendment of 1920 also authorized the Commission, subject to limits concerning the expense incurred and its effect upon the

ability of a carrier to perform its duty to the public, to "provide itself with safe and adequate facilities, including special types of equipment." This amendment may have an important bearing upon the private car system in the future, but its full scope has not thus far been determined in the Federal courts.

Local L. C. L. Motor Truck Services [2]

A very significant recent development in the road-haul services of several railroads is the substitution of motor trucks for freight cars in their local short-haul L. C. L. freight services. The use of motor trucks for the performance of railroad terminal and store-door delivery and collection services will be discussed in Chapter VI in connection with terminal freight services, and in Chapter XXXVI in connection with motor and highway transportation, but the operation of motor trucks by railroads between stations not located within the same terminal area, or between larger terminals and smaller near-by freight stations, is essentially a road-haul development.

The use of motor trucks in this way might have been included among the expedited freight services referred to previously, for one of the results obtained has been prompter movement of L. C. L. freight. Time is saved by reducing the number of freight handlings, by minimizing the movement of freight cars within congested terminal areas, and by dispatching motor trucks more promptly after they are loaded. But the purpose of the lines that have adopted this plan on some of their divisions includes operating economies as well as improved L. C. L. freight service. The economies claimed variously include a reduction in the number of local way-freight trains, in the number of stops of such trains, and in the number of freight handlings; also solid merchandise car movements instead of a number of transfer cars to near-by transfer stations; and heavier loading of cars at stations to which motor trucks bring L. C. L. freight for further transportation in railroad cars.

The New York Central and Pennsylvania Railroads were pioneers in the use of motor trucks for the transportation of

[2] This subject is discussed in detail in Chapters XXXV and XXXIX, Part V of this volume.

railroad freight outside of terminal areas.[3] The former began its local motor freight services in January, 1923, in the vicinity of Buffalo when a serious box car shortage was threatened, and since then the plan has been adopted in its short-haul freight services at many other points. The Pennsylvania Railroad also adopted the plan in 1923 and since then has extended its motor freight service until more than a thousand miles of rail line are paralleled with motor freight units. The Long Island Railroad, a subsidiary of the Pennsylvania Railroad, is also using motor trucks in its short-haul L. C. L. freight services, and the Chesapeake & Atlantic Railway, another of its subsidiaries, has adopted a plan under which motor trucks and trailers are operated in connection with the company's steamers. The latter company took over the operation of a trucking company in 1923, but the general policy of the New York Central and Pennsylvania Railroads is to enter into contracts with reliable trucking concerns, the railroads, however, assuming liability for loss or damage of freight and issuing the same bills of lading as are used in connection with their freight train services.

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[3] See Chapter XXXV.

CHAPTER V

SPECIAL TRAFFIC SERVICES

THE railroad freight service includes not only the regular, customary terminal and line-haul services of the carriers, but many "special services and privileges." Although the distinction between regular and special services cannot always be drawn with precision, it may in general be said that the distribution and placement of freight cars on sidings or team tracks for loading or unloading, the transportation of freight from shipping point to destination point, the tracing of cars, the receipt and delivery of L. C. L. freight at freight houses, the sending of a notice of arrival, and even the performance of dispatch, preference, through package car, livestock, perishable and other expedited freight services, are considered by the carriers as parts of the regular freight service for which they receive the freight rates that are published in lawful rate tariffs. Special services in general are services performed at terminal points or en route in addition to their regular line-haul and terminal services. Some of them are performed without additional cost to the shipper, but the carriers are authorized to impose reasonable special charges in addition to the freight rate when they perform a service or grant a privilege recognized as special by the Interstate Commerce Commission. The purpose of this chapter is to discuss briefly the special services and privileges that are performed or granted at transit points or en route. Some of them are also rendered or allowed at terminal points of origin and destination of shipments, and to that extent special transit and terminal services may overlap.

Special Marketing and Transportation Services and Privileges

Several important special services have been referred to in previous chapters. The refrigeration service performed by the

railroads or by private car lines has always been considered a special service for which an icing charge is collected in addition to the freight rate. Many other special services, however, may be defined as special traffic services in that they are primarily important in the marketing of the commodities of commerce and in the development of railroad traffic. Most, although not all, of them permit of the stoppage of freight in transit and its subsequent reshipment without loss of the through freight rate.

One of the most generally performed special traffic services is the reconsignment or diversion privilege which has come to include not only changes in routing, but also changes in destination, name of consignee or consignor and any other change requiring either an alteration in billing or a car movement or both. It is especially important in the marketing of fruits and vegetables that are shipped to distant markets. Carloads of California fruits, for example, are forwarded by local shippers, marketing corporations or coöperative exchanges and associations before the final markets have been determined. The cars are billed to a reconsignment point and the shipper or his traffic manager is thus able to take advantage of favorable market conditions wherever they may be found either in the Central West or in the East. His cars will be held at the original reconsignment point if necessary, and later be forwarded subject to his instructions either to a market or to another reconsignment point for further instruction. The marketing value of the reconsignment privilege to the fruit shipper is obvious, and a general economic value also results from the equalization of market supply, the prevention of alternate periods of glut and scarcity, and in some instances the expediting or speeding up of the marketing process. Reconsignment may in fact influence the production methods of an industry, such as bituminous coal mining, the output of which is closely dependent upon the daily supply of freight cars. Reconsignment enables the mines to forward loaded cars more promptly and in that way to produce certain quantities of coal in advance of sales orders. The reconsignment privilege is also utilized frequently in the shipment of grain from the primary terminal markets of the Central West to the eastern seaboard markets

and other wholesale grain markets in the Atlantic states, and it is used occasionally in many other industries.

Definite tariff rules are necessary because the reconsignment privilege may be subject to abuse by shippers and also because special charges are imposed and care must be taken to avoid unfair discrimination. Certain reconsignment services such as those merely requiring a change in billing or other inexpensive operations are frequently performed without imposing a reconsignment charge, but, except under conditions specifically set forth in the railroad reconsignment tariffs, a special charge in addition to the freight rate is collected. It is a flat amount per car and varies according to the nature of the reconsignment service performed. As is true of most other special services or privileges, reconsignment is a service as well as a privilege; it is a thing of value to the shipper and also a service in the performance of which costs may be incurred by the carrier, and for which a reasonable special charge in addition to the freight rate is fully warranted. Some commodities are at times granted more liberal terms than others both as to the number of reconsignments authorized without loss of the through freight rate and as to the granting of at least one free reconsignment even when that occasions an extra car movement or other expensive operation.

Other special traffic arrangements directly connected with the marketing and shipment of commodities are the "concentration-in-transit" privilege under which products such as cotton, butter and eggs, dairy products, dressed poultry, lumber, etc., may be concentrated at certain points for subsequent reshipment in carload lots without sacrificing the advantage of through freight rates; and the "compression-in-transit" arrangement under which hay and straw and more particularly cotton are unloaded at transit points for the purpose of compression. A "commercial elevation" privilege makes possible the unloading of grain at transit elevators, subject to protected through freight rates, for the purpose of mixing, bleaching, cleaning, drying, and reconditioning, and also for the purpose of inspection, grading, sacking, storing, and commercial weighing. This privilege, however, is to be distinguished from "trans-

portation elevation," which refers to the transfer of grain from car to car at transit points and its weighing en route for purely transportation purposes. Special charge for the commercial elevation may be imposed, but transportation elevation is considered a part of the regular line-haul freight service, and the costs incurred in connection with it are absorbed by the carriers. "Storage-in-transit" tariffs authorize the unloading of shipments en route for the purpose of storage and subsequent reshipment under protected through freight rates. Various commodities are granted a "stoppage-in-transit" privilege under which carload lots may be partially unloaded in transit without loss of through carload rates. This privilege runs directly counter to the general rule applying carload rates only when a carload of freight is shipped "from one station in or on one car . . . in one day by one shipper for delivery to one consignee at one destination." The publication of a special tariff or tariff rule is essential.

In the distribution of packing-house products in the Central West the "peddler car service" has become an important marketing method. Peddler cars which are loaded in station order and iced at the packing plants, are halted at many stop-off points for delivery of L. C. L. shipments to local retail butchers who receive them for prompt removal to their shops. This special service differs from most others in that the packing-house products are shipped in peddler cars at L. C. L. freight rates, subject to guarantees of either minimum weights or charges or both by the packing concerns to whom the cars are assigned.

Many other special arrangements concerned primarily with the marketing or transportation of shipments have been made by the railroads. Such, for example, are the "barreling-in-transit" privilege under which oils are transferred from tank cars to barrels, drums, or cases, and subsequently reshipped without loss of through freight rates; "cooperage-in-transit" by the carriers to protect shipments from loss or damage; stoppage-in-transit of many other commodities besides the grain referred to above, for inspection, grading, assorting, reconditioning, etc.; dipping, disinfecting and drenching of livestock at transit

points; stoppage of livestock for the purpose of testing a market; special arrangements for the transportation of caretakers of commodities such as livestock, live poultry, fruits or vegetables.

Special Transit Services or Privileges Allowing Fabrication or Processing of Commodities

Besides the several special traffic services or privileges granted primarily for marketing and transportation purposes there is an important group of special services or privileges that allow the manufacture or processing of commodities at transit points under protected through freight rates. They are intimately connected with the marketing or distribution of some of the staple commodities of commerce, but they also have an important direct bearing upon the location of manufacturing industries, and the production of commodities.

The "milling-in-transit" service and privilege which has become so important in the grain and flour industries originally began in the eastern states for the primary purpose of enabling eastern flour mills to compete with the mills that were being established in the Central West. The latter are in many instances located in cities where large primary grain markets have been established and all of them are located relatively nearer to the grain fields of the Central West than are the older milling centers of the eastern states. Eastern mills when receiving western grain at local inbound rates and shipping flour at local outbound tariffs, were handicapped in their attempt to compete with western millers whose flour shipments to the Atlantic seaboard had the advantage of through freight rates. The milling-in-transit privilege tends to equalize this difference by enabling eastern mills to receive grain from the Central West subject to a special arrangement which permits them to convert it into flour and other grain products, and subsequently to ship their manufactured products upon payment of an amount equivalent to the through freight rate from the original grain shipping point to the destination of their mill products. Later the milling-in-transit privilege was also extended westward because mills were established at many central western points

less favorably located than some of the great milling centers. It was also extended to grains other than wheat, and to mills producing products other than wheat flour; and miscellaneous special tariffs such as those permitting the shelling of corn, the blending and mixing of flour, and the mixing of glucose, etc., into stock feed at transit points have been established by many railroads.

The same general type of special transit privilege has been extended to other industries. Livestock feed is produced at transit points by manufacturers using many other kinds of raw material. The special tariffs of the railroads variously apply to cottonseed, soy-bean and other oil cake or meal, alfalfa feed, dried beet pulp, copra meal, and other varieties of stock feed. Different grades of syrup and molasses are mixed at transit points, and oils are mixed and blended and in some instances, refined, subject to transit arrangements. Logs are at times sawed into lumber at transit points, and rough lumber is shipped to mills located at such points to be resawed, dressed, kiln-dried, manufactured into lumber products, or to be sorted, graded, inspected, or stored. Veneer, box material, and pencil slats are sometimes manufactured at transit points subject to a "band-sawing-in-transit" privilege; unfinished handles, neck yokes, etc., may be stopped en route subject to a "finishing-in-transit" privilege; lumber and other forest products may be unloaded at transit points for creosoting or burnetizing. Marble and granite are also at times shipped subject to a finishing-in-transit privilege, and zinc ore and lead bullion, subject to a "refining-in-transit" arrangement. Livestock is frequently unloaded at transit points for further grazing or to be fattened or prepared for subsequent reshipment to the central livestock markets under protected through rates.

In the iron and steel industry the "fabrication-in-transit" privilege has become almost as important as the milling-in-transit privilege has become in the grain and flour industries. Many fabrication plants have been established at a distance from the steel plants principally in order to avoid congestion at the great steel manufacturing centers. Much structural steel to be used in the construction of buildings, bridges, or ships

is unloaded at these plants for further fabrication, such as bending, boring, bolting, counter-sinking, cutting, painting, riveting, straightening, welding, etc., with the privilege of subsequent reloading and forwarding without sacrificing the through rate in effect from the original steel mill to the final destination of the fabricated steel.

Administration and Regulation of Special Traffic Services

All special traffic services and privileges are governed by published tariffs, and in interstate commerce, are subject to regulation by the Interstate Commerce Commission. In order to safeguard their use, definite rules, varying with each type of special service or privilege, have been formulated by the carriers and in some instances by the Commission. It is also necessary to "police" some of the special traffic arrangements, particularly the special transit arrangements that permit the unloading of commodities for milling, fabrication, or processing. Such arrangements are intended only for the through traffic that is unloaded at transit points and care is taken to prevent the billing of local traffic at protected through rates to which it is not entitled. In some instances the identity of particular commodities is preserved, but this is frequently not practicable. Tariffs may instead limit the substitution of tonnage in transit by requiring that no more than equivalent amounts of the same general kind of commodity, subject to an allowance for shrinkage, may be billed out, or by limiting substitution in other ways. The carriers maintain inspectors at the principal transit points, and traveling inspectors endeavor to enforce the transit rules in effect at the smaller places. Much policing of this kind is performed by the weighing and inspection bureaus which the railroads have established as neutral or autonomous organizations for this and other inspection purposes in each of the major traffic territories of the United States.[1]

Certain general principles that have been developed in Com-

[1] The Western Weighing and Inspection Bureau; the Central Inspection and Weighing Bureau; the Trunk-Line Freight Inspection Bureau; the Southern Weighing and Inspection Bureau; and two weighing and inspection departments of the Transcontinental Freight Bureau.

mission and court decisions are instructive although they do not constitute a complete rule for the measurement of all special traffic services and charges:[2]

1. The right of a carrier to collect a special charge depends largely upon whether or not the service performed is properly regarded as a part of the regular line-haul and terminal services it is legally required to provide.

2. The collection of a separate charge for a special service is optional with the carrier, that is, it may perform a special service without imposing a separate charge, provided unfair discrimination does not result.

3. When a carrier exercises its option of collecting a special charge, such charge may not be unreasonable or unfairly discriminatory. Indeed the special services themselves as well as any charges that may be imposed in interstate commerce are fully within the scope of the Interstate Commerce Act. Special charges and the regulations governing special freight services must be published in lawful tariffs and be duly filed with the Interstate Commerce Commission.

4. There has been a tendency on the part of the Commission to emphasize the cost of service principle in its supervision of special freight charges. Costs have not become an inflexible rule, but the Commission has on various occasions announced the general principle of establishing special charges on the basis of the costs incurred plus a reasonable profit. The Commission at one time attempted to limit reconsignment charges to the actual cost of service, but the United States Supreme Court held that the carrier is "entitled to receive some compensation beyond the mere cost for that which it does."[3]

5. Some of the special services performed by the carriers are required by law. Section 1, paragraph 3 of the Interstate Commerce Act includes "all services in connection with the receipt, delivery, elevation and transfer in transit, ventilation, refrigeration or icing, storage and handling of property transported" in its definition of "transportation," and Section 1, paragraph 4, requires common carriers subject to the Act "to provide and

[2] G. G. Huebner and E. R. Johnson, *The Railroad Freight Service*, p. 145.
[3] Southern Railway Co. *v.* St. Louis Hay & Grain Co., 214 U. S. 297.

furnish such transportation upon reasonable request therefor." The full extent to which the Interstate Commerce Commission is authorized to require special services not specifically mentioned in the Act has not been determined with exactness. It has in some instances insisted upon the performance of a special service or the granting of a special privilege, but in the majority of its decisions concerning the establishment or withdrawal of such a service or privilege, it has based its conclusions primarily upon the presence or absence of undue discrimination. When, however, a special service or privilege has been established by a carrier in interstate commerce it clearly comes within the scope of the Commission's powers, and carriers may not refuse to perform special services or grant special privileges at particular points if such refusal results in what the Commission considers to be undue discrimination.

Not every special traffic service initiated by the carriers or requested by shippers is necessarily a desirable addition to the railroad freight service, but when properly safeguarded, such services or privileges effectively supplement the regular terminal and line-haul services of the carriers. Those established voluntarily by the railroads are frequently regarded as methods of traffic development, but it is also being realized that legitimate traffic development may carry with it real benefits to commerce and industry. Special traffic services variously equalize competitive conditions, facilitate the marketing or distribution of commodities, stimulate and in some instances improve production, relieve congestion and reduce shipping costs. They introduce a flexible element into the railroad freight service; they adapt the freight service as a whole more closely to the varying needs of commerce and industry. They are also a routing consideration to which industrial traffic managers should give their closest attention. The carriers offer these services and privileges in regularly published tariffs, but it is the function of the shipper or his traffic manager to utilize them and apply them to the particular needs of his firm.

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CHAPTER VI

FREIGHT TERMINAL SERVICES

TERMINAL facilities are as much a part of a railroad system as the line, and the services performed at the terminals constitute an essential part of the service. Unless freight terminal facilities are adequate and are well managed, efficient car and train services are impossible; and if terminal operations are not performed economically, the operating economies that the carriers are now emphasizing must be seriously limited. Both traffic and operating functions are performed at the terminals. The freight station is the point of physical contact between the carrier and the shipping public, while the location of terminals and the efficiency with which the terminal facilities are used determine the ability of a railroad to develop its tonnage. No other occurrences have so convincingly demonstrated the importance of adequate freight terminals as have the car shortages that formerly disrupted business and transportation, and when it became evident that terminal congestion was a primary reason why cars could not be furnished as requested during periods of heavy traffic, the railroads spent many millions of dollars on terminal improvements and gave expert attention to the effective layout and operation of their terminals.

Freight Terminal Facilities and Management

The railroad freight terminal facilities with which the shipper is most familiar are the freight stations and their appurtenances —the offices, freight houses, and loading and unloading platforms, team tracks, private sidings, storage warehouses, livestock yards, the special facilities for various special classes of traffic, the wharves and wharf structures, and the other appliances that are maintained where freight is delivered and received and where shipping arrangements are made. Strictly speaking, the loading and unloading facilities owned by the

shipper also constitute parts of the freight terminal; not only his private sidings, but the extensive industrial railroads with which large industries are equipped, and all of the facilities for loading and unloading, switching, etc., that the shipper provides, and a freight terminal may, in addition, contain many facilities with which the shipper does not come into contact.. Transfer houses are in many instances provided for the transfer of L. C. L. freight and the final loading of cars for train movement. Terminal yards for receiving and delivering cars are essential freight facilities and at large terminals there may be a series of yards, including distinct receiving yards, where inbound cars are delivered by train crews to switching crews; separating yards where "the first breaking up of a train and the distribution of its cars are effected";[1] classification yards, where inbound cars are classified or sorted in detail for actual delivery; outbound yards where outbound freight trains are made up, and perhaps distinct departure yards, where switching crews deliver trains to the train crews; storage yards, where cars are placed when they are to be held; and repair yards or bad order tracks, where cars are placed for yard repairs or for movement to repair shops. Freight terminals may also contain distinct scale tracks, caboose tracks, coal, ash-pit, sand, and engine tracks, icing tracks, etc., and facilities such as cooling plants, water stations, air-testing plants, ash pits, engine houses, turntables, switching engines, switching and interlocking plants, yard signals, telegraph facilities, offices for yard officials and employees, and rest rooms.

At terminals where motor trucks are substituted for freight cars in the movement of freight within the terminal areas, the facilities used in performing terminal services also include trucks and in some instances trailers and tractors. Such facilities may be owned by terminal or trucking concerns, but they nevertheless constitute parts of the facilities upon which the railroad depends for the performance of its terminal services. Their more general introduction is one of the promising tendencies of recent years.

[1] See Droege, *Freight Terminals and Trains*, p. 261; also Huebner and Johnson, *The Railroad Freight Service*, p. 495.

The business organization maintained at a large freight terminal is complex and extensive. There are the offices and freight houses of each freight and transfer agency within the terminal area; and in a large terminal there may be numerous large and small freight and transfer stations. The terminal personnel includes the yardmaster and his assistants and clerks, the engine-house foreman and his engine-house force, switching crews, switchmen, telegraph operators, car repair men, and others performing transportation, maintenance and mechanical duties in connection with the operation of the terminal as a whole. Operating officials, such as the Train Master and Division Superintendent, are also concerned very directly with terminal operation. The Train Master supervises the condition of terminal and junction yards, and the functioning of the yardmasters. The Division Superintendent, under the prevailing divisional plan of operating organization, is the responsible executive of the entire division including line and terminal operation. In some instances, however, a specialized superintendent of a terminal division is placed in charge of a large terminal area as the local executive head. Higher executive officials too are concerned with terminal operation. General Superintendents supervise terminal as well as line operation throughout their respective grand divisions, and system or regional officials, such as the General Superintendent of Freight Transportation, General Superintendent of Transportation, General Manager and Vice President in Charge of Operation, may devote much attention to terminal construction and operation. The general staff of some railroads contains a special executive known as the Superintendent of Stations and Transfers.

General Terminal Freight Services

Many of the freight movements and other operating activities performed within railroad terminals, under the prevailing American plan of freight rate-making and service performance, are regarded as definite parts of the regular freight service for which the shipper or consignee pays freight rates. Many indeed are performed within the railroad service rather than in the carrier's direct relations with the shipping public. Among

such services, are the movement of L. C. L. freight from freight stations to transfer houses in freight cars or motor trucks; the break-up of trains and classification of inbound cars; the make-up of freight trains of outbound cars; the transfer of cars through junction points, and all the switching operations performed directly in connection with this work; the making of yard repairs; the testing of air brakes; and the preparation of engines for service.

Various additional terminal services are of somewhat more direct concern to the shipper, but may also be classified as general in character in that they too are included in the general freight service and are covered by freight rates currently in effect. The common practice of receiving and delivering L. C. L. freight and loading and unloading it at freight stations is a service of this kind. So also is the customary delivery of C. L. freight in cars, or the placing of empty cars on public team tracks, private sidings, or industrial railroads, subject, however, to limits as to the amount of free switching that may be demanded by the shipper or consignee when cars are placed on private sidings or industrial railroads. Short-time storage of freight at terminals either in freight houses or cars, within the free time periods set in the carriers' demurrage and storage tariffs is a general terminal service for which no special charge is made. Weighing for billing and transportation purposes are a part of the regular freight service, for which no special charge is made except in case of certain contingencies that may arise when a shipper requests the reweighing of his freight. It is also a part of the carriers' general duty to see that freight cars are cleaned and put into condition to receive ordinary freight, but if special preparation of freight cars to fit them for particular classes of carload traffic is necessary the service is frequently regarded as a special terminal service for which additional charges may be imposed, or as a service that the shipper may be expected to perform as a part of his duties in connection with the loading of carload shipments.

Ordinarily carload freight is loaded by the shipper and unloaded by the consignee, the carload rate not including loading or unloading services. Any variation from this is regarded as

a special terminal service for which the railroad may impose a special charge unless some unusual circumstance arises or some particular purpose is to be accomplished. Ordinary livestock received at and shipped from public stockyards has, however, been made a general exception to the customary practice. Section 15, paragraph 5, of the Interstate Commerce Act, as amended in 1920, provides that "transportation wholly by railroad of *ordinary* livestock in carload lots destined to or received at *public* stockyards shall include all necessary service of unloading and reloading en route, delivery at public stockyards of inbound shipments into suitable pens, and receipt and loading at such yards of outbound shipments, without extra charge therefor to the shipper, consignee or owner, except in cases where unloading or reloading en route is at the request of the shipper, consignee or owner, or to try an intermediate market, or to comply with quarantine regulations."

Special Terminal Freight Services

The distinction between general line haul and special transit services and privileges made in Chapter V is equally valid as between general and special terminal freight services and privileges. The general switching services referred to above are to be distinguished from switching services performed in addition to the general freight service for which freight rates are customarily paid. When performing them the carriers may as a rule either absorb the special costs incurred or impose additional charges, subject to public regulation designed to prevent unreasonable charges and unfair discrimination. When, for example, a car is to be placed on a private siding and the switching service incident thereto is more expensive than the switching movement to and from the carrier's public terminals, a special charge is sometimes imposed in addition to the freight rate; and if the railroad is requested to "spot" a car at more than one place on a private siding a special "car spotting" charge may be collected. If the railroad performs more than the customary switching service on a private siding or on an industrial railroad without special charge, it is absorbing the special costs incurred, and care must then be taken not to perform a free

special service that the Interstate Commerce Commission or a state regulatory commission may consider an unfair discrimination. A special switching service is also performed when the railroad performing the inbound line-haul service is requested to deliver the car within the destination terminal on the tracks of another line or on a private siding which cannot be reached directly over the track of the line-haul railroad. The switching service incident to the movement of the car within the terminal area from one line to another for delivery purposes is known as line-haul switching and unless a reciprocal switching arrangement is in effect, the line switching the car to its place of delivery is entitled to compensation. Its line-haul switching charge may either be charged against the shipment in addition to the freight rate or be absorbed by the line-haul railroad. The latter is frequently done when active competition is encountered, but a special switching service is in any event being performed. Freight originating within a terminal area and destined to another place within the same terminal area pays a switching charge. Switching of this kind, however, is the equivalent of local transportation and the switching charges collected from the shippers are in lieu of a freight rate.

When freight is lightered a similar situation arises. Lighterage or floatage services are performed at various ports within "lighterage limits" which correspond in principle to the "switching limits" within which cars are moved when they are switched over railroad tracks. "Free lighterage" is frequently performed within prescribed zones either by the railroads themselves or by lighterage companies whose charges are absorbed by the line-haul railroads. For lighterage services outside of the free zone there are special charges in addition to the freight rate; moreover, the absorption of lighterage costs or charges within the free zone does not apply to all classes of commodities nor to all shipments.

A special service in addition to the regular railroad transportation is also performed when the carrier delivers L. C. L. freight in cars on private sidings, and when it receives such freight in this manner. The general practice of requiring shippers and consignees to cart L. C. L. freight to and from freight

stations is obviously waived, when an industrial "trap car" or "ferry car" service of this kind is performed. This special service is frequently offered without special charge if a prescribed minimum amount of L. C. L. freight is being shipped or received.

Sometimes a railroad will also perform a drayage or cartage service. It may for example be difficult or impossible to make delivery at particular stations or places directly by rail. Where lighterage services are performed, the carriers may also choose drayage instead; sometimes the one service is performed in lieu of the other, and in other instances a special drayage charge is imposed. When, however, a drayage service is required because of an erroneous terminal delivery, the shipper or consignee is entitled to a drayage allowance to compensate him for any reasonable additional cartage expenses the error caused him to incur.

As L. C. L. freight is customarily delivered and received at freight stations and rates are based upon this general practice, it follows that delivery and collection services are in addition to the rail haul, and special charges may be imposed. In the United States but few present-day instances of such services may be cited, but a beginning has been made and future extensions of the services are probable. The Erie Railroad has established a store-door delivery and pick-up service within a prescribed district in New York, and a motor service each way between East St. Louis and St. Louis is performed for the eastern trunk-lines terminating at East St. Louis. By special arrangement deliveries will be made directly to consignees, otherwise the goods are taken to off-track or inland freight stations in St. Louis. No special charge is collected for station deliveries which are considered to be part of a railroad's regular service; but for a store-door delivery a special charge is made. The Boston and Maine Railroad has also established a store-door delivery and collection service at Boston, Lawrence, and Lowell, Massachusetts, and "a door-to-door service on shipments moving between store-door in Boston and store-door in Lawrence, or between store-door in Boston and store-door in Lowell." The latter feature is "so designed that the traffic may be handled all the way by truck or may be brought by truck to a Boston and Maine

freight house for forwarding by rail to store-door. In either event the rates are the same. . . ."[2]

The railroads now offering store-door delivery and collection services operate under contract with trucking or terminal companies which provide the necessary trucks or trailers and tractors and perform the services under the direction of the carriers. The services also are optional with shippers and consignees. Although, from the railroad standpoint the economies to be derived from establishing such services would probably be greater if store-door delivery and pick-up services were made compulsory at particular terminals, compulsory services meet with special opposition on the part of such business concerns as prefer to arrange for their own trucking services. An optional store-door delivery and collection plan under which shippers and consignees either have the railroads perform the necessary trucking service to or from their warehouses or elect to perform this service themselves would seem to be a desirable addition to the railroad freight service. It would do much to relieve freight terminal congestion; it would probably become an important factor in the location of freight terminals and influence the extent to which freight houses may need to be enlarged in the future; and in so far as motor trucks might displace industrial trap cars, the plan would release freight cars now so used for road-haul service. The carriers must of course receive adequate compensation for the collection and delivery services, for the operating economies resulting to the carrier would not be sufficient to cover the special costs incurred. But the charges made by the carriers for the services would probably be less than the drayage costs of many of the smaller shippers and consignees, the volume of whose business does not give full employment to trucking facilities of their own.

The use of motor trucks in connection with a store-door delivery and pick-up service is to be distinguished from the use of motor trucks for station-to-station terminal or local L. C. L. freight movements. The former is a special terminal freight service for which a charge in addition to the freight rate is

[2] Letter by Vice President, Traffic Department, July 10, 1925. Motor terminal services are discussed in detail in Chapters XXXIV and XXXVI.

imposed, while the latter is merely the substitution of motor trucks for freight cars in the regular intraterminal or road-haul freight service. Freight rates cover the customary movement of L. C. L. freight between a carrier's freight stations or between freight stations and transfer houses, whether motor trucks or freight cars are used. If a carrier elects to perform a regular local L. C. L. freight service in motor trucks, the rail freight rate is charged.

Many additional special terminal freight services are at times performed by railroads. When it is necessary to fit cars with temporary doors, bulkheads, lining and flooring, or to provide blocking, stakes, or dunnage material for the loading of special classes of freight, the railroad may agree to perform this special service or provide the necessary materials without special charge; or it may perform the special service and impose a special charge in addition to the freight rate. Conversely when the shipper performs a service that is customarily included in the general freight service for which he pays a freight rate the railroad may make a specific money allowance to him in accordance with published tariffs, and a weight allowance is also at times granted when dunnage is needed to secure freight in cars. Such dunnage allowances are usually made when freight is shipped on flat or gondola cars, and special tariffs frequently grant weight allowances in connection with other types of cars.

When carload freight, other than ordinary livestock at public stockyards, is loaded or unloaded by a railroad a special terminal service is performed, and for carload freight the rates usually do not include these services which are to be performed by the shipper or consignee. In many instances, however, there is some special reason why a railroad will assume the cost of loading or unloading carload freight, such as the desire to release needed equipment, to expedite traffic moving on car floats, barges or lighters, to clear congested tracks, or to fulfill its obligations under railroad export and import or domestic tariffs that apply to or from shipside. A carrier may impose a special unloading and loading charge when a car is held overtime because the consignee cannot accept delivery. The carrier may unload the car on his own premises and collect the actual cost of unloading

or reloading in addition to a storage charge and the freight rate.

A warehousing service is also performed at railroad terminals. It is in large part an enforced storage service for which published storage charges are collected; and in so far as these charges are intended to expedite deliveries and prevent congestion or freight accumulations they are similar to the demurrage charges that were discussed in connection with car service. But railroad storage charges are also imposed as a source of revenue for a distinct warehousing service, which is a form of special terminal service, that is performed for shippers or consignees when freight is stored on railroad premises for longer periods than the customary free time allowed in freight tariffs. Most storage at railroad terminals is now governed by a uniform Code of Storage Rules and Charges, but special storage rules apply to particular classes of traffic, and the uniform code does not apply to freight "stored in warehouses owned and operated by railroads as exclusively storage warehouses."

Weighing for billing purposes, as was previously stated, is considered to be part of the carriers' general freight service and is usually included in the freight rate. When, however, the shipper or consignee requests reweighing and it is found that the carrier's original weight is not in error or the error does not exceed a prescribed amount, known as a "tolerance," a special reweighing charge is usually collected in addition to the freight rate. Railroad scales and weighing arrangements, moreover, are often used in performing weighing services for the general accommodation of shippers or consignees or for public use. In such cases a special service is performed, either free of charge or upon payment of special weighing charges.

Other special terminal services include the wharfage and freight-handling services that are performed at many ports, either free or subject to special charges in addition to the freight rate; the dumping of coal into vessels from piers and the trimming or leveling of coal in vessel holds; the pre-cooling of fruit by railroads; and the special services performed at the great public stockyards. Many of these yards are owned and operated by stockyard companies, but they constitute necessary parts of

the terminal facilities needed in livestock transportation. The companies collect various fees that are frequently absorbed by the railroads, such as bedding charges, when providing customary material and bedding cars for reshipment, weighing charges when weighing shipments upon arrival or departure, and loading and unloading charges which in case of ordinary livestock are by law required to be absorbed by the carriers. But the companies also collect yardage fees for providing yard facilities and for keeping livestock in pens and for watering them; there are also charges for feeding and at times for dipping of stock.

The industrial railroads which are operated by large industries and the tap lines that are owned and operated by lumber and timber concerns present some problems as regards rates. As a result of extended litigation in the courts and of proceedings before the Interstate Commerce Commission, such privately owned facilities are now divided into two major classes; they are common carrier industrial railroads and tap lines, or they are plant facilities. The former, which carry freight for other shippers as well as for the proprietory industries, or at least stand ready to perform a public service, have the standing of common carriers and may receive rate divisions out of the through freight rates upon shipments from points on an industrial railroad to destinations on a trunk line carrier. Or the industrial common carrier may insist upon performing the necessary switching service to and from junction points incident to delivery and receipt of freight cars and collect reasonable switching allowances from the connecting trunk line carrier. Conversely they may permit the trunk lines to perform such necessary switching services without being required to pay special switching charges in addition to the freight rate. When, however, the trunk line carriers are requested to perform switching services in and about the plant area in excess of car switching properly incident to the receipt and delivery of cars, the common carrier industrial railroads are receiving a special service for which special charges are usually collected. An unlimited amount of free switching would be regarded by the Commission as an unfair discrimination. The plant facility industrial rail-

roads, on the contrary, may not receive divisions out of through freight rates, nor may they insist upon performing the switching services necessary in delivering and receiving a car. They may, however, perform such services with the consent of the line-haul carriers and then receive reasonable switching allowances. Common carrier and other industrial railroads and tap lines are supervised by the Interstate Commerce Commission as to the special services, divisions, and allowances received from connecting railroads, for the purpose of preventing them from obtaining any unfair advantage over industrial concerns not equipped with such facilities.

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CHAPTER VII

RAILROAD PASSENGER SERVICES

ALTHOUGH more than 75 per cent of the operating revenues of the railroads are received from freight, the services performed by passenger or express trains are important from the carrier's standpoint and are of great economic, political and social significance to the country. The remaining 25 per cent or less of the operating revenues come from passenger, baggage, milk, express, mail, and other miscellaneous services performed by passenger trains.

The passenger and freight services of the railroads differ in several ways, some of the differences being basic or fundamental in character while others are less pervasive than in the past. Freight is routed and shipped while passengers travel of their own volition and in most instances control the time and direction of their departure and arrival. Freight must be loaded and unloaded at terminals; it must be billed, checked, and routed; and less-than-carload freight must be handled not only at freight stations but frequently also at transfer houses and junction points. Yards and freight houses or storage warehouses, moreover, must be provided for storing freight cars and merchandise. The passenger stations provided in the larger cities are costly structures, but the terminal facilities needed in the freight service are more costly and far more expensive to operate.

Differences appear also in freight and passenger train operation. Much freight is moved in carloads or trainloads, the freight car being delivered to the railroad's operating forces when it is loaded, and the train being dispatched when a desired tonnage has been attained, while passenger trains are operated on fixed schedules. This distinction, however, now applies less generally than in the past for, as was stated in Chapter IV, there has more recently been a demand for greater regularity

and promptness in freight deliveries. Express matter, milk, fresh fruits and vegetables, high-class merchandise and in many instances a wide range of other types of freight are now transported on scheduled trains. Tonnage freight trains, whose departure is governed mainly by the volume of freight offered for shipment, however, remain a distinctive feature of the freight service, and scheduled freight train services are as a rule not offered until an adequate volume of freight is quite regularly available. While the average number of tons of revenue freight per train has advanced rapidly from 175 tons in 1890 to 271 in 1900 and 689 tons in 1926, the average passenger trainload had advanced less rapidly from 41 in 1890 and 1900 to 48 in 1905 and 61 in 1926.

Passenger train operations also differ from the freight train service in that greater emphasis is placed upon speed, frequency, safety, and convenience. The major demand of shippers for many years was for low freight rates, and the railroads consequently strove to reduce the costs of handling and moving freight. It is only recently that shippers and carriers have begun to emphasize speed and regularity in the freight service. The expedited freight services of the railroads and motor truck carriers are indeed beginning to influence the distribution and production policies of American industry. In the passenger service, on the contrary, the ideal has always been to increase the speed of trains and to reduce the risks and discomforts of travel. Service excellence rather than minimum fares has undoubtedly been the general tendency and aim in the development of the passenger service.

Passenger Services and Fares

Different classes of passenger service designated to meet the varying needs of the traveling public are provided by railroads everywhere. European railroads offer from three to five distinct classes of service and in most European countries a special service offered at exceptionally low fares in workman's trains is provided for laborers. Of the three standard classes of service most commonly provided, third-class service is provided in cars or compartments equipped with comfortable, but fre-

quently unupholstered, seats. The second-class passenger is provided with an upholstered seat and adequate toilet facilities, and he is given more room. Compartments assigned to first-class passengers are similar as to the comforts provided but are more elegantly fitted. The difference between second- and third-class service in England is slight, both being similar to the second-class service offered by the railroads of Germany, and some English railways have merged the two lower classes into a single second-class service. The fares charged in the several classes take into account the difference in cost of service, the heavy volume of traffic moving in the lower classes, and the ability of different classes of people to pay higher or lower fares. Slow and fast passenger trains, moreover, are operated by European railways and the difference in the speed of trains is considered in the making of fares. The sleeping-car facilities provided in Europe are also offered at fares which take into account the class of service in which the passenger is traveling. In Germany, for example, the sleeping-car fare from Berlin to Munich, Hamburg, Bremen, Cologne, or Dresden, first-class, is $6.20 while in second-class service it is $3.10.

In the United States the policy of providing three or four standard classes of service has not been adopted. Railway men have not been convinced of the effect such a policy would have upon the volume of passenger travel. Social distinctions are less sharply drawn in the United States and the average ability to pay high fares is undoubtedly greater than in Europe. Experience has shown that the faster trains which in many instances are operated at extra fares are patronized more heavily than the slower trains which are operated at standard fares. 85 and 90 per cent, respectively, of the through passengers traveling on the two most important railroads operating between New York and Chicago travel on extra-fare trains. Their extra-fare trains, however, greatly outnumber their standard-fare trains between these points.

This evidence is not conclusive because standard first-class fares are substantially higher than the fares that would probably be charged if an additional lower class or classes of service were regularly offered. The known effect of excursion fares

upon traffic volume is equally as significant as the experience of the fast trains which are operated at a speed differential. Speed and the rate of fare both are factors in traffic development.

"First-class" service and the Pullman, or sleeping and parlor car service have come to be the regular practice throughout the United States, the former being offered at standard or extra-fare charges and the latter at those charges plus a special sleeping car or parlor car fare. But American railroads have by no means been blind to the need for special and irregular services and to the effect of reduced fares upon the development of traffic volume. Commutation tickets are regularly sold at reduced fares to meet the demands of suburban traffic. Reduced-fare clergy tickets and children's tickets are also regularly issued in the first-class service. Immigrant and colonist tickets are sold at greatly reduced fares to bona fide foreign immigrants at the larger Atlantic ports, a special service in immigrant trains or cars usually being provided when the traffic is heavy.[1] A second-class service has at times been offered by individual railroads, but this class of traffic has not been generally encouraged. On some western lines "tourist sleeping cars" are provided at reduced fares for railroad and sleeping car tickets.

The excursion services that are offered only on special occasions or during certain seasons are the most widely known of the irregular passenger services offered by American railroads. Summer and winter excursion tickets valid only during limited seasons are sold in the first-class service to encourage pleasure travel to summer and winter resorts. General excursion tickets are usually issued at reduced round-trip fares in the regular first-class service to particular points at which a world's fair or other important event of interest to the general public is being staged. Special excursion tickets usually valid on regular trains, are frequently offered at reduced round-trip fares to groups attending conventions, sessions of large organizations or other gatherings; the certificate plan usually being employed to restrict the reduced fares to the persons for whom they are intended. Special excursion fares valid only on designated excursion trains,

[1] See Chapter LIII.

moreover, are at times offered to the general public on particular days that are announced and advertised in advance to Washington, D. C., seashore resorts, or other points of interest. Western railroads have at times issued reduced-fare colonist, homeseekers' and land tickets to encourage settlers to locate in the territory served by them, and in some instances to purchase railroad land; and they have offered a special service at reduced fares to enable farm laborers to reach the grain fields of the far West during the harvesting season. Groups of persons wishing to travel together for any purpose may on most railroads, travel on special party tickets.

The factors entering into the determination of passenger fares are similar to those referred to in connection with freight rates but differ from them in certain respects. Both are made primarily with reference to "what will move the traffic," but the governing influences work out in a somewhat different manner. Although there is interregional rivalry in the passenger service, particularly for resort traffic, it is far less pervading than is the commercial and industrial competition of rival markets and production districts, and the railroads encounter less inland and coastwise water competition than in the freight service. The rivalry of ocean ports for overseas travelers is less widespread, because a large part of all ocean passenger traffic is concentrated at a very few American ports. Interrailway competition has also on the whole been less influential in the making of passenger fares not only because of these related differences but also because most of them have always depended upon the freight service for about three-quarters of their operating revenues. Cost of service has played a somewhat larger rôle in the making of passenger fares because the forces of competition have been less compelling and because passenger terminal costs are comparatively lower. Passenger fares are less complicated; they can be graded on a mileage basis more readily, and passenger mileage results in a somewhat closer approximation of varying service costs. The volume of traffic moving in opposite directions, moreover, is more evenly balanced in the passenger than in the freight service, and in the United States less of an effort has been made to grade fares in accordance

with the varying abilities to pay of different classes of passengers.

Sleeping and Parlor Car Service

Sleeping cars of a kind were provided by various railroads beginning as early as 1836-37 and a few railroads now own and operate sleeping and parlor cars. The dependence of nearly all carriers upon the Pullman Company has, however, become so general that the sleeping and parlor car service is commonly known as the Pullman service. George M. Pullman converted several passenger coaches into sleeping cars for the Chicago and Alton in 1854 and built his first Pullman palace car in 1864, and in 1867 he organized the Pullman Palace Car Company. It has since then become a vast enterprise that owns, operates, and builds railroad equipment. In 1926 the railroads owned 810 sleeping and parlor cars while the Pullman Company owned 8,607.[2]

The advantage to the railroads of rented Pullman cars is mainly in their great mobility. As in case of privately owned refrigerator cars for fresh fruits and vegetables,[3] the Pullman cars can readily be shifted about from one line or district to another in strict accord with varying traffic requirements. The volume of passenger traffic in different sections of the country is subject to seasonal fluctuations and is at times increased temporarily by special events, such as large expositions or conventions. The country as a whole, however, is so large that the unusual demands of different lines or regions can frequently be met by a prompt redistribution of Pullman cars. The rental system has been economical because it has resulted in a more intensive use of sleeping and parlor car equipment. If each railroad provided itself with an adequate supply of sleeping and parlor cars most of the roads would be burdened with a surplus of idle cars much of the time unless they succeeded in renting them to other carriers. The Pullman car system by centralizing this business of renting cars wherever they may be needed is especially efficient and elastic. It is conceivable, of course, that

[2] Total equipment owned, 8,885 cars.
[3] See Chapter IV.

the consolidation of railroads into large systems serving very extensive areas may in the future warrant a heavier investment in sleeping and parlor car equipment by the railroads themselves.

Pullman cars are rented to the railroads in accordance with the terms of definite contracts. These contracts vary, but the Pullman Company usually agrees to furnish an adequate number of cars; to provide Pullman conductors, porters, and other car employees, and linen, blankets, etc.; to keep the interior of the cars clean and serviceable; to bear the expense of repairs due to ordinary wear and tear; and to restrict the rental of space to one stateroom or section against one railway ticket unless with the consent of the carrier. The railroad company usually agrees to pay a mileage rental for the use of each Pullman car, the amount of the mileage payment varying with the amounts realized from Pullman fares. If the earnings from Pullman fares exceed defined amounts the contract may provide for the waiver of mileage payments. The railroad also agrees to provide places where Pullman tickets may be sold and where bedding may be stored and aired, cars cleaned, etc.; to haul and switch the cars, to lubricate them, and make specified kinds of running repairs, to clean the outside of the cars, and to provide fuel, ice, water, and lighting; to repair damage to cars resulting from the negligence of the railroad's employees or by reason of an accident; and to carry free of charge the officers and employees of the car company. Operating expenses, it will be noticed, are in this way divided between the carriers and the car company.

In addition to the mileage payments received from the railroads, the car company receives the Pullman fares paid by passengers when they purchase sleeping car or parlor car tickets. The railroads for many years received only their regular first-class passenger fares, but more recently they have also received an additional surcharge amounting to one-half of the Pullman fare. On fast trains, some of which are made up entirely or largely of Pullman cars, the railroads may in addition receive the extra passenger fares previously referred to as a speed differential. Pullman traffic is, however, on the whole, less

profitable to the railroads than day-coach traffic, because Pullman cars are usually heavier than day coaches and have a smaller capacity. Sleeping cars are essential in the long-haul passenger service and must be provided either by the carriers or by a car company. A comparison with day-coach profits is of little significance.

Dining Service

Railroads in the United States provide accommodations for serving food to passengers traveling over their lines either through dining cars, or through dining stations at which the trains are stopped while the passengers are served regular meals in dining rooms at or close to the stations, or à la carte meals at restaurants. The latter form of dining service is extensively used by several railroads west of the Missouri River, one of the best known of which is the Fred Harvey service of the Atchison, Topeka and Santa Fé Railway. This railroad serves meals on dining cars on its through express trains as well as at station dining rooms.

Dining car service has been extensively provided since 1890 on all through trains in the United States. The service was installed first on a few limited trains of each road and was gradually extended to include virtually all long distance trains. One large eastern railroad operates 152 dining cars on 165 trains and serves more than four million meals per year. The dining service requires a large organization which, under the supervision of a Superintendent, purchases, prepares, and serves food on the company's trains. The Pennsylvania Railroad dining-car department, typical of the larger eastern railroads, in 1926 had 1,779 stewards, waiters, chefs, commissary workers, clerks, inspectors, and miscellaneous employees. Commissary stations are maintained at Sunnyside Yard, Long Island, outside of New York City, at Chicago, and at Columbus, Ohio, where the supplies are purchased and stored and the dining cars are stocked and supplied for their runs. A typical diner seats from 30 to 36 passengers and is manned by a crew consisting of a steward, five or six waiters and a kitchen force including a chef and three or four assistants.

Contrary to common opinion, the dining car service of the railroads is operated on a nonprofit-making basis if not actually at a loss. The average cost of a dining car is approximately $40,000 and its equipment represents an investment of $2,500. Service costs are high because of the large fixed expense and the labor required in preparing and serving meals. A typical railroad's ready-to-serve expenses are $.83 per meal exclusive of the cost of the food actually served. Its average out-of-pocket cost is $1.48 per meal served, while its average receipts per meal amount to $1.17.

Passenger Traffic Development

Although most American steam railroads depend primarily upon the freight service, they nevertheless engage actively in the promotion of their passenger traffic. An adequate passenger service must be maintained regardless of relative profits, and with an average trainload of but 61 it is quite generally recognized that a large increase in traffic volume could be accommodated without a proportionate increase in operating expenses. The principle of increasing returns is a strong incentive to traffic development in the passenger service.

The Passenger Traffic Department of every large American railroad contains traffic officers whose attention is expressly devoted to traffic development, and passenger traffic solicitors are employed to solicit business. City ticket offices are maintained at favorable locations in large cities, and off-line agencies are maintained by connecting lines. But personal solicitation is depended upon to a less degree than in the freight service because the millions of individual passengers who comprise the bulk of passenger traffic cannot be solicited personally except at prohibitive expense to the carriers. The Passenger Traffic Department depends mainly upon advertising. Public advertising in newspapers and magazines, and in the form of time-tables, folders, maps, descriptive booklets, posters, pictures, window signs, billboards, electric signs, street car advertisements, lectures, etc., is usually directed by the experienced advertising agents of the carriers' Passenger Traffic Department. A systematic effort is also made to inform currently the ticket agents

of connecting lines as to direct connections, superior service, reduced fares for conventions or expositions, and similar matters of interest. Mailing cards or leaflets, booklets, time-folders, maps, newspaper clippings, and other advertising material are regularly forwarded to them, and traveling passenger agents are sent out to follow up their printed matter and to "gather in the results."[4]

Much of the passenger traffic advertising emphasizes the suprior service offered by particular lines. The speed, comfort, and safety of certain of their trains, the quality of their dining car service, the frequency of their service to certain points or other evidences of superior service are impressed upon the public by an endless variety of advertising methods. Many advertisements also center about regions or points of interest—the seashore, the mountains, the lakes, parks, forests, great cities, farming regions, etc—and the splendid opportunities for recreation or for earning a livelihood to be had at points served by the advertising railroad. Some of these advertisements have the double purpose of promoting freight traffic as well as passenger travel.[5]

Superior service rather than low fares has been the goal in passenger traffic development in the United States. The commutation, excursion, and other reduced fares of American railroads undoubtedly promote travel, but they do not accomplish the same results as the lower classes of service regularly offered by European railroads for long-haul as well as short-haul traffic. European railroads depend to a far greater degree upon differences in fares as a means of developing their passenger business. Although a larger part of the population is able to avail itself of a superior passenger service at high fares here than in Europe, there are nevertheless large numbers of potential passengers to whom expensive travel is impossible. The additional passenger business that would be created by low fares would probably increase operating expenses but slightly, and materially enhance the profits of the railroads.

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[4] E. R. Johnson and G. G. Huebner, *Railroad Traffic and Rates*, Vol. II, p. 192.

[5] See Chapter XIII.

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CHAPTER VIII

THE RAILROAD EXPRESS SERVICE

THE domestic express business has for many years been primarily a part of the railroad service. The express companies forward the shipments entrusted to them mainly over the lines of the railroads with which they have entered into definite contractual relations. The stagecoach and saddle horse, and the inland and coastwise steamboat are less important in the express business than formerly, and only a small part of the express companies' traffic is transported by electric railways and motor trucks. The most recent development is the use of airplanes by the American Railway Express Company.[1] In transporting express matter between the United States and foreign countries, other than Canada and Mexico, the ocean steamship is necessarily the carrier employed and these international express services will be discussed in Chapter LII.

The dominant characteristics of the domestic express business are the speed, care, and convenience with which express shipments are made, and these characteristics largely determine the volume and nature of express traffic. In the shipment of small parcels of merchandise the general practice of basing minimum railroad freight charges upon a weight of at least one hundred pounds is also a consideration,[2] and articles of extraordinary value are diverted to the express companies by the general shipping rule of the railroads excluding them from the freight service. Express traffic is made up mainly of parcels of merchandise, particularly of commodities of light weight and high value; books and other printed matter; coins, currency, precious stones, valuable papers, and other articles of extraordinary value; and perishables requiring unusual speed and care. But the express companies will also accept other commodities includ-

[1] See Chapter LIX.
[2] See Chapter XII.

ing heavy or bulky products that are offered either in small or large quantities. Carload lots of commodities that are customarily shipped in the railroad freight service sometimes move by express. As express traffic usually moves on passenger or fast express trains, the express service is relied upon when an unusually prompt delivery of such commodities is desired.

History of Express Companies

The early dependence of shippers of parcels upon stage drivers, steamboat captains, railroad train conductors and accommodating travelers appealed to William F. Harnden of Boston as the basis for an organized express business.[3] About 1839 he obtained an express contract from the Boston and Providence Railroad authorizing him to carry parcels between New York and Boston. This was the forerunner of the present-day express business. His service was extended to Philadelphia and across the Atlantic to England in 1840, and in 1850 Harnden and Company extended the company's express business into the South. The success of this pioneer express company induced Alvin Adams to organize Adams and Company in 1840. It first competed for the New York and New England express business, but later also extended its services southward and westward. Several other express companies also began to compete for express traffic at an early date, and in 1854 Adams and Company, Harnden and Company, Thompson and Company, and Kinsley and Company were consolidated into the Adams Express Company. In 1841 Livingston, Wells and Company began to operate between Albany and Buffalo, and in 1845 Wells and Company was organized to operate westward from Buffalo over a steamboat and wagon route. Butterfield, Wasson and Company began operating over the New York Central in 1850, and later during the same year a consolidated company, the American Express Company, was organized. The National Express Company was formed in 1853 to operate in New York and New England

[3] For early history see A. L. Stimson, *History of the Express Business*, and E. R. Johnson and G. G. Huebner, *Railroad Traffic and Rates*, Vol. II, Chap. xxxvii.

Wells, Fargo and Company was organized in 1852, and gradually extended its activities throughout large parts of the far West. The United States Express Company was organized in 1854 to perform an express service in the Central West and in 1894 the Western Express Company began operating in the Northwest and in Michigan and Wisconsin. The Southern Express Company began to operate throughout the southern states in 1886. Several smaller independent express companies were also formed during these years of organization, but they were soon consolidated with one or another of the larger companies. A number of affiliated express companies were also organized by several railroads.[4]

During later years consolidation gradually reduced the number of express companies. The business of the Pacific Express Company, for example, was taken over by Wells, Fargo and Company in 1911, and that of the National Express Company by the Adams Express Company in 1912; and financial difficulties caused the United States Express Company to discontinue operations in 1914. When the railroads were placed under Federal control late in 1917 it was found that four large express companies—the Adams, Wells-Fargo, American and Southern—held express contracts covering about 92 per cent of all railroad mileage and controlled about 95 per cent of the domestic express business of the United States.

The Director General of Railroads promptly notified the express companies that he was opposed to the prevailing plan under which the express business was conducted by several companies each with separate railroad contracts, and that he favored a single consolidated express company. The four large express companies then secured the business of the smaller companies by lease and organized the American Railway Express Company to take over the property of the four companies and conduct their entire domestic express business. The property

[4] The Globe Express Co. was organized by the Denver and Rio Grande and Rio Grande Western; the Southwestern and International Express Co., by the El Paso and Southwestern Railroad; the Canadian Express Co. by the Grand Trunk; the Pacific Express Co. by the Missouri Pacific, Wabash and Union Pacific; the Northern Express Co. by the Northern Pacific; the Great Northern Express Co. by the Great Northern.

exchange was made by accepting the capital stock of the consolidated company, the parent companies acting as holding companies and the American Railway Express Company as the operating company. The new company operated under contract with the United States Railroad Administration for a while, but was later placed under direct Federal control.

Following the termination of Federal control the Interstate Commerce Commission, acting under authority received in the Transportation Act of 1920, authorized the continuation of the consolidation. The American Railway Express Company now controls about 96 or 97 per cent of the domestic express business.[5] It had the field to itself until 1921 when the Southeastern Express Company was organized to conduct the express business over some ten thousand miles of railroad mileage in southeastern territory.

The Railroad Express Contract

The financial terms of the contract under which the American Railway Express Company operates over the lines of the railroads were approved by the Interstate Commerce Commission in December, 1920. The express company makes settlement with the railroads as a whole in each of three defined groups or territories—an eastern, a southern, and a western group. The company's operating charges, rentals, and other expenses, and also interest and discount on funds borrowed and expended for additional equipment and property are deducted from its gross receipts in each of these groups, and from the remainder, 2.5 per cent is set aside for the express company. The remaining "net income for division" is then distributed among the several railroads in each group in proportion to the gross express transportation revenue earned by each line. The express company's income, moreover, is limited by an excess profits clause which provides that whenever the 2.5 per cent set aside for the company exceeds 6 per cent of the capital value of its property,

[5] Since the above was written a number of leading railroads have announced themselves as being in favor of taking over the express business from the American Railway Express Co. when their present express contracts expire. This matter has been referred to the Uniform Express Contract Committee of the American Association of Railway Executives.

one-half of the excess is to revert to the railroads. The one-half accruing to the express company is to be accumlated until it amounts to 10 per cent of the capital value of its property, after which three-fourths of the excess profit is to go to the railroads and but one-fourth to the express company.

The amounts going to the railroads for the express privilege are heavy not only because of their basic position, but also because they perform costly operations in connection with the express business. They agree to provide the equipment needed for the transportation of express traffic and the express company's messengers, and to haul express cars on passenger, mail, or express trains. They provide the terminal space needed in the handling of express traffic; the express company, however, agreeing to pay a reasonable amount should it be necessary to build a special express station. They also transport free of charge the personal property and supplies of the express company and those of its officers and employees.

The expenses of the express business, however, aside from the heavy payments made to the railroads for the express privilege, are large and have kept the net operating income of the express companies at a low figure. In 1926 their total operating revenues—the sum remaining after express privilege payments were made to the railroads—amounted to about $155,000,000, but their operating expenses were so heavy that their operating income amounted to but $1,300,000. The express companies must necessarily maintain a general business organization, and a large staff of express agents, car messengers, route agents and station employees. Although the railroads provide space at their terminals for the handling of express traffic, the express companies bear the expense of operating their express stations. They also agree to assume the risk of loss or damage to property or persons, and under the terms of their contracts they agree to carry free of charge money or packages pertaining to the business of the railroads over whose lines they operate.

Business Organization and Methods

The business organization of the American Railway Express Company is of the regional type. The executive officers of the

central or system office include a President, a Secretary, a Vice President and Treasurer, and three other Vice Presidents, one of whom has charge of the company's accounts, another of its personnel work and a third of its traffic solicitation, rate publication, and claim settlements. There are also a General Counsel, a Manager of Maintenance and Purchase and a General Manager in charge of the company's department of public relations. The operating organization is divided into five regions or regional departments each of which is subject to executive supervision by an operating Vice President. The territory served by the American Railway Express Company is so large that each region is in turn divided into subterritories which are supervised by general superintendents, and these territories are usually further subdivided into operating divisions, each of which is supervised by a Division Superintendent.

Scattered along the lines of the railroads are the company's many express stations. The practice of maintaining additional offices at convenient points within the larger cities is less common than formerly. The express stations are managed by express agents who in many instances are assisted by clerks or helpers and truck or wagon drivers. The express service includes not only the shipment of express traffic from station to station, but in many cities also a general truck delivery service and a pick-up service under which many parcels are collected by express company drivers. Messengers are placed in charge of express traffic and cars while in transit. Route agents are sent out by the Division Superintendents to inspect the several routes and station agencies.

In their dealings with shippers the express companies usually issue a nonnegotiable *uniform express receipt* which roughly corresponds to a uniform straight railroad bill of lading. As the express companies perform C. O. D. and free delivery services, several special clauses, however, appear among the terms and conditions that are printed on the receipt, and as their liability is limited to 50 dollars, or 50 cents per pound in case of shipments weighing more than 100 pounds, the value of each shipment is declared by the shipper on the face of the receipt. In shipping livestock the express companies issue

either a uniform contract for *ordinary livestock* or a *uniform contract for the transportation of animals other than ordinary livestock* which correspond in general with the two forms of livestock contracts used in the railroad freight service. A *uniform special contract* is issued upon receipt of paintings, pastels, pictures, statuary, and wax figures of a value in excess of $550.

To avoid the double collection of express charges the Interstate Commerce Commission in 1912 prescribed a system of *express labels, waybills,* and *waybill labels.* The express agent is required to affix to every shipment, except money, either a "prepaid" or a "collect" label, the former being printed on yellow and the latter on white paper. Express waybills of distinctive color for prepaid, collect, and C. O. D. shipments are also used, and the agent is required to affix a duplicate waybill label [6] to each shipment. Upon delivery of a shipment the consignee is requested to receipt for it either by signing the delivery book of the driver or a delivery receipt which is made out with the waybill and waybill label and is sent to the delivering agent with the waybill.

The general shipping rules applicable to the express business are published in the Official Express Classification. They are less comprehensive than the general freight shipping rules of the railroads,[7] but are concerned with similar matters, such as the application of rates and charges, the receiving and routing of shipments, the weight basis of express charges, refrigeration practices, packing and marking requirements, and maximum charges. They also contain rules governing various shipping practices which in the railroad freight service are governed by separate tariffs or codes of rules. The Official Express Classification, for example, contains the demurrage rules applicable to carload shipments. They differ from those of the railroads chiefly in that no average demurrage plan is authorized, and the demurrage charges imposed are higher. A general free time period of 48 hours is authorized, after which demurrage accrues at the rate of $10.00 for each of the first two days and

[6] This differs from the express waybill in that it does not contain shipping directions.

[7] See Chapter XII.

$15.00 for each succeeding day. The express classification, moreover, contains rules governing storage, diversion and reconsignment, and the special payment of charges when the shipper or consignee requests a special switching or other transportation service not performed by the express company nor provided for in its tariffs. As express companies perform a collection and delivery service and a C. O. D. service, the rules governing these services are also published in the Official Express Classification.

Express Classification and Rates

The Official Express Classification [8] is published by the American Railway Express Company in connection with the Southeastern Express Company and the several express companies and government express departments of Canada and Newfoundland. It divides express traffic into three classes and in addition provides for a "money classification." First-class traffic is basic and includes all property not specifically assigned to a different class or otherwise provided for. Second-class traffic includes all food products and beverages and certain other articles such as hides of domestic animals, ice, specified plants and seeds. Books, almanacs, printed blanks, calendars, pamphlets, and certain other kinds of specified printed matter are rated as third-class express traffic subject to a valuation limitation and other specific rules. Certain articles because of their light and bulky character or because they occasion unusual risks of transportation are rated at multiples of the rates applicable to first-class traffic. Coin, currency, uncoined gold and silver, securities, valuable papers, pawn tickets, precious stones, etc., and the charges made for money collection services are provided for in a special money classification.

The rates on first-class and second-class express traffic bear a definite relationship, the Interstate Commerce Commission having decreed that the rates on second-class shipments may not exceed 75 per cent of those on first-class traffic, except that the minimum charge is to be that for 10 pounds unless the first-class rate is less. In such case the first-class rate is applied. Third-class rates are one cent for each two ounces, subject to a minimum charge

[8] No. 30, effective Jan. 17, 1927.

of fifteen cents and a proviso that they must not in any case exceed the rate in effect on first-class traffic. They are low because third-class shipments are accepted subject to a released value not exceeding ten dollars per package and because parcel-post competition is especially applicable to third-class express traffic.

When the Interstate Commerce Commission, in 1913, gave its attention to complaints charging double collection of charges, indirect routing and delays in the settlement of claims, it also investigated complaints charging excessive rates, unreasonable rate discriminations, and the confusing manner of publishing express rates. Effective February 1, 1914, the Commission prescribed a new system of express rates, and although rates have been advanced several times and various changes have been made in the determination and application of express rates, the general rate system then promulgated by the Commission is now in effect. In arriving at first-class rates three sums were added together—an allowance for the collection and delivery service, a railroad terminal allowance, and a charge for railroad transportation varying with weight and distance. A general basis of rates has been adopted by the Commission for each of three (originally five) zones, zone 1 now comprising the northern and eastern, zone 2 the southern, and zone 3 the western section of the United States. The resulting first-class rates are stated between main "blocks" or "sub-blocks" rather than between specific express stations or points. Second-class rates, as was previously stated, are in turn based upon the rates assigned to first-class shipments and are also published between main blocks or sub-blocks.

The 950 main "blocks," between which express rates are published, are formed by the intersection of the parallels of latitude with the meridians of longitude, and are numbered according to horizontal tiers and vertical rows. Each main block is also subdivided into sixteen lettered "sub-blocks." The first- and second-class rates between express stations located in nonadjacent blocks are stated from one main block to another main block; and those between stations located in adjacent blocks are stated from one sub-block to another sub-block. Local ex-

press rates on first-and second-class shipments moving between the several sub-blocks of a given main block are also stated from one sub-block to another.

In ascertaining an express rate for first-class or second-class traffic the express agent or shipper first consults a joint directory of express stations which contains a list of all express stations in the United States and shows the block and sub-block within with each station is located. He then consults his local and joint-rate tables which contain the numbers of the rate scales applicable from each block to all nonadjacent blocks, and the numbers of the rate scales to be used in quoting rates between its sub-blocks and from its sub-blocks to those of adjacent express rate blocks. The rate scales in turn indicate the first-class and second-class rates for weights varying from one to one hundred pounds. Shipments of greater weight are charged "pound rates," the rate for 100 pounds shown in the rate scale being multiplied by the number of pounds in the shipment and the product so obtained divided by 100. In order to simplify rate quoting an express station located in an important city is supplied with a "block tariff" applicable from its particular block number. It is so arranged as to show the rate scale numbers applicable on shipments destined to all other blocks, and contains a schedule of first- and second-class express rates arranged by scale numbers.

The express rates shown in the rate scales are based upon a property value not exceeding $50 for shipments weighing 100 pounds or less, and not exceeding 50 cents per pound for shipments of greater weight. When the declared or released value of a shipment exceeds these limits, valuation charges are added at the rate of 10 cents for each $100 or fraction thereof of excess value.

Special commodity express rates are published in commodity tariffs. As in the railroad freight service, these tariffs remove the application of the classification rating.

Competition in the Express Business

Although the American Railway Express and Southeastern Express Companies control the domestic express business, they

are meeting with keen indirect competition. The express business has since 1913 had to share the package traffic throughout the entire country with the parcel-post service. The express companies, because of certain advantages retained by them, have not lost all of this business. While the parcel-post service is subjected to weight limits, the express companies accept packages of any weight. At the larger stations, moreover, the express companies collect as well as deliver shipments while parcel-post shipments are only delivered. The express companies issue receipts for each shipment while the Post Office issues a receipt only for insured parcels. Fragile articles when shipped by express are handled in safety trunks while the Post Office handles them in parcel bags. Express rates on long-distance traffic are in most instances lower than parcel-post rates when full allowance for parcel-post insurance charges is made, and although the Post Office has a rate advantage in its short distance business this advantage is at least partly offset in the larger cities where the express companies perform a package collection service.

The parcel-post service operates under the most favorable conditions in the short-distance package business, and on rural free delivery routes where parcels are collected and delivered by rural mail carriers. Differences in liability and postal insurance charges, moreover, are not always considered by shippers. Many shipments are attracted by the low parcel-post rates on uninsured parcels.

The business of the express companies has also been affected somewhat by the many expedited freight services that are now being performed by the railroads. The extent of this competition, however, is less widespread than may appear, for the self-interest of the railroads is governed to some extent by their returns under the express contracts previously referred to. Railroad fast freight services, moreover, do not as yet compare favorably with the passenger train services of the express companies either in speed or care in handling, and but few railroads perform a collection and delivery service.[9] Charges for cartage or for an industrial trap car service must be added when freight

[9] See Chapter IV.

rates are compared with express rates and service differences must necessarily be considered.

Additional competition is afforded the express companies by the consolidated freight services of freight forwarders and others who undertake the consolidation of L. C. L. freight, and by the prompt and economical freight services of motor truck lines and privately operated motor trucks.

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CHAPTER IX

THE RAILROAD MAIL SERVICE

THE carriage of United States mails by the railroads is very much more important to business, society, and the carriers than the amounts paid for the transportation of the mails would indicate. In 1926, Class I railroads received but $95,320,000 or approximately 1.5 per cent of their total operating revenues, and the payment for domestic mail transportation as a whole amounted to but $139,428,000. An economical and rapid system of mail distribution tends to extend the social, economic, political, and intellectual horizon of the people of a nation by encouraging the exchange of social and business correspondence, and the circulation of newspapers, periodicals, and other literature. Economic activity depends in large measure upon the mails; the interruption of the mail service for even a short period of time would inevitably curtail business.

The Post Office depends so largely upon the railroads for the transportation of the domestic mails, that the domestic mail service may from the standpoint of transportation be discussed as a part of the railroad service. As is true of the express business, however, the direct relations of the public are with a separate agency, in this case the United States Post Office. The Post Office itself performs a distinct service. Some of it is monopolistic in character and some of it is performed in competition with the express companies. The railroads and other transportation agencies in either case receive compensation for their transportation services.

Domestic Mail Services and Charges

Being performed by the Government, the mail service is influenced less by revenue considerations than are the freight and passenger services of the railroads and other carriers or

the express service of the express companies. Mail is classified and postal charges are determined more largely on the basis of general social and economic considerations. Postal deficits have not deterred the Government from keeping postage rates in general at a low level and offering costly services believed to be in the public interest.

Domestic mail matter is divided into four classes as follows:[1] First-class mail, comprising letters, postal cards, and all written and sealed mail matter; second-class mail, consisting of newspapers, magazines, and other periodicals containing notice of second-class entry; third-class mail, subject to a maximum weight limit of eight ounces, consisting of circulars and other miscellaneous printed matter, merchandise, books and catalogues of twenty-four pages or more, seeds, cuttings, bulbs, roots, scions, and plants; and fourth-class or parcel-post matter, subject to a minimum weight of over eight ounces, consisting of merchandise, books, printed matter, and all other mailable matter not included in first- or second-class mail. Within each of these classes further subdivision is accomplished by means of varying postage charges for different kinds of mail matter.

Much mail of all classes is accepted free of charge. Congress and the several departments and independent establishments of the Government exercise a free franking or penalty privilege, and mail sent by agricultural colleges and experiment stations, literature for the blind, etc., and local newspapers for delivery within the county of publication except in cities having a free mail-carrier service, are carried free by the Post Office.

First-class postage rates are 1 cent for government postal cards, 2 cents for private post cards, and 2 cents per ounce for letters and other first-class mail matter. Second-class postage charges are 2 cents for each 2 ounces up to 8 ounces, and fourth-class zone rates plus a service charge of 2 cents for each parcel weighing more than 8 ounces. Third-class rates range from 1 to 1½ cents for each 2 ounces of different kinds of third-class mail matter. The postage charges in the first three classes of mail service are flat rates applicable to all distances, except in case of second-class parcels weighing over 8 ounces.

[1] For classification of foreign mail matter see Chapter LIII.

In determining fourth-class or parcel-post rates it was not feasible to apply the principle of flat charges for all distances. Rates on merchandise, whether freight, express, or mail, must bear a relation to their effect upon the movement of traffic. Flat rates for all distances based upon short-haul parcel-post business would obviously result in an enormous postal deficit, while flat rates based upon long-distance business would seriously curtail the use of the parcel-post service by mail-order houses, manufacturers, farmers, and others desiring to mail merchandise to near-by markets. Although parcel-post rates are less closely related to distance than express rates,[2] the parcel-post zone system gives effect to wide differences in distance. The initial step was to divide the country into numbered units of area 30 minutes square, each unit being equal to one-fourth of the area formed by the intersecting parallels of latitude and meridians of longitude. Each of these units was then made the center of eight postal zones, the outer boundary of the first zone being a circle with a radius extending 50 miles from the center of any given unit taken as a basis, the second zone 150 miles, the third 300 miles, the fourth 600 miles, the fifth 1,000 miles, the sixth 1,400 miles, the seventh 1,800 miles, and the eighth includes all units beyond 1,800 miles. Each post office is supplied with a parcel-post guide which discloses the unit location of every post office, and with a parcel-post map on which are shown all postal units and also the zones for the unit in which the post office is located. The guide and map, however, are dispensed with at post offices located in the larger cities, a zone key directory indicating the zone location of all other post offices being used instead.

Parcel-post rates on packages to be delivered locally within any given postal unit are 7 cents for the first pound, including a service charge of 2 cents per parcel, and 1 cent for each additional 2 pounds. The rate on the first pound to units located within the first two zones is 7 cents, and to units located within the remaining zones is 8, 9, 10, 11, 13, and 14 cents respectively, the 2-cent service charge [3] per parcel being

[2] See Chapter VIII.
[3] Not applicable on rural free delivery routes.

included in each instance. When parcels weighing over one pound are mailed, these rates are applied to the first pound and each additional pound is charged for at the rate of 1 cent in the first and second zones and 2, 4, 6, 8, 10, and 12 cents in the remaining zones.

Additional charges are collected when the sender of a parcel requests a special service. For a fee of 25 cents in addition to the parcel-post rate, a fourth-class parcel marked "special handling" will be accorded the same expeditious movement as first-class mail. Parcels or any other class of mail are accorded a special-delivery service upon payment of special-delivery fees varying from 10 to 20 cents for different weights. Third- and fourth-class parcels may be insured upon payment of insurance fees ranging from 5 cents for an amount not exceeding $5.00 to 25 cents for an amount not exceeding $100.00. Return receipts showing delivery may be obtained upon request and payment of a fee of 3 cents for each receipt. When a C. O. D. service is requested, a special fee ranging from 12 cents for an amount not exceeding $10.00 to 25 cents for an amount not exceeding $100.00 is charged.

When the domestic parcel-post service was established in 1913 a weight limit of 11 pounds was imposed. Since then the maximum weight of a parcel has been raised to 70 pounds in the first three zones and 50 pounds beyond, and a size limitation of 84 inches in combined length and girth has been established. The acceptance of parcels of such weight and size has enabled the parcel-post service to cut heavily into the package traffic of the express companies.[4]

When the sender requests mail of any class to be carried by airplane, a special air mail postage rate is charged. The policy of the Post Office Department with respect to charges for air mail is discussed in Chapter LX.

Railway Mail Transportation

Prior to the coming of the railroads the Post Office depended principally upon the stagecoach for the transportation of the domestic mails. Horseback, sulky, packet and steamboat serv-

[4] See Chapter VIII.

ices supplemented the stagecoach. The Post Office usually entered into contracts requiring individuals to carry the mails over particular routes; speed of transportation, frequency of delivery, and rates of pay being defined in each contract. The first railroad mail route was established about 1834, but its service was so slow and uncertain that "grave doubts were entertained as to whether the railway service could ever be made acceptable to the public or the Department."[5] The earliest railway mail services were performed through the usual contractors who made their own arrangements with the railroads. Later the Post Office entered into contracts directly with the railroads, and during the seventies the contract method was abandoned so far as railroad mail transportation was concerned, railroad mail routes being governed by congressional statutes and by orders of the Post Office Department.

As the stagecoach and steamboat routes were carrying the mails in closed pouches, the "pouch service" was also adopted on the railway routes. "Distributing post offices" were maintained for some years to facilitate the redistribution and forwarding of pouch mail but abuses arose and, beginning in 1859, "direct mailing" between post offices was gradually substituted. The entire system of distributing post offices was abandoned when railway post-office cars came into use.

The "railway mail service" in which the mails are distributed en route by postal clerks in post-office cars or compartment cars has since the early 1860's become an outstanding feature of mail transportation. The plan was first introduced in the United States on the Hannibal and St. Joseph Railroad in 1862 by William A. Davis, and on the Chicago and Northwestern Railway in 1864 by George B. Armstrong, who later became General Superintendent of the Railway Mail Service. Some mail is still carried by the railroads in closed pouches on fast mail trains, in the baggage cars of passenger trains, or in the caboose cars of freight trains, but a large part is carried in the railway mail service. In 1926 there were 902 full-sized mail cars equipped as post offices and 4,068 additional cars

[5] General Superintendent Railway Mail Service, *History of the Railway Mail Service*, Exec. Doc. No. 40, 48 Cong., 2 Sess. (1885).

containing postal compartments. In these cars the clerks of the Post Office Department distribute mail not only by cities, but also by substations of a large city, and mail to be delivered in business sections is ready for the mail carriers when the train arrives.

The "fast mail service" in which railroads operate fast trains consisting entirely of mail cars was first introduced in 1875. It has since become a quite general practice to operate "fast mail trains" made up wholly of postal cars when the amount of mail matter moving in a single mail over a route exceeds 50,000 pounds. In most instances, however, the post-office and compartment cars are operated as parts of passenger trains.

In 1911 the Post Office began the policy of establishing terminal railway post offices at the railway stations of large cities for the handling of a part of the mail formerly sorted en route. These terminal post offices made possible a reduction in the number of railway mail clerks and in car space, and much rehandling of mail matter was eliminated.

The primary mail service performed by the railroads is to provide the necessary equipment for pouch mail and such railway post-office and compartment cars as are requested by the Post Office, and to haul these cars as directed. The post-office cars provided by the railroads are built under Government specifications, and the companies are required to carry the mails on fast mail trains, passenger trains, or other trains selected by the Post Office. They are required to give precedence to the loading, dispatching, and unloading of the mails. They are penalized for leaving behind mail arriving at stations before the departure of the trains for which it is intended; for failure to make use of the first practical means available for the forwarding of mails delayed en route; for failure to receive or deliver mail promptly; for permitting mail to become damaged, lost, or destroyed, and for other delinquencies that are subject to fines in such sums as the Postmaster General may determine. The railroads are also required to install approved mail cranes for the unloading of mails from moving trains, and are penalized for failure to sound the proper signal when approaching them.

The railroads indeed perform a number of services not directly connected with the providing of mail equipment and the movement of mail-carrying trains. Mail is loaded into cars by railroad employees, and, excepting when cars are in charge of postal clerks, it is also unloaded by them. Transfers of mail from one car to another are made by the railroads. They are required to take mail from, and deliver mail into post offices located not more than 80 rods from railroad stations, excepting at places where the post office performs its own messenger service. They must also give preference to mail traffic in providing terminal space and in the placing of postal cars.

There has from the very beginning been friction between the Post Office and the railroads concerning methods and amounts of compensation. The first railway mail act, enacted in 1838, declared all railroads to be post routes, and it authorized the Postmaster General to enter into contracts with them and to determine the compensation of each carrier subject to a maximum 25 per cent in excess of what similar transportation would cost in post coaches. In later acts Congress established different maximum rates of railway mail pay at varying yearly amounts per mile, and in 1872 compensation for railway post-office cars was also provided for. The first drastic change was made in 1873 when Congress enacted a statute under which the contract method and the inviting of proposals were abandoned, and fixed maximum rates based upon the weight of mail, distance hauled and number of full-sized postal cars were authorized. The Postmaster General acting under this law established rates ranging from $50.00 per mile per year for average daily weights of 200 pounds, to $200.00 in case of 5,000-pound weights and $25.00 additional for every 2,000 pounds. He also decided upon extra payments for full-sized post-office cars ranging from $25.00 for cars 40 feet long to $50.00 for 55 to 60-foot cars. The daily weights carried were determined by actual weighing of the mails for not less than 90 successive days once in four years. Prior to 1907, working days only were counted, but the Postmaster General then ordered the full number of days in the weighing period to be used as a divisor.

This general plan of compensation remained in effect until 1916, although the general rates of pay authorized were changed a number of times, usually downward. Important changes in general rates were made in 1876, 1878, 1907, and 1910. Special rates of pay on a lower basis were authorized for land grant railroads. For some years small additional payments for special facilities and a fast mail train were authorized, but such payments were discontinued in 1907. Further reduction in mail pay was made in 1911 when the Postmaster General required certain periodicals to be carried by freight instead of in the mails.

The railroads protested against the successive reductions in rates of pay that had been effected, and they also contended that the weighing of the mails but once in four years obligated them to carry a large volume of mail traffic for which they received no pay whatever. The Post Office, on the contrary, urged a reduction in rates of pay and charged the carriers with the padding of mail weights during weighing periods. In 1912 a Joint Congressional Committee undertook an exhaustive investigation as a result of which the entire system of railway mail pay was later changed. Meanwhile, in 1913, when the volume of mail traffic was greatly increased by the establishment of the parcel-post service, an increase in mail pay, not to exceed 5 per cent, was granted to railroads on which the mails were not weighed during that year.

Upon completing its investigation in 1914, the Joint Congressional Committee recommended not only an increase in railway mail pay to compensate adequately the railroads for their services, but also the adoption of space as the general basis of payment. After much contention and delay Congress in an act of July, 1916, authorized the Interstate Commerce Commission to determine fair and reasonable railway mail pay from time to time and to prescribe the method or methods of payment to be applied in the future. Pending action by the Commission, however, the Postmaster General was authorized for the purpose of experimentation, to put into effect the space basis of payment at tentative rates fixed in the Act on such railway mail routes as he might select for that purpose. The

Postmaster General therefore placed virtually all railway mail routes, except closed pouch routes, on the space basis.

Although the carriers protested against this wholesale application of the new basis, the Interstate Commerce Commission upheld the Postmaster General and in its formal decision of December 23, 1919, prescribed the space method of payment for all railway mail routes. The basic rates of pay prescribed by the Commission were made effective as from November 1, 1916, to January 1, 1918, and the general rates to be paid after January 1, 1918, were to be increased 25 per cent. Land grant railroads were granted mail pay rates 80 per cent of those generally in effect on other railroads, and separately operated short lines were granted rates from 20 to 50 per cent in excess of the general space rates. Separate compensation based upon cost of service was prescribed for the carrying of mails between railroad stations and between stations and post offices at points where the railroads are required to perform this service. As the general space rates prescribed by the Commission were higher than the tentative rates named in the Act of 1916, the Post Office was required to readjust the mail pay of the railroads for the period beginning November 1, 1916.

The space rates received by the carriers have been changed since the Commission's order of 1919, but the space basis has been retained. The schedule of general space rates now in effect is as follows:

Service Units	*Rates in Cents*
For each mile of service by a 60-foot R.P.O. car	33.75
" " " " " " " 30-foot apartment car	18.75
" " " " " " " 15-foot apartment car	12.50
" " " " " " " 60-foot storage car	35.00
" " " " " " " 30-foot storage car	18.75
" " " " " " " 15-foot storage car	10.00
" " " " " " " 7-foot storage car	5.625
" " " " " " " 3-foot storage car	3.125
" " " " " " " 15-foot closed pouch space	12.50
" " " " " " " 7-foot closed pouch space	6.25
" " " " " " " 3-foot closed pouch space	3.75

The larger railroads are paid for mail transportation on the basis of these general rates except the land grant lines, and

when performing special side and transfer services they receive additional compensation on the basis of cost of service plus 3 per cent. The space rates prescribed for separately operated short lines have been changed several times in recent decisions of the Commission.

In 1927 the railroads, referring particularly to increased costs of performing the mail service, entered complaint before the Commission to obtain a readjustment in mail pay. A general investigation is being made but the Commission has not yet announced a decision.

Other Mail Transportation Agencies

The carriers next in importance to the railroads in the transportation of the mails are the ocean steamship lines which carry the foreign mails, but as ocean mail services are essentially a part of the business of ocean passenger lines they will be discussed in Part VI. A number of minor transportation agencies however, contrive to be of some importance in the domestic mail service. In 1926 mails were carried by steamboats and other power boats over 276 routes covering 46,871 miles, compensation being arranged for in contracts which are entered into after advertisement and receipt of competitive bids. Electric railways carried mail traffic over 8,205 miles of line, their compensation being provided for by order of the Interstate Commerce Commission as in case of steam railway mail routes. Between many places not reached by rail or power boat the mails are still carried by wagon, on horseback, or by motor vehicle over "star routes" on the basis of contracts awarded to the lowest bidders tendering guarantees to insure faithful performance. In 1926 contracts were in effect on 10,991 star routes. There were also ten Government-operated star routes, such routes being established when no proposals for contract star services are received, or when the bids received are considered to be exorbitant or in excess of the cost at which a government service can be operated. Many star routes have from time to time been discontinued as a result of the extension of the rural mail service of the Post Office. In 1926, 45,318 rural delivery routes having an aggregate length of 1,250,000

miles carried the United States mails directly to over thirty million people.

The use of airplanes for mail carrying is the most recent improvement in the transportation of the mails. However keen the demand for greater speed may be in the transportation of passenger, express, and freight traffic in the United States, it remained for the air mail service to take the lead in commercial air transportation. The transportation of mail by aircraft operated either directly by the Post Office Department or over contract air mail routes is discussed in Chapter LX.

Local transportation of the mails within cities requires the use of many thousands of motor trucks and horse-drawn vehicles. The transportation of mail matter between post offices and railroad stations either by the Post Office or by the railroads is but one branch of local transportation. An extensive vehicular service is also maintained for transporting mail between the post office, postal stations, and other points where mail is received or dispatched, for collecting mail from street letter boxes, for delivering parcel-post mail, for relaying mail to carriers on their routes, for transporting carriers to and from their routes, and for hauling postal supplies.[6] Prior to October 1, 1914, all services of this kind excepting the Government messenger service to and from railroad stations performed in some cities, were performed under contract, but since then the contract vehicular service has in many cities been displaced by motor trucks that are owned and operated by the Government. In a few of the larger cities pneumatic tube services are utilized in transporting certain amounts of mail matter between post offices and postal stations, or between post offices and railroad stations.

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PART II

RAILROAD BUSINESS METHODS AND ORGANIZATION

CHAPTER X

ORGANIZATION OF FREIGHT TRANSPORTATION AND TRAFFIC [1]

THE ambition of the railroads to perform their operating and traffic functions efficiently and economically, to improve their services, to establish close and friendly relations with the shipping public, and to maintain proper relations between managements and employees has caused railroad executives to pay an increasing amount of attention to their business organization. The problem is complicated by the growth of the volume and variety of traffic, by the increasing size, in many instances, of the systems being operated by individual managements, and by the vast numbers of their employees. The effective management of great railroad systems necessitates careful organization. Moreever, many traffic and transportation functions require the joint action of several railroads both directly and through railway associations. There is also the necessary coöperation of the carriers with the shipping public and of the carriers with the public authorities entrusted with the duty of regulating the carriers.

Railroad freight traffic and service associations will be discussed in Chapter XIV. The freight traffic and transportation organizations of individual railroad lines or systems are briefly considered in this chapter.

A large railroad's business organization may contain twelve or more departments, to each of which are assigned certain functions that together comprise the sum total of the company's business affairs. There is usually the Secretary's Department, and the Law, the Accounting, the Treasurer's, the Purchasing, or Purchasing and Supply, and the Executive Departments. There may also be an Engineering Department for new construc-

[1] For a detailed discussion of railroad organization consult Huebner and Johnson, *The Railroad Freight Service*, Part III, pp. 413-578.

tion, separate from the Maintenance Department of the railroad's operating organization, and there may be an Insurance, a Real Estate or Land, a Relief, and a Pension Department. The immediate performance of a railroad's traffic and transportation functions, however, is mainly limited to its Traffic, Operating, Freight Claim, and Industrial or Development Departments. The last two of these are frequently subdivisions of other larger departments, but are in some instances given a separate status. Their functions always bring them into direct contact with the shipping public. Some railroads have organized Personnel Departments as subdivisions of the Operating Department, and most railroads, whether they have taken this step or not, are now giving more attention than they have given in the past, to personnel management and labor organization.

General Plans or Types of Traffic and Operating Organization

As long as railroad lines were comparatively short and served small compact areas, the general officials employed in the several business departments were usually centralized at one point and the entire system was supervised from one general office. There were line officials to supervise the local traffic and operating forces in the several divisions or districts, the line officials reporting to the centralized general office. This centralized type of traffic and operating organization still works satisfactorily on many small roads or on systems of moderate size. The departments not engaged in traffic or operating work are usually of the centralized type even in the case of large systems, because the nature of their work is such that there is less need for decentralization. Although the Accounting, Treasury, Law and some other departments are concerned with activities out on the line as well as at headquarters and function directly or indirectly through line officials, the necessary executive supervision by general officers is practicable and administrative control can be efficient without stationing many general officials at different points on the railroad line or system.

The tendency to decentralize railway organization by station-

ing responsible general officials at strategic points on the line as well as at the central office has been confined largely, although not entirely, to the departments concerned directly with traffic and operation. Effective executive supervision by general traffic and operating officials is more difficult on a large railroad system serving a wide territory and operating an extensive network of roads, than on a short, compact system. Statistical reports, moreover, cannot wholly displace personal supervision, and the carriers are attempting to develop a business organization that will enable the general traffic and operating officials to maintain close relations with line officials and employees, and with the shipping public, and thus, by keeping in touch with local conditions, to perform their duties intelligently and promptly.

Most large railroad systems have decentralized their traffic and operating organizations by stationing responsible general officials at various local points, and several companies have adopted a so-called regional plan of organization whereby almost complete traffic and operating organizations are maintained in each of several defined regions. The Pennsylvania Railroad, for example, is divided into three regions—Eastern, Central, and Western—with regional offices at Philadelphia, Pittsburgh, and Chicago, and the operating organization in each region includes not only the usual General Superintendents, Division Superintendents, and other line officials and employees, but a staff of general operating officials. The operating organization in each region is, indeed, headed by a regional Vice President who acts as the immediate general operating executive of his entire region. Under each of these regional Vice Presidents there is a staff of general operating officials, some of whom are concerned with all branches of operation, while others are specialists concerned with transportation only or with motive power, maintenance, or telegraph and signals. (See Form 1.) When the regional plan was first adopted by the Pennsylvania Railroad, four distinct regions were created and a complete regional office was maintained at St. Louis, but later the original southwestern and northwestern regions were consolidated. The regional Vice Presidents report to the Vice President in charge of operation, who is a system

executive assisted by a staff of operating officials whose duties extend throughout the entire railroad system, and who coördinate the operating managements that are maintained within the three regions. The chief of Freight Transportation, Chief of Passenger Transportation, Chief of Motive Power, Chief Engineer, Supervisor of Operating Expenditures, Vice President in charge of Personnel, and other system-operating officials are listed in Form 1.

Most large railroad systems have not decentralized their operating organizations so completely as to adopt a regional plan but most of them have decentralized in part by stationing a number of general operating officials at different points on their lines. Between the centralized type and the regional type of operating organization there is almost endless variation as to the degree to which operating functions are performed directly from a main central office or are assigned to general officials who are geographically detached from the central office.

These three general types or plans of business organization also prevail in traffic management. Many small railroads or systems of moderate size are able to adhere to the original plan of centralizing their general traffic officials at a single central office, but most of the larger systems have either adopted the regional plan or have partly decentralized their traffic departments. When, for example, the Pennsylvania Railroad first adopted the regional plan, almost complete regional traffic departments were created in each region, and each regional Traffic Manager was placed under the immediate executive supervision of the regional Vice Presidents. The regional principle was, however, so modified later as to require the regional Traffic Managers to report directly to the General Traffic Manager of the entire system, but nearly complete traffic departments were retained within each of the company's three operating regions. A Vice President in charge of traffic, a General Traffic Manager, an Assistant General Manager, several joint traffic and operating officials, and several other traffic officers comprise the system of traffic organization. (See Form 1.) Regional traffic offices are maintained at Philadelphia, Pittsburgh, and Chicago, each under a Traffic Manager; and there are several additional regional

traffic officials, who are located at other points but report to these Traffic Managers. Every railroad of average size will have certain traffic officials and employees such as division freight agents, district freight agents, commercial agents, on the line or at off-line offices, but there is wide variation in the extent to which the general traffic officers are decentralized. Most of the larger systems have not decentralized them to the extent of adopting the regional plan.

Minimum overhead expense and the possibility on smaller roads of administering efficiently traffic and operation from a central office are sufficient reasons for retaining the centralized plan of organization on such railroads or for decentralizing only to a small degree. The extent to which the traffic and operating organizations of the great railroad systems are decentralized however, is partly a matter of executive judgment. Whether the regional plan or a plan of partial decentralization will prevail in the future will depend upon further experience. Complete decentralization results in a larger number of general officials than does partial decentralization. The relative efficiency of the plans will ultimately be decisive, but it is now well established that some degree of decentralization in the case of extensive railroad systems is essential to the efficient management of traffic and operation.

The operating organization of a railroad, whether centralized, regional, or partly decentralized, may be either divisional or departmental. All railroads except the smaller short ones are divided into operating divisions for purposes of actual line operation; and, at an early date, the question arose as to whether the major operating functions—transportation, motive power and maintenance of roadway and structures—should be administered separately by different officials, or should be in control of one division officer having jurisdiction over all three branches of operation. The former plan is known as the departmental plan, and the latter as the divisional plan. Under the departmental plan each major function is administered separately by an official of a distinct subdepartment of the Operating Department, the Division Superintendent being concerned only with train operation, train dispatching, car distribution, yard oper-

ation, station operation, and other distinctly transportation work. The division shops and the other motive power or mechanical work are in charge of the Master Mechanics or otherwise designated division officials who are in the Motive Power Department; while the maintenance of roadway and structures comes under the Division Engineers in the Maintenance Department.

The divisional plan, on the contrary, places the Master Mechanics and Division Engineers and their entire division motive power and maintenance forces under the supervision of the Division Superintendents. Each Division Superintendent then, is a division executive with jurisdiction over all operating activities within his division—motive power and roadway as well as conducting transportation. Larger railroads or extensive regions of a railroad system, moreover, may combine several operating divisions into grand divisions for further supervision and direction by line officials. Under the divisional plan the General Superintendent in charge of a grand division is also given jurisdiction over every branch of operation, while under the departmental plan his powers are limited to conducting transportation.

The departmental plan has in its favor the technical character of railroad operation and the need for specialization. Although the three major functions of operation are interdependent, each requires the services of specialists and three groups of operating employees are in fact employed in each operating division. It is contended by the advocates of the departmental plan that the necessary coördination can be attained through the use of reports and operating statistics; and the making of frequent inspections, by interdepartmental conferences, intelligent rules and regulations and well adapted working arrangements. In the United States, however, the departmental plan is followed mainly on the smaller roads on which the necessary coördination can readily be attained directly by the General Manager or other general operating officials. The only large system that still adheres to the departmental plan (with modifications) is the New York Central. The divisional system has become the prevailing American plan of line management on large railway systems, because the close coördination of the various operating

functions and forces within each division can be accomplished more effectively by placing a single division executive in charge of operation as a whole. The necessary specialists are employed in each division, but all of them are subject to his direct executive supervision, and further assistance in technical matters can be obtained through the office of the General Superintendent of a grand division or from the central or regional office where the company's general officials, many of whom are specialists, are stationed. The divisional plan has the further advantages of training out on the line, a number of all-round operating officials who become qualified to serve as general operating officials when vacancies occur. Many of the operating officials in a railroad's central office or in its regional offices are specialists, but others, such as the General Managers and Assistant General Managers, are directly concerned with the Operating Department as a whole and need a broad training.

Freight Transportation Organization

In discussing some of the general principles of operating organization it was necessarily noted that the transportation of freight is but one of several functions performed in the Operating Department, and that under the prevailing American or divisional plan all of these functions are supervised by the Division and General Superintendents. Even under this plan, however, specialists are employed everywhere from the central office of the railway system down to the local operating divisions, and these specialists are attached to particular subdivisions of the Operating Department. On some roads, various general and line or division officials are concerned with operation as a whole, but other officials and employees are specialists. The operating organization necessarily contains a Motive Power or Mechanical Department, a Maintenance or Roadway Department, and a Transportation or Conducting Transportation Department; and sometimes a Telegraph and Signal Department is established as a further subdivision of the Operating Department for the maintenance of wires and signals and the supervision of signal operation. The transportation or conducting transportation organization, moreover, includes the necessary

officials and employees for passenger as well as freight transportation.

The freight transportation organization, whether centralized, regional, or partly decentralized, varies on different railroads. Usually, however, there is a Vice President in Charge of Operation, there are one or more General Managers and other general system or regional officials who are concerned with all operating functions, including conducting transportation; and there are also general transportation officials whose duties are confined to the supervision of conducting transportation, the determination of transportation rules and policies, and the performance of certain transportation functions. There is ordinarily a General Superintendent of Transportation who is concerned with both passenger and freight transportation, and a General Superintendent of Freight Transportation; and there may also be a Superintendent of Car Service or a General Car Accountant, a Superintendent of Stations and Transfers, a Warehouse Superintendent, a Superintendent of Refrigerator Service, and a Supervisor of Motor Service.

If the system as a whole, or an operating region is subdivided into grand divisions, there is a General Superintendent for each grand division, who, under the divisional plan, supervises operation as a whole and may have a staff including a number of transportation inspectors as well as specialists in mechanical and roadway work. Reporting to the General Superintendents or directly to a system or regional operating official, are the several Division Superintendents who, under the divisional plan, coördinate and direct all of the operating forces of their respective operating divisions. The division forces directly concerned with conducting freight transportation include the train masters, assistant train masters, yardmasters and assistant yardmasters, chief dispatchers and train dispatchers, freight agents, and sometimes distinct division car distributors. There are also road foremen of engines who are concerned both with conducting transportation and with motive power, and the Division Superintendent's forces may include a division operator, a signal inspector or an otherwise designated official who is concerned with the maintenance of wires, instruments, and

signals and also with the direction of telegraph operators, line repairmen, lever men, or switch and signal operators. All of the working forces of these division transportation officials, yard switching crews, train crews and enginemen, firemen, freight station and transfer employees, etc., and their clerical staffs, which in some instances are large, are employed partly or wholly in the business of conducting transportation. Similar division forces are engaged in conducting passenger transportation, and some division employees are concerned with both branches of transportation.

The remaining operating forces employed within the operating divisions are concerned primarily with maintenance of roadway and structures and with maintenance of rolling stock and the operation of the railroad shops. The principal shops of a railroad, however, are frequently removed from the business organization of its operating divisions and instead are managed under the more direct supervision of a higher operating or motive power official. Divisions equipped with floating equipment must also make provision for its maintenance, and special electrical or motive power forces are provided on divisions that have been electrified.

The Freight Traffic Department

Traffic services are in part performed by the Operating Department, the station agents being connected with that department; but the prevailing practice in the United States is to distinguish between the transportation or the handling of freight and the commercial or traffic functions of the railroad industry. All railroad companies have separate Operating and Traffic Departments. The Traffic Department of every large American railroad contains at least two subdivisions—the Passenger and the Freight Traffic Departments. In some instances there are also such additional subdivisions as an Industrial, an Agricultural, or a Foreign Freight Department, all of which are supervised by the Vice President in Charge of Traffic. In other cases, however, the duties of these subdepartments are performed by the Freight Traffic Department. In some organizations, agricultural and industrial traffic development is put in charge

of a Development Department separate from the Traffic Department.

The Freight Traffic Department is concerned with the making of rates and other freight charges, the classification of freight, the determination of shipping rules, and the publication of tariffs. Freight charges, however, except those of purely local concern, are considered in freight traffic associations, and freight is classified by Classification Committees. Officials of the Freight Traffic Departments of the carriers take part in the proceedings of these committees, and sometimes issue classification exceptions. The general shipping rules are also determined by the Classification Committees, but the traffic officials of the carriers participate in the work of the committees, and individual carriers publish special shipping rules in their tariffs. Some tariffs are published by tariff agents acting for the carriers, and others are issued directly by the Freight Traffic Departments of the railroads. The work of the Freight Traffic Department includes the distribution of tariffs, the filing of tariffs with State and Federal Commissions, the giving of instructions to freight agents as to the use of tariffs, the quoting of freight rates, the establishment of through routes, the arrangement of the divisions of joint rates with connecting lines, the preparation of percentage or special division sheets for the use of the Accounting Department, the giving of expert evidence, and the preparation of exhibits in freight rate cases before commissions or courts.

The Freight Traffic Department, moreover, is entrusted with the solicitation of freight. The methods pursued and the many considerations that enter into this work will be discussed in Chapter XIII, which also contains an account of the methods that have been adopted for the development of new traffic.

Freight Traffic Departments of the several railroads are uniform neither as regards the official positions contained nor as to the assignment of duties to the different officials, and further variation results from the extent which the work of the department in particular instances is centralized or decentralized. The general freight traffic officials of many railroads act as executives for entire railroad systems, while others function within defined regions or territories. Some officials, moreover, are concerned

with all classes of traffic, while others, like coal freight agents, have jurisdiction over certain commodities or classes of traffic.

The general traffic officials of most railroads include a Vice President in Charge of Traffic; and one or more General Freight Traffic Managers, Assistant General Freight Traffic Managers, General Freight Agents, and Assistant General Freight Agents. Some companies have a general Coal and Coke Traffic Manager or General Coal and Coke Agent, several have Foreign Freight Agents, and officials in charge of special kinds of traffic such as livestock, dairy products or milk, and perishables. There may also be Agricultural, Industrial or other officials for the development of traffic. The central organization also contains freight solicitors, a Tariff Bureau, and rate-tracing, reconsignment, and other clerks.

Freight traffic officials are employed on the line, and at off-line traffic offices or agencies that are maintained at points reached via connecting lines. Division freight agents have charge of defined traffic divisions of the company's lines, and district agents maintain traffic offices at important points either on or off the line. Off-line agencies or representatives may also be freight representatives, contracting agents, general agents (who are sometimes connected with both the Traffic and Operating Departments), or commercial agents; and special titles may be given to off-line agents who are placed in charge of freight solicitation within larger off-line territories. All of these line or off-line soliciting agencies may have staffs of solicitors or traveling agents who act as traffic salesmen.

Development Departments

Many railroad companies distinguish between the solicitation of freight traffic and the development of new business, and maintain industrial, agricultural, or otherwise designated departments either within the Traffic Department or as separate departments. Other companies have not created separate departments for the development of new traffic, but have appointed development officials within the Freight Traffic Department. The business organizations of many railroads contain Industrial Agents, Industrial Survey Agents, Industrial Engineers or officials with

appropriate titles, whose primary duty is to bring about the location or development of industries along the lines of their respective companies. There are also Agricultural Agents, whose activities embody everything having to do with the promotion of agriculture and agricultural traffic. Some railroads also employ Geological Engineers, Horticulturists, Supervisors of Farm Marketing, Livestock Agents, Development Agents, and officials with other special titles, all of whom are primarily concerned with the creation of new business.

The policy is often followed of consolidating all of these officials into departments variously known as "Commercial and Development," "Industrial, Agricultural, and Industrial," or "Development" departments. The Immigration Agents employed by various lines are as a rule included within one of these departments. The industrial, agricultural and other development organizations of the larger roads are to an increasing extent being decentralized by the location of officials at points where they can maintain the closest relations with industries and business interests.

Freight Claim Departments

The adjustment of loss, damage, and overcharge freight claims is so closely related to the freight service that special attention is given to the proper organization of the Freight Claim Departments. In the past, most railroads adjusted freight loss and damage claims in the Freight Traffic Department, and this is still the policy of some carriers. Many of the larger railroads have, however, transferred the Freight Claim Department to the Law Department, because questions of legal liability frequently arise and because the Law Department is in any event charged with the duty of defending suits. Other companies have shifted the Freight Claim Department to the Operating Department or to the Accounting Department, and a few have established separate Freight Claim Departments, or have made the Freight Claim Agent directly subordinate to the head of the Traffic Department but independent of the officials concerned with traffic solicitation.

The Freight Claim Department investigates all loss and

damage claims, adjusts them with claimants or declines payment, and in case of interline shipments, arranges the division of freight claim payments between connecting lines in accordance with the rules of the Freight Claim Division of the American Railway Association. The department keeps the necessary freight claim records and files and may be required to supervise and assist in disposing of unclaimed shipments or freight which the consignee refuses to accept. Much attention is also given to ways and means of reducing losses and freight claims.

The work of the Freight Claim Department requires coöperation with other railroad departments. Freight loss and damage claims usually originate at the stations where the claimants in most instances file their claims and where much of the information needed in claim adjustment is obtained. Large freight agencies usually employ a head claim clerk; also, over, short, and damage report clerks, claim and tracer clerks, and an inspector, and perhaps other station employees who, while not permitted to adjust loss and damage claims, facilitate the adjustment of freight claims by the department. The Claim Department also coöperates with the Operating Department in its efforts to reduce losses and claims. When suit is brought by a claimant, the Claim Department must coöperate with the Law Department's attorneys and with the Accounting Department so that proper adjustments may be made on the company's books. The company's rules may in fact require that claim papers be sent to the Accounting Department and that claim vouchers be referred to that department for verification and countersignature or approval for payment.

The Freight Claim Department may also have charge of the adjustment of overcharge claims but the policy of assigning such adjustments to the Accounting Department has been widely adopted. Some railroads have an Auditor of Overcharge Claims who reports either to the Auditor of Freight Revenues or to the Comptroller; other companies place the adjustment of overcharge claims under the immediate supervision of a claim clerk subordinate to the Auditor of Freight Revenues. All overcharge claims arising in connection with freight rate charges and such special charges as switching, milling-in-transit,

storage, demurrage, elevation charges, etc., must be investigated as to their merits before they are adjusted with claimants, and claims arising in connection with interline shipments are prorated between connecting lines in accordance with the overcharge claims rules of the Freight Claim Division of the American Railway Association, or the rules of the Railway Accounting Officers' Association.

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CHAPTER XI

FREIGHT STATION OPERATIONS: BILLING AND HANDLING OF FREIGHT

ALTHOUGH the freight station agencies of the Operating Department are primarily concerned with the physical handling and transportation of railroad freight, they also have many traffic and other commercial relations with the shipping public either directly or in conjunction with the Freight Traffic, Freight Development, Freight Claim, Accounting and Treasury Departments. The stations are the local points of contact between the shipping public and the entire business organization of a railroad, and are necessarily maintained at small and large shipping centers. Stations vary everywhere from a one-man agency to the enormous terminal at which the agent is aided by a large staff of employees and clerks. There are also numerous small nonagency stations at which no agent is located, shippers being required to prepay charges on freight destined to such stations.

Some stations handle both inbound and outbound freight, while others handle only inbound or only outbound shipments. Some handle all classes of freight, while other stations may serve only certain commodities such as grain, coal, lumber, or perishables. Both carload and less-than-carload freight can be handled at some stations while others are equipped only for carload or only for less than carload. Still other stations accept only freight moving to or from certain points or territories. Some stations are joint passenger and freight agencies.

Transfer agencies are important parts of the freight operating organization but have no direct relations with the shipping public. The transfer stations may be operated in conjunction with freight stations, but large transfer agencies are often operated independently. Their primary function is to transfer L. C. L. freight from car to car and thus to give a full loading

to straight cars destined to particular stations, also to load some cars so that their contents may conveniently be unloaded in part at successive stations.

Railroad Shipping Papers

The shipping papers or documents employed in the railroad freight service are the following:

1. In discussing car distribution, reference was made to the ordering of freight cars by shippers of carload freight, through station agents, on prescribed forms. The customary *car order* is arranged so as to indicate the number, size, and kind of cars desired, the date and hour when wanted, the kind of products to be shipped, and the destination and route of the shipment.

2. In shipping either carload or less-than-carload freight a *bill of lading* is prepared. As this is the principal shipping document in the business transaction between the railroad and shipper it has been the subject of much legislation and public regulation. The principal Federal statutes governing railroad bills of lading are the Bills-of-Lading Act of August 29, 1916, and the bill-of-lading and liability clauses contained in the Interstate Commerce Act. The form and contract provisions of bills of lading were prescribed by the Interstate Commerce Commission in 1922.

The bill of lading is not only the legal contract between carrier and shipper, but it is the freight receipt, the routing order, and the basic document in the settlement of freight claims; and when made out to the order of the shipper, it is a negotiable document that is frequently used for the purpose of financial settlement. Order bills of lading are variously used for obtaining advances or loans from banks, for attachment to drafts that are discounted, or for forwarding to destination through banking channels for collection of the amount due the shipper. An "order" bill of lading is for the consignee an essential delivery document, because the carrier is prohibited from making delivery until the bill of lading is presented with proper endorsement. A "straight" bill of lading, which is made out directly to the consignee, on the contrary, is not negotiable and its presentation is not always required.

The uniform domestic straight and order railroad bills of lading now in general use are issued in distinctive colors and their contents have been standardized by the Commission. (See Forms 2 and 3.) The straight bill is printed on white paper in triplicate—the "original bill of lading," which is signed by both the shipper and the freight agent and goes to the shipper, the "shipping order" which is signed by the shipper and is retained by carrier, and the "memorandum" which is signed by both shipper and freight agent and is retained by the shipper for filing purposes, care being taken to prevent its use in lieu of the original bill of lading by inserting a clause to the effect that it is merely "an acknowledgment that a bill of lading has been issued and is not the original bill of lading nor a copy or duplicate, covering property named herein, and is intended solely for filing or record." The original order bill of lading is printed on yellow paper, and the shipping order and memorandum prepared in connection with an order bill of lading, on blue paper.

The contract terms of the uniform domestic straight and order bills of lading now issued by American railroads are identical. They deal primarily with the liability of the railroads for loss and damage of freight. As is stated in *The Railroad Freight Service:*[1]

> Railroads operating in interstate commerce are liable under certain conditions which are specifically stated. They are not liable for loss or damage caused by (1) acts of God, (2) the public enemy, (3) authority of law, (4) the act or default of the shipper or owner, or (5) material shrinkage. (6) After the expiration of the free time allowed in its tariffs, the railroad, moreover, is liable only as a warehouseman in case of loss, damage or delay caused by fire. (7) It is not liable for loss, damage, or delay occurring while property is held in transit upon request of the shipper, owner, or party entitled to make such request except in case of negligence on the part of the carrier or party in possession. (8) Nor is the carrier liable, except in case of negligence, where loss, damage, or delay results from a defect or vice inherent in the property shipped, or (9) from country damage to cotton, or (10) from strikes or riots. (11) The carrier is further exempted

[1] See G. G. Huebner and E. R. Johnson, *The Railroad Freight Service*, pp. 253-258. For the contract terms and conditions of the domestic bill of lading see note at end of this chapter.

(Uniform Domestic Straight Bill of Lading adopted by Carriers in Official, Southern and Western Classification territories, March 15, 1922.)

UNIFORM STRAIGHT BILL OF LADING

(Prescribed by the Interstate Commerce Commission.)

Original—Not Negotiable

(To be Printed on "White" Paper)

Shipper's No. .....

Agent's No. .....

Company

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading,

at ..... , 192

from .....

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee—For purposes of notification only)

Consigned to .....

Destination ..... State of ..... County of .....

Route .....

..... Car Initial ..... Car No .....

(Delivering carrier.)

No. Packages	Description of Articles, Special Marks, and Exceptions	*Weight (Subject to Correction)	Class or Rate	Check Column

If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and other lawful charges. (See Section 7 of conditions.)

..... (Signature of consignor.)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

.....

Received $ ..... to apply in prepayment of the charges on the property described hereon.

..... Agent or Cashier.

Per .....

(The signature here acknowledges only the amount prepaid.)

Charges advanced:

$ .....

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

Note—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding .....per .....

..... Shipper. ..... Agent.

Per ..... Per .....

Permanent postoffice address of shipper .....

FORM 2.—UNIFORM DOMESTIC STRAIGHT BILL OF LADING.

(Uniform Domestic Order Bill of Lading adopted by Carriers in Official, Southern and Western Classification territories, March 15, 1922.)

UNIFORM ORDER BILL OF LADING

(Prescribed by the Interstate Commerce Commission.)

ORIGINAL

(To be Printed on "Yellow" Paper)

Shipper's No. .....

Agent's No. .....

Company

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, at ..... 192 .

from .....

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

The surrender of this Original ORDER Bill of Lading properly indorsed shall be required before the delivery of the property. Inspection of property covered by this bill of lading will not be permitted unless provided by law or unless permission is indorsed on this original bill of lading or given in writing by the shipper.

Consigned to **ORDER** of .....

Destination ..... State of ..... County of .....

Notify .....

At ..... State of ..... County of .....

Route .....

..... Car Initial ..... Car No .....

(Delivering carrier)

No. Packages	Description of Articles, Special Marks, and Exceptions	*Weight (Subject to Correction)	Class or Rate	Check Column

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

Note—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

..... per .....

If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges (See Section 7 of conditions.)

.....

(Signature of consignor)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

.....

Received $ ..... to apply in prepayment of the charges on the property described hereon.

.....

Agent or Cashier.

Per .....

(The signature here acknowledges only the amount prepaid.)

Charges advanced:

$ .....

.....Shipper. .....Agent.

Per..... Per.....

Permanent postoffice address of shipper.....

FORM 3.—UNIFORM DOMESTIC ORDER BILL OF LADING.

from liability for loss, damage or delay resulting from fumigation, disinfection, or other acts required by quarantine regulations or authorities. Other liability provisions of the uniform domestic bill of lading are: (12) those exempting the railroad in case of property destined to or taken from a station, wharf, or landing at which there is no regularly appointed freight agent; (13) the special clause governing documents, specie, or articles of extraordinary value not specifically rated in the carrier's classification or tariffs;[2] (14) the special section applicable to explosives or dangerous goods shipped without previous full disclosure of their nature;[3] and (15) the portion of Section 2 which provides that a carrier is not bound to transport a shipment "by any particular train or vessel, or in time for any particular market or otherwise than with reasonable dispatch," and that every "carrier shall have the right in case of physical necessity to forward said property by any carrier or route between the point of shipment and the point of destination."

The bill of lading contract in Section 2, moreover, permits the limitation of the amount or sum for which the carrier is liable "in all cases not prohibited by law, where a lower value than the actual value has been represented in writing by the shipper or has been agreed upon in writing as the released value of the property as determined by the classification or tariffs upon which the rate is based. . . ." An effort was made in 1915, in an act of Congress,[4] to hold the carrier liable for the "full actual loss, damage, or injury" regardless of any release contract or agreement which may have been signed by the shipper or any rule or regulation which may have been made by the railroad. This so-called Cummins Amendment, however, was amended during the following year so as again to permit released or agreed values under certain conditions.[5] The Act to Regulate Commerce, Section 20, Paragraph 11, now provides that the requirements as to full actual loss, damage, or injury, shall not apply to baggage carried on trains or vessels carrying passengers, nor to property, "except ordinary livestock, received for transportation concerning which the carrier shall have been or shall hereafter be expressly authorized or required by the Interstate Commerce Commission to establish and maintain rates dependent upon the value declared in writing by the shipper or agreed upon in writing as the released value of the property. . . ."

Section 9 of the uniform domestic bill of lading applies in case a shipment is carried by water over any part of the route defined in the bill of lading. It includes all the exemptions to which carriers by water are entitled under the Harter Act of February 13, 1893, and other Federal statutes applicable to shipments by water and those

[2] Section 5.
[3] Section 6
[4] Cummins Amendment, effective June 3, 1915.
[5] Amendment of Aug. 9, 1916.

usually embodied in the bills of lading issued by steamship lines.[6] If, however, the shipment is "being carried under a tariff which provides that any carrier or carriers party thereto shall be liable for loss from perils of the sea, then as to such carrier or carriers the provisions of this section shall be modified in accordance with the tariff provisions which shall be regarded as incorporated into the conditions of this bill of lading." The exemptions from liability accorded to transportation by water, moreover, do not apply to "lighterage in or across rivers, harbors, or lakes when performed by or on behalf of rail carriers."

Other contract terms of the uniform domestic bill of lading govern the time within which loss and damage claims should be made, and suits to recover loss or damage should be instituted;[7] the cost incident to necessary cooperage; the compression of cotton bales; the delivery of grain in elevators; the storage in railroad or public storage warehouses of freight not removed within the free time permitted in the carriers' storage and demurrage tariffs; the disposal of unclaimed freight; and the right of the carrier to collect freight and other lawful charges. Section 7 specifies that the "owner or consignee shall pay the freight and coverage, if any, and all other lawful charges accruing on said property, but, except in those instances where it may lawfully be authorized to do so, no carrier by railroad shall deliver or relinquish possession at destination of the property covered by this bill of lading until all tariff rates and charges thereon have been paid. The consignor shall be liable for the freight and all other lawful charges, except that if the consignor stipulates by signature, in the space provided for that purpose on the face of this bill of lading that the carrier shall not make delivery without requiring such payment, and the carrier contrary to such stipulation shall make delivery without requiring such payment, the consignor shall not be liable for such charges. Nothing herein shall limit the right of the carrier to require at time of shipment the prepayment or guarantee of the charges. If upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped."

The Interstate Commerce Commission has also prescribed a "uniform livestock contract" that is used in lieu of the "uniform domestic bill of lading" in the shipment of livestock. Its contract terms are similar, except that they include a number of clauses made necessary by the special nature of livestock shipments and by the requirements of the law governing the trans-

[6] See Chapter XLIX.
[7] See Chapter XV.

portation of live animals. Its general form, moreover, distinguishes between "ordinary livestock" and "other than ordinary livestock." The Interstate Commerce Act provides that in the case of ordinary livestock the shipper may not be required to declare their value because the rates applicable to ordinary livestock are not dependent specifically upon the valuation placed upon them by the shipper.

In shipping export freight the shipper may either bill it to the seaboard on a uniform domestic bill of lading and there rebill it on an ocean bill of lading, or he may request the railroad to issue a through export bill of lading. The "uniform through export bill of lading" prescribed by the Interstate Commerce Commission is issued either in "straight" or "order" form, and as far as the transfer and transportation of export cargoes are concerned, the bills apply through to the foreign port of entry or to the designated interior foreign destination. It requires the carriers to see to the transfer and handling of the export commodities at the ports, but it does not relieve the shipper of port cargo charges, nor does it usually state a through or joint rail-ocean freight rate or hold the railroad and ocean carriers jointly liable for loss or damage.

The provisions of the export bill-of-lading contract are divided into three major parts, each of which, so far as liability is concerned, is virtually a separate contract. Part I, which applies to the shipment while in possession of the railroads that carry the export shipment to the port, is similar to the contract terms of the uniform domestic railroad bill of lading, special clauses, however, being included concerning the absence of railroad liability after delivery has been made at the port of export, regarding the settlement of claims and with reference to the duty of the railroad to deliver the shipment to the vessel "as a part of its undertaking as a common carrier." The conditions imposed in Part II, which applies from port to port, are similar to those contained in ocean bills of lading.[8] All of its conditions apply to the export shipment, but complete uniformity is not obtained because any clauses contained in the individual ocean carrier's customary ocean bill of lading

[8] For account of ocean bills of lading see Chapter XLIX.

may be added if they are not inconsistent with Part II. Part III, which governs the shipment beyond the foreign port of entry, provides that the property shall be subject "exclusively to all the conditions imposed by the carrier or carriers completing the transit."

When a shipper elects not to ship subject to the terms of the uniform domestic or through export bills of lading, but instead requests that his shipment be accepted subject to the full liability imposed upon carriers by statute and common law, a "special bill of lading" is prepared by printing, writing, or stamping notation to this effect upon the former, and the shipper is usually required to pay freight rates 10 per cent [9] higher than the rates that apply when shipments are made subject to the customary bill-of-lading conditions. When the United States Government ships freight the railroads issue a "government bill of lading" which contains numerous special conditions and instructions.

3. *Bonds, releases, and guarantees* constitute a third group of shipping documents of direct concern to the shipper or consignee. A bond of indemnity may be required when railroad freight is delivered without presentation of the bill of lading, and also when a freight claim is filed by a claimant who is unable to submit the original bill of lading. In case of shipments on which freight and other charges are to be prepaid or guaranteed, the shipper may be requested to sign a "guarantee." When the freight rate is based specifically upon an agreed or declared value, the shipper is required to sign a "release." Formerly a separate "release" document was prepared, but it is now customary to enter releases on the regular bill of lading and shipping order.

4. Upon the arrival of railroad freight at its destination a "notice of arrival" is sent to the consignee. On some lines it is customary to send out "mailing cards" at certain points immediately upon the arrival of the freight, and notice of arrival may also be served by telephone in case of special arrangement with the consignee. The general practice, however, is to send a "notice of arrival" on forms provided especially for

[9] Subject to a minimum increase of 1 cent per 100 lbs.

that purpose. The freight agent at destination also prepares a *freight bill* which, upon payment of all amounts due the carrier, is signed by the agent or station cashier and serves as a receipt to the consignee. When freight is delivered the consignee is requested to sign a *delivery receipt.* The notice of arrival, freight bill, and delivery receipt are usually standardized in a triplicate form so that they can be prepared at one writing. A less common practice is the so-called "unit billing" system under which these shipping papers and also the bill of lading and the waybill are made out on sheets of the same size and general form and are prepared on a typewriter at one writing at the point of shipment. The arrival notice, freight bill, and delivery receipt are in these cases forwarded to the delivering freight agent from the receiving agency. When freight is prepaid a distinctive *prepaid freight bill* is prepared at the shipping point, or the regular freight bill is stamped with the word "paid." When credit is granted to shippers or consignees, it is customary to prepare a *statement of freight bills* for each concern. Credit transactions are now regulated by the Interstate Commerce Commission and are limited to periods not exceeding 96 hours.

5. Other important shipping papers of direct concern to shippers and consignees are the standardized forms used in filing loss, damage, and overcharge freight claims discussed in Chapter XV; and the additional papers required in case of export and import shipments, referred to in Chapter XLIX. Special forms are also variously used in connection with demurrage and many of the special freight services that were described in Chapters III to VI, inclusive.

Billing and Freight-Handling Operations at Freight Stations

Billing and freight-handling methods vary at different stations in accordance with the general policies of different railroads and the business organizations maintained at particular freight agencies. On any given railroad the essential billing and freight-handling operations are performed at all freight stations that receive freight and deliver freight to the shipping public, but station methods vary. A large freight agency may

subdivide its functions between a freight house or platform organization and an office or clerical staff. The latter frequently includes a general office, a cash department, a rate and waybill department, a station accounting department, a cash department, a claim department, and a car record and demurrage department. The number of station departments maintained in addition to the freight house or platform department, however, varies and the policy at some stations is not to recognize distinct clerical departments.

At a large station the handling of cargo at the freight houses is usually supervised directly by a general and an assistant general foreman. As shippers present outbound bills of lading and shipping orders the papers are checked by route clerks as to routing instructions, and in case of unrouted freight, proper routing instructions are indicated, and proper loading classification numbers are also marked on shipping orders. Receiving clerks check the documents against the freight received at the freight house, affix on the bill of lading the agent's stamp and their own initials, return it to the shipper and arrange the shipping order for use by trucking gangs and tallymen, or checkers. Weights are determined, the freight is loaded into freight cars, and messengers carry the shipping orders from the tallymen's desk to the station's rate and billing department. Men are also employed at the freight house to clean cars, repair or reinforce packages of freight, tag or card outbound cars containing certain kinds of freight, close car doors, seal cars and prepare seal records; and stations handling outbound carload freight loaded by shippers employ men to perform the necessary outside duties incident to such shipments.

Inbound freight is handled similarly at the freight house and some employees are frequently shifted from one class of business to the other. Delivery clerks require consignees to sign the delivery receipts, that are prepared in the station accountant's office, and they make notations upon the delivery receipts in case of known shortage or damage. Upon receipt of evidence that amounts due have been paid or satisfactory arrangements have been made with the station's cash depart-

ment, they issue delivery permits which enable consignees to obtain possession of their freight. Meanwhile, tallymen or checkers, and trucking or unloading gangs unload the freight that is to be unloaded by the carrier, check it against the delivery receipts or inbound waybills, and prepare check reports that are sent to the agent's notice clerks for use in the final preparation of arrival notices. Provision is also made for the opening of car doors, the taking of car seal records, the piling of inbound freight in assigned places awaiting delivery, the actual physical delivery to consignees who present delivery permits, and for warehousing freight. Yard clerks may be employed to make delivery of inbound carload freight direct to consignees at private sidings or on public delivery tracks, to obtain a delivery receipt, and to keep a record of car seals.

Shippers and consignees obviously have direct dealings with the agent's office as well as with the freight house organization, and the office organization also performs waybilling, accounting, and other necessary agency work. The agent's rate and billing department[10] quotes rates to shippers and consignees; receives shipping orders from the freight house for the purpose of determining correct freight classification and freight rates, and of checking junction points and the block numbers that were assigned for loading purposes; advises other agency departments concerning freight rates and classification; and prepares outbound waybills and waybill abstracts or reports.

The *waybill* is one of the principal documents required by railroads for their own use in freight transportation. A waybill is made out at the forwarding freight station for each carload of freight and as many waybills as may be needed are prepared for L. C. L. freight loaded in any one car. Separate forms may be used for local and interline shipments and also for particular kinds of freight or freight services. The many items listed in the waybill become self-explanatory when it is realized that this paper performs a number of different functions. It is a basic freight revenue accounting document needed by the railroad's Accounting Department; it serves as a check against freight unloaded from cars, and contains the data upon which

[10] Separate rate and billing departments may be maintained.

delivery receipts, freight bills, and arrival notices are based at the delivering station, and it is the Operating Department's official car routing document. Freight train conductors, junction agents, and yard employees follow the instruction contained in the waybill. When the regular waybill is not completed in time to be forwarded with the freight car a "card waybill," "slip bill," or "car ticket" is prepared for the train conductor and the waybill is later forwarded by train mail to the delivering freight agent.

The agent's Accounting Department is charged not only with keeping the station's freight record books and with accounting work such as the preparation of station balance sheets, consolidated records, exhibits, summaries, etc., but also frequently performs other essential station activities: the sorting of inbound waybills, verifying their classifications and freight rates, making corrections and checking calculations and extensions, preparing freight bills, arrival notices, delivery receipts, copy waybills, bills covering demurrage, storage and special freight charges, and accounts of many kinds, waybill abstracts or reports, various correction and adjustment notices, and also preparing abstracts of miscellaneous freight revenues required by the railroad's Accounting Department.

The agent's notice clerk, who may be included in the accounting staff or may report direct to the agent's chief clerk, compares the arrival notices received from the accountant's transcribing clerks with the check reports received from the inbound freight house, adjusts discrepancies if possible, and mails the notices to the consignee. By special arrangement the consignee may also be notified by telephone.

The duties of the agent's car record clerk vary at different stations. Car record clerks may prepare station car records, and compute demurrage and prepare demurrage bills, but at some stations the demurrage work is performed by separate Demurrage and Storage Bureaus. The car record clerks may send out the special notices required under certain conditions by the carriers' demurrage rules and weather reports may be prepared. The clerks may prepare waybill envelopes and card waybills, give directions as to the placement of cars at freight houses or

on team tracks and private sidings, inform delivering agents as to the weights of cars forwarded on card waybills that do not show weights, and perform other duties assigned to them by the agent.

The agent's cash department collects freight charges on outbound and inbound shipments; acknowledges receipt on the bill of lading in case of outbound prepaid shipments, and on the freight bill in case of inbound freight; makes payments in case of overcharges adjusted directly at the station; prepares bank deposit slips and the cash reports required by the Treasury Department and makes cash deposits; reports delinquent credit accounts; sends statements to the station accountant; and keeps the station's cash book. Other duties may also be performed, such as the preparation of statements of freight bills for concerns to which credit is extended, and the administration of the United States customhouse routine. The cashiers who collect freight charges, may for the convenience of shippers and consignees be located at the station's freight houses, instead of at the agent's office.

The agent's claim department usually has charge of over, short, and damage reports, freight claims, claim briefs, tracers, reports of stolen freight, and other station work incident to freight claims or occurrences that complicate deliveries and may result in freight claims. The claims received from shippers or consignees are forwarded to the railroad's Freight Claim Department for adjustment.[11] A freight agent's office organization may also include time and tonnage clerks who take a record of the working time of station employees or the tonnage handled by those employed on a tonnage basis; and a supply clerk, filing clerks, general clerks, stenographers, watchmen, janitors, messengers, etc. A chief clerk is usually provided to assist the agent at a large freight station in supervising his office organization, and provision may also be made for the employment of an assistant chief clerk. At stations where definite departments are recognized, each department of the agent's office organization is usually under the immediate charge of a head clerk such as the head waybill clerk, the station accountant, the head cashier, and

[11] See Chapter X.

the head claim clerk. In discussing freight handling it was noted that an agent's freight house organization also includes clerks such as receiving clerks, route clerks, delivery clerks, tallymen and perhaps a storage clerk, who are usually supervised directly by a general foreman and an assistant general foreman.

NOTE

CONTRACT TERMS AND CONDITIONS OF DOMESTIC BILL OF LADING

Sec. 1. (*a*) The carrier or party in possession of any of the property herein described shall be liable as at common law for any loss thereof or damage thereto, except as hereinafter provided.

(*b*) No carrier or party in possession of all or any of the property herein described shall be liable for any loss thereof or damage thereto or delay caused by the act of God, the public enemy, the authority of law, or the act or default of the shipper or owner, or for natural shrinkage. The carrier's liability shall be that of warehouseman, only, for loss, damage, or delay caused by fire occurring after the expiration of the free time allowed by tariffs lawfully on file (such free time to be computed as therein provided) after notice of the arrival of the property at destination or at the port of export (if intended for export) has been duly sent or given, and after placement of the property for delivery at destination, or tender of delivery of the property to the party entitled to receive it, has been made. Except in case of negligence of the carrier or party in possession (and the burden to prove freedom from such negligence shall be on the carrier or party in possession), the carrier or party in possession shall not be liable for loss, damage, or delay occurring while the property is stopped and held in transit upon the request of the shipper, owner, or party, entitled to make such request, or resulting from a defect or vice in the property, or for country damage to cotton, or from riots or strikes.

(*c*) In case of quarantine the property may be discharged at risk and expense of owners into quarantine depot or elsewhere, as required by quarantine regulations or authorities, or for the carrier's dispatch at nearest available point in carrier's judgment, and in any such case carrier's responsibility shall cease when property is so discharged, or property may be returned by carrier at owner's expense to shipping point, earning freight both ways. Quarantine expenses of whatever nature or kind upon or in respect to property shall be borne by the owners of the property or be a lien thereon. The carrier shall not be liable for loss or damage occasioned by fumigation or disinfection or other acts required or done by quarantine regulations or authorities even though the same may have been done by carrier's officers, agents, or employees, nor for detention, loss, or damage of any kind occa-

sioned by quarantine or the enforcement thereof. No carrier shall be liable, except in case of negligence, for any mistake or inaccuracy in any information furnished by the carrier, its agents, or officers, as to quarantine laws or regulations. The shipper shall hold the carriers harmless from any expense they may incur, or damages they may be required to pay, by reason of the introduction of the property covered by this contract into any place against the quarantine laws or regulations in effect at such place.

Sec. 2. (*a*) No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market or otherwise than with reasonable dispatch. Every carrier shall have the right in case of physical necessity to forward said property by any carrier or route between the point of shipment and the point of destination. In all cases not prohibited by law, where a lower value than actual value has been represented in writing by the shipper or has been agreed upon in writing as the released value of the property as determined by the classification or tariffs upon which the rate is based, such lower value plus freight charges if paid shall be the maximum amount to be recovered, whether or not such loss or damage occurs from negligence.

(*b*) Claims for loss, damage, or injury to property must be made in writing to the originating or delivering carrier or carriers issuing this bill of lading within six months after delivery of the property (or, in case of export traffic, within nine months after delivery at port of export), or, in case of failure to make delivery, then within six months (or nine months in case of export traffic) after a reasonable time for delivery has elapsed; provided that if such loss, damage, or injury was due to delay or damage while being loaded or unloaded, or damaged in transit by carelessness or negligence, then no notice of claim nor filing of claim shall be required as a condition precedent to recovery. Suits for loss, damage, injury, or delay shall be instituted only within two years and one day after delivery of the property, or in case of failure to make delivery, then within two years and one day after a reasonable time for delivery has elapsed: provided, that in case the claim on which suit is based was made in writing within six months, or nine months in case of export traffic (whether or not filing of such claim is required as a condition precedent to recovery), suit shall be instituted not later than two years and one day after notice in writing is given by the carrier to the claimant that the carrier has disallowed the claim or any part or parts thereof specified in the notice.

(*c*) Any carrier or party liable on account of loss of or damage to any of said property shall have the full benefit of any insurance that may have been effected upon or on account of said property, so far as this shall not avoid the policies or contracts of insurance: provided, that the carrier reimburse the claimant for the premium paid thereon.

Sec. 3. Except where such service is required as the result of carrier's negligence all property shall be subject to necessary cooperage and bal-

ing at owner's cost. Each carrier over whose route cotton or cotton linters is to be transported hereunder shall have the privilege, at its own cost and risk, of compressing the same for greater convenience in handling or forwarding, and shall not be held responsible for deviation or unavoidable delays in procuring such compression. Grain in bulk consigned to a point where there is a railroad, public or licensed elevator, may (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of the same kind and grade without respect to ownership (and prompt notice thereof shall be given to the consignor), and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder.

Sec. 4. (*a*) Property not removed by the party entitled to receive it within the free time allowed by tariffs, lawfully on file (such free time to be computed as therein provided), after notice of the arrival of the property at destination or at the port of export (if intended for export) has been duly sent or given, and after placement of the property for delivery at destination has been made, may be kept in vessel, car, depot, warehouse or place of delivery of the carrier, subject to the tariff charge for storage and to carrier's responsibility as warehouseman, only, or, at the option of the carrier, may be removed to and stored in a public or licensed warehouse at the place of delivery or other available place, at the cost of the owner, and there held without liability on the part of the carrier, and subject to a lien for all freight and other lawful charges, including a reasonable charge for storage.

(*b*) Where nonperishable property which has been transported to destination hereunder is refused by consignee or the party entitled to receive it, or said consignee or party entitled to receive it fails to receive it within 15 days after notice of arrival shall have been duly sent or given, the carrier may sell the same at public auction to the highest bidder, at such place as may be designated by the carrier: provided, that the carrier shall have first mailed, sent, or given to the consignor notice that the property has been refused or remains unclaimed, as the case may be, and that it will be subject to sale under the terms of the bill of lading if disposition be not arranged for, and shall have published notice containing a description of the property, the name of the party to whom consigned, or, if shipped order notify, the name of the party to be notified, and the time and place of sale, once a week for two successive weeks, in a newspaper of general circulation at the place of sale or nearest place where such newspaper is published: provided, that 30 days shall have elapsed before publication of notice of sale after said notice that the property was refused or remains unclaimed was mailed, sent, or given.

(*c*) Where perishable property which has been transported hereunder to destination is refused by consignee or party entitled to receive it, or said consignee or party entitled to receive it shall fail to receive

it promptly, the carrier may, in its discretion, to prevent deterioration or further deterioration, sell the same to the best advantage at private or public sale: provided, that if time serves for notification to the consignor or owner of the refusal of the property or the failure to receive it and request for disposition of the property, such notification shall be given, in such manner as the exercise of due diligence requires, before the property is sold.

(*d*) Where the procedure provided for in the two paragraphs last preceding is not possible, it is agreed that nothing contained in said paragraphs shall be construed to abridge the right of the carrier at its option to sell the property under such circumstances and in such manner as may be authorized by law.

(*e*) The proceeds of any sale made under this section shall be applied by the carrier to the payment of freight, demurrage, storage, and any other lawful charges and the expense of notice, advertisement, sale, and other necessary expense and of caring for and maintaining the property, if proper care of the same requires special expense, and should there be a balance it shall be paid to the owner of the property sold hereunder.

(*f*) Property destined to or taken from a station, wharf, or landing at which there is no regularly appointed freight agent shall be entirely at risk of owner after unloaded from cars or vessels or until loaded into cars or vessels, and, except in case of carrier's negligence, when received from or delivered to such stations, wharves, or landings, shall be at owner's risk until the cars are attached to and after they are detached from locomotive or train or until loaded into and after unloaded from vessels.

Sec. 5. No carrier hereunder will carry or be liable in any way for any documents, specie, or for any articles of extraordinary value not specifically rated in the published classifications or tariffs unless a special agreement to do so and a stipulated value of the articles are indorsed hereon.

Sec. 6. Every party, whether principal or agent, shipping explosives or dangerous goods, without previous full written disclosure to the carrier of their nature, shall be liable for and indemnify the carrier against all loss or damage caused by such goods, and such goods may be warehoused at owner's risk and expense or destroyed without compensation.

Sec. 7. The owner or consignee shall pay the freight and average, if any, and all other lawful charges accruing on said property; but, except in those instances where it may lawfully be authorized to do so, no carrier by railroad shall deliver or relinquish possession at destination of the property covered by this bill of lading until all tariff rates and charges thereon have been paid. The consignor shall be liable for the freight and all other lawful charges, except that if the consignor stipulates, by signature, in the space provided for that purpose on the

face of this bill of lading that the carrier shall not make delivery without requiring payment of such charges and the carrier, contrary to such stipulation, shall make delivery without requiring such payment, the consignor shall not be liable for such charges. Nothing herein shall limit the right of the carrier to require at time of shipment the prepayment or guarantee of the charges. If upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped.

Sec. 8. If this bill of lading is issued on the order of the shipper, or his agent, in exchange or in substitution for another bill of lading, the shipper's signature to the prior bill of lading as to the statement of value or otherwise, or election of common law or bill of lading liability, in or in connection with such prior bill of lading, shall be considered a part of this bill of lading as fully as if the same were written or made in or in connection with this bill of lading.

Sec. 9. (*a*) If all or any part of said property is carried by water over any part of said route, such water carriage shall be performed subject to all the terms and provisions of, and all the exemptions from liability contained in, the Act of the Congress of the United States, approved on February 13, 1893, and entitled "An act relating to the navigation of vessels, etc.," and of other statutes of the United States according carriers by water the protection of limited liability, and to the conditions contained in this bill of lading not inconsistent therewith or with this section.

(*b*) No such carrier by water shall be liable for any loss or damage resulting from any fire happening to or on board the vessel, or from explosion, bursting of boilers or breakage of shafts, unless caused by the design or neglect of such carrier.

(*c*) If the owner shall have exercised due diligence in making the vessel in all respects seaworthy and properly manned, equipped, and supplied, no such carrier shall be liable for any loss or damage resulting from the perils of the lakes, seas, or other waters, or from latent defects in hull, machinery, or appurtenances whether existing prior to, at the time of, or after sailing, or from collision, stranding, or other accidents of navigation, or from prolongation of the voyage. And, when for any reason it is necessary, any vessel carrying any or all of the property herein described shall be at liberty to call at any port or ports in or out of the customary route, to tow and be towed, to transfer, trans-ship, or lighter, to load and discharge goods at any time, to assist vessels in distress, to deviate for the purpose of saving life or property, and for docking and repairs. Except in case of negligence such carrier shall not be responsible for any loss or damage to property if it be necessary or is usual to carry the same upon deck.

(*d*) General average shall be payable according to York-Antwerp Rules, 1890, and, as to any matter not therein provided for, according

to the law and usage of the port of New York. If the owners shall have exercised due diligence to make the vessel in all respects seaworthy and properly manned, equipped and supplied, it is hereby agreed that in case of danger, damage or disaster resulting from faults or errors in navigation, or in the management of the vessel, or from any latent or other defects in the vessel, her machinery or appurtenances, or from unseaworthiness, whether existing at the time of shipment or at the beginning of the voyage (provided the latent or other defects or the unseaworthiness was not discoverable by the exercise of due diligence), the shippers, consignees and/or owners of the cargo shall nevertheless pay salvage and any special charges incurred in respect of the cargo, and shall contribute with the shipowner in general average to the payment of any sacrifices, losses or expenses of a general average nature that may be made or incurred for the common benefit or to relieve the adventure from any common peril.

(*e*) If the property is being carried under a tariff which provides that any carrier or carriers party thereto shall be liable for loss from perils of the sea, then as to such carrier or carriers the provisions of this section shall be modified in accordance with the tariff provisions, which shall be regarded as incorporated into the conditions of this bill of lading.

(*f*) The term "water carriage" in this section shall not be construed as including lighterage in or across rivers, harbors, or lakes, when performed by or on behalf of rail carriers.

Sec. 10. Any alteration, addition, or erasure in this bill of lading which shall be made without the special notation hereon of the agent of the carrier issuing this bill of lading, shall be without effect, and this bill of lading shall be enforceable according to its original tenor.

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CHAPTER XII

SHIPPING RULES AND FREIGHT ROUTING

In shipping and receiving railroad freight, shippers and consignees as well as railroad freight agencies and freight claim agents are concerned with the carriers' shipping rules. The rules that govern special transit and terminal freight services and privileges are published in the carriers' special service tariffs and many of the more important of these rules have been referred to in earlier chapters. In discussing railroad bills of lading mention was also made of certain general shipping rules, but additional rules are published in the Consolidated Freight Classification, and many of the conference rulings of the Interstate Commerce Commission relate to the shipping rules that in interstate commerce customarily apply in the general line-haul and terminal freight services. A substantial measure of uniformity has been attained, for the Commission's rulings are general in scope, the Commission has prescribed uniform or standard bills of lading and, subject to a few exceptions, the shipping rules of the Consolidated Freight Classification apply in all of the major classification territories. The carriers, however, reserve the right to publish in their freight rate tariffs and in classification exception sheets or tariffs, additional and also special rules that take precedence over the general shipping rules published in the Consolidated Freight Classification.

General Shipping Rules

In preparing his bill of lading and shipping order and delivering certain kinds of freight, the shipper may be concerned with various rules under which particular articles may be refused for shipment in the railroad freight service. The Consolidated Freight Classification rules state that, unless otherwise especially provided for, currency or coin, valuable papers, jew-

elry, precious metals, and other articles of extraordinary value will not be accepted as freight, and the uniform domestic bill of lading provides that such articles, unless specifically rated in a classification or tariff, need not be accepted for shipment unless a special agreement and a stipulated value are endorsed on the bill of lading. If articles of extraordinary value are shipped without declaration of their nature the carrier is not liable for loss or damage. The Consolidated Freight Classification, moreover, authorizes the carriers to refuse acceptance of freight that is apt to permeate or damage equipment or other freight, or to accept such articles "subject to delay for suitable equipment." The rules of the Interstate Commerce Commission governing the shipment of explosives and other dangerous articles contain extensive lists of forbidden articles that may not be shipped in the freight service, and also provide that explosives and other dangerous articles may not be accepted for shipment unless they are packed, marked, labeled, described, and certified in a prescribed manner.

The preparation of billing for ordinary freight not covered by special billing rules is also governed by the Consolidated Freight Classification. In billing freight, descriptions of articles should be definite and should conform to those contained in the governing classification. False representation by shippers and false billing by carriers is prohibited, special reference being made in the rules to the penalties imposed in the Interstate Commerce Act. Freight Agents are required to exercise care in billing to assure accuracy and avoid false descriptions, and they, their inspectors, or those of the carriers' Weighing and Inspection Bureaus are authorized to inspect the contents of packages and cars. As a general rule the bill of lading and shipping order may contain the name of but one shipper, one consignee and one destination, subject to the general proviso that under certain conditions the name of an additional party on whom notice of arrival is to be served may also be included. The Consolidated Freight Classification also provides that freight shipped at the regular rates published in the railroads' tariffs must be billed on the uniform bills of lading or the uniform livestock contract prescribed by the Interstate Commerce Commission. If the

shipper requests a special bill of lading imposing greater liability upon the carriers the governing freight rate is to be increased so as to cover the additional risk assumed.[1]

The Consolidated Freight Classification contains rules that require the shipper to mark L. C. L. freight accurately, legibly and durably, and the Interstate Commerce Commission has also made this a duty of the shipper. Carload freight need not, as a general rule, be marked except in case of freight forwarded in excess of full cars, the excess being less than 20,000 pounds. The general marking rules of the railroads are specific as to what information shall be set out upon each package of L. C. L. freight, and they require the shipper to compare his marks with the bill of lading and shipping order.

Detailed packing rules and specifications are also published in the Consolidated Freight Classification. Not only may Freight Agents refuse to accept freight that is not adequately packed, or to delay shipment until adequate packing is provided, but many of the classification ratings assigned by the carriers' classification committees are based specifically upon packing that conforms to their published specifications as to containers. Specifications are published for many kinds of freight containers, the certificates of manufacturers of containers are required, and shippers are obliged to certify their packing in the bills of lading and shipping orders. Penalties in the form of higher class ratings or higher freight rates are imposed when packing specifications and requirements are not fully complied with by the shipper.

Many general shipping rules, in addition to those previously referred to, affect the amount of the shipper's freight charges, and others govern the payment of freight charges. The uniform bill of lading provides that the owner or consignee shall pay all freight charges accruing on railroad freight. The shipper or consignor, however, is held liable for freight charges and he is therefore authorized to stipulate in the bill of lading that delivery is not to be made without payment of such charges. If delivery is made contrary to such stipulation, the carrier agrees that the consignor shall not be held liable for unpaid

[1] For general rule see page 129 of Chapter XI.

freight bills.[2] The uniform bill of lading also authorizes the railroads to require prepayment or guarantee of freight charges. The Consolidated Freight Classification prohibits the advance of charges to shippers, owners, consignees or their agents, or to draymen or warehousemen, and provides that freight charges, subject to certain general exceptions, will be computed on the basis of the gross weight of freight and containers unless a different rule is specifically provided for. The general exceptions referred to are that estimated weights may be used in computing charges when such weights are authorized; that established minimum carload weights must be observed; and that authorized allowances or charges for temporary blocking, dunnage, etc., must be made.

The Consolidated Classification contains many other detailed, yet important rules that may seriously affect freight charges. When, for example, a package of L. C. L. freight contains more than one class of freight the charge will be computed on the basis of the rating applicable to the highest classed article, and when combination articles, such as a combination ironing board and stepladder, are shipped they will be charged for at the rating of the highest classed article unless the combination has been specifically classified. Minimum charges are prescribed for single shipments of L. C. L. freight, and maximum charges on such shipments are limited by a rule which provides that "the charge for a less-than-carload shipment must not exceed the charge for a minimum carload of the same freight at the carload rate," plus prescribed loading and unloading charges. Minimum carload freight charges are prescribed in a rule which provides that the lowest weight on which carload charges may be computed is the minimum carload weight lawfully assigned to the shipment. Another rule fixes a general minimum carload

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[2] An amendment of March 4, 1927, to the Interstate Commerce Act, provides that the consignee (other than the shipper or consignor) is not liable for charges found to be due after delivery, if he is merely an agent and has no beneficial title in the property and has notified the delivering carrier to that effect; and if, in case freight is consigned or diverted to a point other than the point specified in the original bill of lading, he has also named the beneficial owner. In the former case the shipper or consignor is liable for the additional charges, and, in the latter case, the beneficial owner.

charge of $15 per car, various enumerated commodities and switching charges, however, being specifically excepted. The maximum carload freight charge on a fully loaded car shall not exceed the charges that would apply "for the same lot of freight if taken as a less-than-carload shipment." Definite provision is also made for the computation of freight charges when carload freight is offered in excess of the amount that can be loaded into or on one freight car, and when a carload shipment includes articles that, because of their length, require more than one freight car.

Among the most important rules affecting freight charges are those governing minimum carload weights and mixed carloads of freight. The minimum carload weights published in the carriers' freight classifications, and classification exceptions, or in their rate tariffs serve as the basis in computing carload freight charges unless the actual or authorized estimated weight of a shipment exceeds the carload minimum. The carload minimum weights assigned to different articles depend partly upon the physical ability to load a known weight into a car of a given length and partly upon commercial usage in particular industries or trades. Some of the minimum carload weights published in the Consolidated Freight Classification are specific in that they apply regardless of the length of the freight car ordered or used by the shipper. Other commodities [3] take "graduated minimum" carload weights that vary for cars of different lengths. In the latter case the minimum weights published in the Classification apply when shipments are made in cars having a length of 36 feet 6 inches or less. When the shipper orders a longer car the basic minimum carload weights do not apply; instead, a higher graduated minimum weight ascertained from a published table or scale applicable to such articles governs the shipment. The graduated scale also applies when the shipper does not specify a car of standard length, but in fact uses a longer car. If, however, he orders a car of standard length and the railroad furnishes a larger car, but one not exceeding 40 feet 6 inches, the graduated scale does not apply unless the loading capacity of the car is actually used; and this

[3] Only articles subject to Rule 34.

is also the general rule when a still larger car is furnished, the carrier under such conditions being given six days within which to provide a car of standard length or one not exceeding 40 feet 6 inches in length.

When a number of different articles are combined in a freight car and shipped as a carload lot, the carriers' mixed carload rules become of primary importance in computing freight charges. Various "specific mixtures" are given definite class ratings in the Consolidated Freight Classification, but the freight charges on many other carload mixtures may be computed in accordance with the general alternatives authorized in Rule 10, and this rule also applies wherever it results in a freight charge lower than would result from the application of an authorized specific mixture rating. Rule 10 provides for three general alternatives:

1. When articles having different classification ratings or freight rates are mixed, the Official Classification Committee authorizes the computation of a carload freight charge by applying the carload rate (class or commodity) of the "highest classed or rated" article to the highest carload minimum weight provided for any of the articles contained in the mixture. The Southern and Western Classification Committees also authorize this general method, but provide that, with the exception of a few groups of commodities, it may not be applied in connection with commodity freight rates.

2. The second alternative of the shipper is to subdivide his mixed carload into two or more parts or carloads for the purpose of computing the freight charge for his shipment. It provides that the charges on each separate carload "will be based upon the carload rate applicable to the highest classed article therein and the highest carload minimum weight provided for any of the articles therein, but if one of the carloads is subject to a commodity rate the carload minimum weight applicable to that rate will apply on such a carload." The separate charges so computed on each separate carload or part into which the mixed carload of freight is subdivided are added, and if the result is less than the charge obtained under the first alternative plan, the shipper is entitled to it.

3. The freight charge on a mixed carload may also be computed by applying carload rates to one or more articles and L. C. L. rates to the remaining articles. It is to be understood in applying these alternative general rules, that actual or authorized estimated weights constitute the weight basis for computing carload freight rates whenever they exceed the highest minimum carload weight.

A fourth alternative is provided in Rule 15 which provides that "the charge for a car fully loaded must not exceed the charge for the same lot of freight if taken as a less-than-carload shipment." When, however, "freight is loaded in a car by the shipper and such car is not fully loaded but is tendered as a carload shipment, and the car is forwarded without other freight therein, the shipment will be charged for as a carload."

Commodities for which specific carload mixtures are not authorized or which are not subject to Rule 10 may be forwarded as carload mixtures but freight charges are in such instances computed by adding those applicable to each of the articles in the freight car. The basis may variously be the L. C. L. rates of the several articles, or the C. L. rate and carload minimum weight of each article, or the C. L. rate and carload minimum weight of one of the articles and the L. C. L. rates of the remaining articles contained in the freight car.

These rules are cited as important examples of the many rules affecting freight charges that are enforced by the railroads. The governing rates are published in freight tariffs, but their use in computing freight charges requires a knowledge of the carriers' shipping rules. The rules contained in the Consolidated Freight Classification are especially important because they apply generally, except when specifically superseded by special rules. Their application is not limited to shipments moving under class rates; they are also applied in connection with many commodity freight rates.

Freight Routing

When a shipper prepares his billing he frequently issues specific instructions to the railroads concerning the route over which each shipment shall move. Definite routing powers were con-

ferred upon the shipper when the Interstate Commerce Act was amended in 1910. Section 15, as interpreted by the Interstate Commerce Commission, enables the shipper to give routing instructions that are binding upon the carriers, subject to exceptions and regulations that may be prescribed by the Commission. The freight rate to be charged when the shipper routes his freight is the rate published in the carriers' tariffs for the route selected. Should he specify a route and also a rate which does not lawfully apply via that route the carrier is required to make a reasonable effort to ascertain from him whether the rate or the route given in his instructions shall govern; and if more definite instructions are not given by the shipper, the shipment will be forwarded via the route specified in the bill of lading and the rate for that route shall be collected. When rail-water as well as all-rail routes are available and the shipper fails to indicate which class of service he desires, the railroad freight agent is similarly required to make a reasonable attempt to ascertain the shipper's wishes, and if the shipper fails to give instructions, the shipment may be routed all-rail.

No routing powers are conferred upon the consignee by the Interstate Commerce Act, but he frequently is in a position to influence the shipper. The sales contract between the shipper and consignee, particularly when sales are made F. O. B., shipping point and freight charges are to be paid by the consignee, may in fact enable the consignee to dictate the routing instructions that the shipper shall give to the carriers.

Railroad freight not routed by the shipper is known as unrouted freight, and such shipments are routed by the carrier, subject to certain qualifications. As the shipper is entitled to the lowest freight rate, the freight agent is required to forward an unrouted shipment "via the cheapest reasonable route known to him of the class (of service) designated by the shipper," but if, as was previously stated, after making a reasonable effort, no instructions are received from the shipper as to the class of service desired, the freight agent may route the shipment all-rail. The initial carrier, moreover, may not discriminate unfairly between its several connections in the distribution of unrouted freight, and when a bill of lading has been

issued the carriers are held responsible for the routing shown in it.

Other routing powers of the railroads have to do with shippers' routing instructions that are unreasonable or impossible of fulfillment. In case of conflict between specified rates and routes, or when floods or washouts occur, the carriers are required to consult the shipper for further instructions. Failure to consult the shipper before rerouting freight because of flood or washout results in the carrier being held responsible for any increase in transportation charges that may occur. In times of traffic emergency the railroads are authorized to establish embargoes temporarily closing congested routes.

The routing powers of both shipper and carrier are subject to regulation by the Interstate Commerce Commission. When the Commission finds that a railroad is for any reason unable to transport the traffic offered to it so as properly to serve the public, the Commission may set aside the shipper's routing power and itself issue routing instructions. The rate lawfully in effect over the route designated by the shipper, however, is protected, and in case of unrouted freight the shipper retains his general right to the rate in effect over the cheapest reasonable route. The shipper's routing power is also "subject to such reasonable exceptions and regulations as the Interstate Commerce Commission shall from time to time prescribe."

The railroad's power to route freight for which routes have not been specified may similarly be set aside by the Commission. Congress has authorized the Commission, "whenever the public interest and a fair distribution of traffic require, [to] direct the route which such traffic shall take after it arrives at the terminus of one carrier or at the junction point with another carrier and is there delivered to another carrier." The Commission has also announced various conference rulings that limit the carrier's powers when shipper's routing instructions are unreasonable or impracticable. Further influence over routing is exerted by the Commission through its power, subject to limitations contained in the Interstate Commerce Act, to establish through routes and joint-freight rates in addition to such as may be established voluntarily by the carriers.

Personal friendships formed by railroad freight solicitors and valuable information services performed by them frequently influence shippers when they issue routing instructions, but when the charges and freight services of different available routes are not substantially uniform, an industrial traffic manager usually has in mind the attainment of some definite transportation or marketing purpose. If the controlling purpose in routing a particular shipment is to reduce freight charges to a minimum he will distinguish between the general classes of service—all-rail, rail-water, and all-water—each of which frequently has distinctive freight rates, and he may also in some instances find it profitable to ship in motor trucks. He may have the option of routing through many different junction points with resulting differences in freight rates. A saving may result from the pooling or consolidation of L. C. L. shipments, and he may find that this can be accomplished more readily on some routes than on others. Perhaps a saving in freight charges may be obtained by billing a shipment to a large center for reshipment by motor truck to a near-by smaller town. When routing export freight from interior shipping points, he may consider the combined charges—rail, ocean, and port—through all available ports of export. When routing a shipment to obtain the lowest freight charges he will also consider transportation charges and costs other than freight rates. The aggregate bill includes freight charges and all special charges and costs incurred en route and at the terminals, those paid directly to the carriers, and cartage, storage, marine insurance or other charges or costs that may be incurred in connection with a shipment.

When promptness in delivery is the major purpose of the shipper in routing a particular shipment, the freight service rather than the aggregate freight bill will be the primary consideration. A more expensive route may be selected deliberately because experience or a careful study of available alternatives convinces the shipper that a particular route will result in prompt delivery to the consignee. The shipper will consider not merely the length of the various routes, but the nature of their services, the operation of "time," "preference," "arranged,"

or other expedited freight services, the operation of through package cars, the number and kind of transfers, the favorable location of a freight house, direct connection with a private siding, the possibility of making delivery without the necessity of an interline switching service, the possibility of billing a shipment to a large city for prompt reshipment or truck delivery to smaller destinations and the known general efficiency with which certain freight agencies are operated. In routing export freight primarily for prompt delivery, the shipper will also consider the steamship services from the ports of export and the promptness with which freight can be transferred from the rail to the ocean carrier. During periods of congestion, the fact of congestion becomes the controlling routing consideration. In times of congestion the most direct routes and those normally providing the promptest freight service may be among the first to become clogged.

At times the special freight services and privileges described in earlier chapters may also become routing considerations not merely because of their influence upon the aggregate freight bill but because the shipper or consignee may especially value those offered by particular carriers. Certain reconsignment, storage, milling, or fabrication-in-transit or other transit points, for example, may be so located as best to serve the purpose of a particular shipper or consignee; an especially desirable peddler car service may be offered, or some other special transit or terminal service or privilege of a particular carrier may best meet the need of the industrial traffic manager.

A shipper may also issue routing instructions especially designed to reduce the danger of loss or damage. When shipping perishables promptness in delivery is especially important, but the shipper may know from experience that the refrigeration service of particular routes, as compared with others, is especially efficient or that their perishable freight services are exceptionally dependable. Fragile packages and livestock are also especially subject to loss and damage, and the records of certain routes may be more favorable than those of other routes. The number of transfers and the method of transferring L. C. L. freight, the operation of industrial trap cars, the possibility of

loading or unloading carload freight on private sidings, and other service considerations may affect loss and damage as well as promptness of delivery or aggregate freight charges.

Other routing considerations are the prompt settlement of claims by carriers, and their willingness or ability to report the location of cars and to keep records at junction points so as to reduce or eliminate the necessity of tracing cars. Shippers who sell steel or other materials to railroad companies, moreover, may be influenced by the importance of certain carriers as customers.

The routing powers of the shipper are important because they enable him so to direct the movement of his freight as best to meet the conditions governing each particular shipment. To route a shipment intelligently, the shipper must be informed and careful. Otherwise his routing instructions may result in needlessly large freight bills or may prevent the carriers from giving him the advantage of their most efficient and most expedited services.

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CHAPTER XIII

FREIGHT TRAFFIC DEVELOPMENT

BECAUSE the railroads have had to abandon or modify some of their earlier methods it is easy to assume that little is being done or can be done to develop freight traffic. No assumption is more erroneous. Extensive traffic and development forces are maintained by every large railroad system,[1] and few steps are taken in the adjustment of freight charges, in the adoption of improved freight services, in the making of interline traffic arrangements, or in the expenditure of funds for construction, improvements or consolidations, without considering their probable effect upon traffic.

Rate-Making and Traffic Development

The fixing of the general level of freight rates under the rule of rate-making of the Transportation Act of 1920, which rule was adopted to provide the carriers, if practicable, a fair return on the value of their transportation properties in defined traffic territories, by no means precludes the adjustment of rates with reference to their effect upon freight traffic. When the general level of freight rates was reduced by order of the Interstate Commerce Commission in 1922, one of the considerations to which much attention was given was the stimulating effect that a general reduction would probably have upon American business and consequently upon the volume of railroad freight traffic. The rule of rate-making, moreover, does not obviate the necessity of making individual rate adjustments and of establishing and maintaining territorial rate structures. Rebates and other personal rate favors and also unfair discrimination between different places and classes of traffic are prohibited by law, and both individual freight rates and rate structures are subject to public regulation; but the effect of rates upon traffic still re-

[1] See Chapter X.

mains an important rate-making factor. The purpose of this chapter is not to discuss rate-making, but to indicate briefly how freight rates are now utilized to develop traffic.

Instead of cutting rates, paying rebates or otherwise offering unfair advantages in order to obtain traffic, the railroads now make freight rates to promote traffic not secretly but openly, and general rather than special action is taken. Many commodity rates lower than the prevailing class rates are made not only because lower costs of service may in some instances make such rates possible, but also because the lower rates may stimulate traffic. Joint rates and proportional rates that apply to interline shipments, and which usually are lower than a combination of local freight rates, are often established partly to simplify the quoting of rates but more to facilitate interline traffic movements. The differential rates authorized via circuitous routes by rail or rail-water and by other routes that cannot compete without a favorable rate adjustment, may be justified by service differences or lower cost of service; but the primary purpose of differentials is usually to enable the longer routes to obtain a fair share of the total available traffic. The export and import railroad rates now in effect between interior points and many of the ocean ports of the United States and Canada were established primarily for the purpose of equalizing the competition of rival ports and inland transportation routes, and of distributing the available export and import traffic among the several ports and routes. The adjustment of railroad freight rates, so far as the Interstate Commerce Act and the Interstate Commerce Commission will permit, for the direct purpose of enabling the railroads to compete against rival coastwise carriers for intercoastal traffic is another example of the general relationship between rates and traffic development. So, also, is the common practice of fixing the railroad rates of rival producing districts and rival markets so as to enable the sections to compete and to provide traffic for the carriers serving them. One of the basic principles of rate-making is that freight rates must be made "so as to move the traffic," and the purpose is not merely to move existing traffic but also to develop business so as constantly to increase the volume of future traffic.

The railroads are giving increasing attention to improved freight services as a means of developing traffic; they are competing more largely in services than in rates. Indeed, the carriers are somewhat less free to adjust rates with reference to traffic considerations than they have been in the past, because the Interstate Commerce Commission now tends to emphasize the cost-of-service principle of rate-making. The Commission is applying the long- and short-haul clause of the Interstate Commerce Act more stringently than formerly, and, by establishing an increasing number of distance rate scales, it has begun to standardize rate structures.[2] Traffic considerations are not ignored and cannot be disregarded by the Commission, but its general regulatory policies naturally limit the discretion of the carriers' traffic officers.

Freight Traffic Solicitation

Much of what has been said in earlier chapters concerning freight services is pertinent in this connection. The establishment of expedited services for many kinds of freight, the increasing number of through package cars for L. C. L. traffic, the attention that is being given to motive power and to freight equipment including specialized cars and improved facilities, the expenditure of large sums on terminal improvements, the construction of private sidings, the offering of many special freight services and privileges and advantages, these have become the most important talking points of the railroad traffic solicitor.

The railroads are not content to wait until the shipping public becomes aware of the rates and service advantages of different routes. Each company has a soliciting force in its Freight Traffic Department[3] for the same reason that an industrial concern maintains a staff of salesmen. The freight station agents of the Operating Department, directly or in coöperation with the Traffic Department, are also expected to solicit traffic, and the Traffic Departments of some railroads now encourage coöperation on the part of all railway employees with whatever

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[2] See Chapter XVI.

[3] See Chapter X for organization of the Freight Traffic Department and for various types of traffic solicitors.

departments they may be connected. In some instances traffic is also solicited by railroad-owned "fast freight lines."[4]

Some of the traffic solicitors are located at cities on the company's lines and others are connected with off-line agencies. Each line or through route necessarily stresses its own particular advantages. As is stated in *The Railroad Freight Service:*[5]

> The Solicitors of some lines are in a position to urge favorable differential railroad freight rates or a rail-ocean rate advantage in routing foreign shipments via certain ports. Others may call attention to favorable differences in special freight service charges, to lower cartage or drayage charges due to the location of freight houses or loading tracks, or to the savings that result from a private siding to and from which cars can be switched so as to eliminate wholly drayage costs in the handling of many shipments. The freight bill as a whole may perhaps be emphasized by the solicitor of a carrier whose freight rates do not provide a talking point. Their plea may be one of greater convenience or a gain in time of delivery due to the directness of a particular route, the efficiency of its terminal and junction facilities or the operation of expedited freight services. They may stress the value of certain special freight services or privileges, or a shipper or consignee may perhaps be convinced that his freight will arrive in better condition if shipped via a certain route because transfers en route are wholly eliminated or the number of transfers made is comparatively small, or because of an efficient icing service or other reason advanced by a freight solicitor. The record of loss and damage claims against his line may constitute convincing evidence. If the charges and services of rival lines are substantially alike, the favorable record of one of them with respect to the prompt settlement of freight claims may impress a prospective shipper.

The success of a railroad's traffic soliciting forces, however, does not depend entirely upon the possession of a freight-rate or freight-service advantage. Traffic officials and solicitors are frequently able of themselves to perform services that will gain the good will of shippers or consignees. They may maintain a helpful information service by keeping patrons informed as to current changes in freight and other charges, and in routes, shipping rules, railroad and steamship services, and such related matters as advantageous markets, sources of supply, and

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[4] See Chapter IV.

[5] G. G. Huebner and E. R. Johnson, *The Railroad Freight Service*, pp. 341-342.

marketing methods and practices. They may be able to speed up somewhat the settlement of a freight claim by coöperating with the Freight Claim Department or by calling to the attention of that department the importance of arriving at a decision as promptly as possible. Those charged with the development of foreign freight are at times able to accomplish much by co-operating with steamship companies and port authorities, and by performing such services as the booking of cargoes, quoting ocean rates and arranging for transfer and warehouse facilities. In some instances Foreign Freight Agents have endeavored to promote foreign trade by acting as sources of information concerning customhouse or consular regulations, export packing, steamship services, market conditions and methods of exporting.

Occasionally the civic interest of a community in a particular railroad may facilitate traffic solicitation. Frequently, moreover, the purchase of rails and other materials and supplies from industrial concerns by the Purchasing Department of a railroad will influence the routing of many shipments.

There is of course a large personal factor in the equation of traffic solicitation, just as there is in the sale of a commodity. The personality of the traffic solicitor is certain to influence the shipper or the consignee, either one of whom may decide what railroads they will favor. The shipper, as has been explained, has the power to issue binding routing instructions, subject to the limitations referred to in the preceding chapter, and the consignee, likewise, because of his influence as a customer, is frequently able to enforce his wishes with respect to the routing of shipments billed to him.

Traffic Arrangements with Connecting Carriers

Railroads are now less able than formerly to make traffic arrangements or agreements with connecting carriers as to interchange of traffic. Railroads are not allowed to route disproportionate amounts of traffic over favored connections. The Interstate Commerce Act empowers the shipper to route his shipments and requires the railroads to observe his instructions. The law also prohibits unfair discrimination between connecting lines in the distribution of unrouted freight. Connecting rail-

roads may, however, establish through routes and joint rates, and such action may give the lines that are parties to the joint tariff a traffic advantage over routes not covered by joint rates, but the extent of such advantage is limited by the power of the Interstate Commerce Commission to establish additional through routes and joint rates.

Having established a through route, the interested lines, moreover, may solicit traffic through their respective off-line or on-line traffic agencies or through "fast freight line" agencies for the purpose of inducing shippers to route via a particular through route. Although the railroads may not discriminate unfairly between connecting lines in the distribution of unrouted freight, shippers are permitted to route their shipments over whatever available through routes they may prefer.

The railroads may enter into traffic arrangements with domestic steamship lines but they are not permitted to make exclusive or preferential agreements. The Commission may establish through rail-water routes and joint and proportional rates in interstate commerce in addition to any that the carriers may voluntarily establish, and it may order the making of suitable physical connection between rail and water lines. The exclusive traffic agreements that railroads at one time made with favored ocean carriers in the foreign trade have been prohibited by law, and if a railroad enters into traffic arrangements with ocean carriers the Commission has been authorized to require it "to enter into similar arrangements with any and all other lines of steamships operating from said port to the same foreign country."

The railroad ownership or control of coastwise and Great Lakes steamships, with which the owner does or may compete was prohibited in 1912.[6] This law does not, however, entirely prevent railroads from operating steamship services as a means of developing traffic. The primary purpose of the law is to prevent the railroads from curbing water competition. The extension of a rail carrier's service by means of shipping lines to markets not reached directly by its own railroad line is not prohibited; and even when a railroad-owned steamship line operates over a route that is or might be in competition with

[6] See Chapter LIV.

the railroad, the Commission may grant permission if it finds that competition is not prevented or excluded, that the steamship line is being operated in the interest of the public, and that the continued ownership by the railroad is "of advantage to the convenience and commerce of the people."

Industrial and Agricultural Development Work

Many railroads distinguish between freight traffic solicitation and the development or creation of new traffic, and have appointed Industrial Agents, Agricultural Agents or special traffic officials otherwise designated for the express purpose of encouraging production in the territories served by their lines. As was stated in Chapter X some railroads have created comprehensive Industrial, Agricultural, or Development Departments, while other roads employ development officials within the Freight Traffic Department.

Industrial work is primarily concerned with the locating of factories, mills, or other manufacturing enterprises on the lines of particular carriers. Industrial Agents are essentially business promoters. They depend partly upon personal negotiation with individual business concerns; partly upon coöperation with local chambers of commerce, boards of trade and similar organizations, real estate firms, and investment bankers, and partly upon advertising and the publication of statistical and other relevant data in maps and pamphlets. So far as possible these promotion departments work in coöperation with other railroad departments. An Industrial Department is to some extent a statistical and research bureau supplying the Industrial Agents with the data needed in their efforts to attract industries. Inquiries are constantly being received by the department concerning sources of raw material, population and labor supply, living expenses, taxes, banking facilities, fuel and water power, warehousing facilities, private sidings, terminal facilities, freight charges and services, available markets and other factors that may influence the location of prospective enterprises. Much information can be published for general distribution, but more detailed information is needed by Industrial Agents when they confer with prospective business firms. The

personality of the Industrial Agent is of course an important factor in the effective presentation of the advantages claimed for favored locations.

The effectiveness of industrial development work depends in a large measure upon coöperation on the part of other departments. Prompt information concerning freight rates and other charges is obtainable from the Freight Traffic Department, and the recommendations of the Industrial Department concerning rate changes are given prompt attention, though not necessarily accepted. Information relative to freight services may be secured from the Operating and Freight Traffic Departments. When a private siding is desired the Engineering and Operating Departments are consulted. Analyses of ores and minerals are obtained from the Geologist, who is sometimes attached directly to the Industrial or Development Department. Freight claim information is obtained from the railroad's Freight Claim Department; information concerning real estate owned by the railroad from its Real Estate or Land Department; legal advice from the Law Department. Valuable tips and reports are sometimes received from the Freight Station Agents and traffic solicitors. Although the function of the latter is primarily that of traffic solicitation, all of them are requested to be alert about anything that may increase the carrier's traffic. The off-line agencies of the Traffic Department, at many points, are the only permanent off-line offices maintained by a railroad.

Agricultural development work consists, in part, of efforts to encourage settlement on farms. Special railroad Immigrant Agents, Land Agents or officials that are otherwise designated connected with the Freight, Passenger, Development or other departments, are in some instances placed in charge of this form of agricultural development work. Prospective settlers are variously urged by means of advertising, by operating special colonist trains at low fares and by personal salesmanship, to acquire available railroad, government, or private agricultural land. General development activities of this kind are mainly found in regions where large tracts of unoccupied land are still available, but the Agricultural Agents, Dairy Commissioners

and other special development officials of railroads in other sections are at times able to put prospective dairymen, fruit growers, etc., in touch with owners who desire to dispose of their land, and also to induce farmers to undertake dairy-farming, fruit-growing or other special branches of agriculture in settled farming regions formerly devoted to general agriculture. Special immigrant train services, moreover, and arrangements under which through transportation may be purchased from Europe to interior destinations in the United States, have been established to facilitate the movement of newly arrived foreign immigrants from the seaboard to interior regions.[7] The railroads cooperate with government and private agencies in carrying out irrigation and drainage projects primarily to bring about the opening of new agricultural regions.

Agricultural development work is also concerned with increasing production on farms that are already occupied. Printed information relative to fertilizers, crop rotation, planting methods, tree pruning and spraying, the use of dynamite, the cultivation of various kinds of crops, road construction, etc., are prepared and distributed by the Agricultural or Development Department. Railroads coöperate with agricultural colleges and experiment stations by operating agricultural trains containing exhibits of farm products, pests, machinery and tools, and supplies of printed information. Lecturers from the colleges accompany the exhibition trains. The railroads also assist in making exhibits at county fairs and other agricultural exhibitions; and in running demonstration farms. Some railroads have educated farmers as to improved methods of marketing, packing, and loading farm products. Agricultural Agents have in some instances assisted in marketing farm products by advertising, by preparing lists of growers and local shippers for the information of central market trade agencies, by locating buyers for the growers, and by making arrangements for the inspection of shipments; and there are instances of the Agents' selling farm products in particular markets. Dairy Agents at times facilitate the marketing of milk and cream by putting dairymen in touch with central market dealers or other buyers, and

[7] See Chapter LIII.

by inducing the Operating Department to provide an improved transportation service.

During the European War when the United States Government was particularly desirous of increasing agricultural production, many railroads coöperated to the fullest extent. The special assistance and inducements then offered to farmers have, however, been largely discontinued because they were intended to meet a temporary emergency.

Freight Traffic Advertising

Methods of developing railroad freight and passenger traffic have in the past differed in that the former depended almost entirely upon the personal efforts of a soliciting and development staff, while the latter relied primarily upon advertising. Mention has been made of occasional advertising by industrial and agricultural agents to obtain freight tonnage, but such uses of advertising were exceptional and freight solicitation was rarely done by advertising other than by the publicity campaigns conducted by the Passenger Traffic Department. Passenger traffic advertising has long been an accepted practice, but freight traffic advertising was generally frowned upon. This difference in practice was due to the belief that the volume of passenger traffic, particularly of pleasure travel, readily responded to skillful advertising, while freight traffic was believed to be so definitely related to the general state of business prosperity that little or nothing could be done to develop new traffic or to increase the total available tonnage of freight. The opinion has prevailed that the only effect of freight traffic advertising would be the diversion of tonnage from one route to another, and that, if all the railroads advertised for this purpose, the final result would be much the same as if none of them had done so.

Recently, however, various industrial and agricultural agents have provided convincing evidence that much can be done by advertising to develop new freight tonnage, and numbers of railroads now also use advertising as a means of soliciting freight.

Numerous railroads now are advertising their lines as a whole. Many advertise the industries and resources of particular cities or regions; some, their freight service in general or emphasize

specific freight services such as through package cars, important freight terminals, warehousing facilities, information services, etc.; other roads have conducted publicity campaigns for the purpose of solving some such difficulty or problem as the seasonal peak load of traffic and its bearing upon car service. Traffic advertising campaigns are often conducted jointly by the Passenger and Freight Traffic Departments.

"Other general types of freight traffic advertising may appear in the future. The entire movement toward freight traffic publicity by means of advertising is in its experimental stage. It should prove equally as effective as passenger traffic advertising, for the production and commerce of many regions and the tonnage of many carriers can undoubtedly be increased by the joint efforts of intelligent advertising and personal solicitation and development work."[8]

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[8] G. G. Huebner and E. R. Johnson, *The Railroad Freight Service*, p. 353.

CHAPTER XIV

FREIGHT TRAFFIC AND SERVICE ASSOCIATIONS

MANY transportation and traffic matters are handled by traffic or service associations, bureaus or committees maintained jointly by groups of carriers. Such coöperative agencies are autonomous in that they are not a part of the business organization of any particular railroad. They either perform specific duties assigned to them by the carriers, or provide the means through which the responsible officials of the railroads harmonize their actions. There are also many railroad associations of an educational character, some of which have accomplished much in the improvement and standardization of railroad practice.

General Associations of Railroad Companies

The activities of several associations are broad in scope. The American Association of Railway Executives is a general executive and supervisory agency through which general policies concerning current problems are determined, and it exercises supervisory control over all other railroad associations. Its membership includes the chief executives of about 94 per cent of the mileage of class I railroads in the United States, and several Canadian railroad executives.

The American Railway Association provides agencies for the performance of specific traffic and operating functions, for the promotion of education within the railroad industry, for the advancement of uniformity in practice, the adoption of safe, economical and efficient methods, the exchange of opinions and the establishment of contacts with the public and with the Government. It was the outgrowth of the several time-table and standard time conventions that were called during the seventies and eighties, but it soon widened the scope of its activities. Many of the standard codes of rules now in general

use throughout the United States were formulated by this association or by subordinate associations reporting to it. Its functions were further enlarged in 1919 when a number of other railroad associations, some of which had been maintained separately for many years, were merged with it, twelve organizations becoming a part of the American Railway Association. It now maintains seven "divisions," a special Car Service Division, several joint committees, a Bureau of Explosives and a Freight Container Bureau.[1] Each of the numbered divisions is presided over by a chairman and one or more vice chairmen, and each has a secretary and a "general committee." The detailed work of each is subdivided among special committees and subcommittees, and several divisions are subdivided into "sections." Division No. 1 is the Operating Division; No. 2, the Transportation Division; No. 3, the Traffic Division; No. 4, the Engineering Division; No. 5, the Mechanical Division; No. 6, the Purchases and Supplies Division; and No. 7, the Freight Claims Division. When the Association as a whole meets in convention, it constitutes a legislative body which receives reports from the several divisions and committees, and makes recommendations to its members. Its membership list includes more than seven hundred railroads, operating over 300,000 miles of road.

Railroads operating less than one hundred miles of road, and lines operated primarily as industrial plant facilities, are barred from membership in the American Railway Association. A somewhat similar organization of short lines is the American Short Line Railroad Association, which is affiliated with the American Association of Railway Executives and has a membership of over five hundred commercial steam and electric railroads. There is also an American Electric Railway Association which has gained a position of influence in the electric railway industry.

Departmental Associations

In addition to the American Railway Association, which is composed of railroad companies, there are associations of department officials such as the American Association of Passenger

[1] Since the above was written a special Motor Transport Division has been organized as a separate division of the American Railway Association.

Traffic Officers, the American Association of Freight Traffic Officers, the American Railway Development Association, the American Association of Railway Advertising Agents, the American Association of General Baggage Agents, the American Railway Engineering Association, the Roadmasters' and Maintenance of Way Association, the Association of Railway Electrical Engineers, the Master Boiler Makers' Association, the American Association of Railway Superintendents, the American Train Dispatchers' Association, the Railway Accounting Officers' Association, the Railway Treasury Officers' Association, the Railway Real Estate Association, the Association of Railway Claim Agents, the American Association of Railway Surgeons, and other organizations that are primarily associations of railway department officials. Nearly every department of the railroad service has one or more associations through which the department officials of many railroads give consideration to general and technical problems, exchange opinions and information, form contacts, and, in some instances, take action upon matters of common interest.

Some railroad associations are composed of officials of several departments. The sessions of the International Railway Fuel Association are attended by officials from all departments interested in railroad fuel. The International Railway Congress, which meets in different countries at five-year intervals, is attended by railroad officials and representatives of equipment concerns of different interests and nationalities, the purpose being primarily educational. "Railway clubs," which facilitate contacts, promote a professional attitude and perform a general educational function, have been organized at many of the larger railroad centers. There are also "traffic clubs," the membership of which includes industrial traffic managers, railroad officials and others interested in traffic and transportation.

Many railroad officials are members of technical, scientific and professional societies, such as the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the American Society for Steel Testing. The sessions of trade associations, such as the Railway Business Association, the National Association of Railway Tie Producers, the Railway Car

Manufacturers' Association, and the Railway Equipment Manufacturers' Association, are attended by railroad officials.

Service Associations, Bureaus and Committees

The railroad associations that have been referred to, and others, perform specific services assigned to them by the carriers that are members. The Car Service Division of the American Railway Association constitutes a special department that does educational and general supervisory work and also exercises definite powers over car distribution. The agreements by which the railroads subscribed to the Association's standard car service and per diem rules make the Car Service Division the carriers' agent in their dealings with the Interstate Commerce Commission relative to car service, and confer upon the Division the plenary powers detailed in rule 19 of the Code of Per Diem Rules. The carriers have authorized the Car Service Division to keep watch over the observance of the car service and per diem rules, to obtain car location statements and car performance statistics from subscribing lines, and to make recommendations to the proper committees of the association relative to changes in service rules and per diem charges. The Division is empowered to supervise the application of car service and per diem rules; to suspend or permit departures from the rules governing the return of foreign cars to their owners, and to exempt cars of any type from the application of these rules; to take necessary action to bring about uniform car distribution rules and practices; and to transfer cars from one line or territory to another when necessary to meet traffic conditions, so "far as practicable and consistent with car ownership" and with "due regard to car ownership and requirements."

The Car Service Division is divided into five main subdepartments, each under the direct supervision of a manager and the Chairman of the Division. It maintains thirteen district offices in each of which there is a staff of agents who are supervised by a district manager. In order to maintain direct and friendly contact with the shipping public, the Car Service Division has brought about the organization of "shippers' regional advisory boards." The first of these boards, known as the Northwestern

Regional Advisory Board, was established in 1923, and since then twelve additional boards have been organized in other sections of the United States. Their voting membership consists of representatives of production, distribution, consumption and financial concerns interested in having an adequate freight service, but the sessions of the Board are attended by representatives of the Car Service Division, the carriers and other agencies. Committees of railroad officials have been created for the purpose of facilitating coöperation with the regional boards and their numerous special and commodity committees. They have become a recognized factor in efficient railroad operations, particularly in the effort of the carriers to eliminate freight car shortages and in the distribution of freight equipment. The boards are valuable sources of first-hand information relative to freight car requirements and the various phases of the freight service other than rates and related matters, and are also useful as means for the direct settlement of many freight service disputes. They have made unnecessary many costly and vexatious proceedings before the Interstate Commerce Commission and the State Commissions. Their organization and functions are more fully discussed in Chapter XV.

The Per Diem Rules Arbitration Committee of the American Railway Association is appointed by the Transportation Division. This Committee has authority to interpret the Per Diem Rules and to settle disputes arising under them. The carriers' Code of Interchange Rules governing the condition of interchanged cars and repairs thereto is interpreted by an Arbitration Committee, connected with the Mechanical Division of the American Railway Association.

The standard code of freight claim rules of the American Railway Association is administered by its Freight Claim Division, disputes that may arise in the application of the rules governing the apportionment of interline claim payments being adjusted by Arbitration and Appeals Committees. The "overcharge and agency relief claim rules" of the Railway Accounting Officers' Association, also provide for Arbitration and Appeals Committees.

A Bureau for the Safe Transportation of Explosives and

Other Dangerous Articles, *i. e.*, the Bureau of Explosives, has been organized under the auspices of the American Railway Association. It has its own membership which includes many, although not all of the members of the Association, and also various steamship lines, express companies, and manufacturers of explosives and other dangerous articles. The Bureau is officially recognized by the Interstate Commerce Commission as the administrative agency of the carriers with which it coöperates in the enforcement of the Commission's regulations governing the transportation of explosives and other dangerous articles. The Bureau is authorized to make inspections, conduct investigations, confer with shippers and manufacturers, make recommendations to the Commission, receive reports from carriers as to violations of rules and accidents, and pending promulgation of specifications by the Commission, to grant approval of types of containers not covered by government specifications. The rules of the American Railway Association similarly require carriers to report violations and accidents to the Bureau which is authorized to "inspect everything pertaining to the transportation, handling and storing of explosives or dangerous articles other than explosives." In 1921 the Association directed the Bureau of Explosives to undertake the formulation of standard container specifications for classes of freight other than explosives, but in 1925 this work was assigned to a separate Freight Container Bureau.

The American Railway Association maintains a Department of Demurrage Supervision for the oversight and enforcement of demurrage rules in Trunk Line and Central Freight Association territories. In other regions separate demurrage bureaus have been organized as follows: the New England Demurrage Commission, the Southeastern Demurrage and Storage Bureau, the Western Demurrage and Storage Bureau, the Mid-West Demurrage Bureau, the Pacific Car Demurrage Bureau, the Intermountain Demurrage Bureau, and the Canadian Car Demurrage Bureau. As was stated in Chapter III, many railroads have authorized these bureaus to supervise and inspect demurrage practices, and some carriers have authorized the bureaus, at certain points, to compute demurrage, keep demurrage records

and administer the demurrage rules. Many carriers have also empowered these bureaus to supervise the enforcement of the storage rules, and to adjust and arbitrate demurrage and storage claims.

Other associations, committees, or bureaus performing specific services for groups of railroads are the Committee on Public Relations of the Eastern Railroads, the Presidents' Conference Committee in charge of Federal Valuation, the Bureau of Information of Eastern Railways, the Railway Ticket Protective Bureau, the Bureau of Railway Economics, the Bureau of Railway News and Statistics, and the associations for patent protection. The primary function of the railway patent associations is to advise members whether devices or processes can be used without danger of incurring liability for infringement of valid patents, and by giving legal advice and conducting defense suits to protect the members against unjust claims for patent infringement. Among the most important service bureaus are the Weighing and Inspection Bureaus that have been established in different sections of the United States. They are affiliated with the carriers' Freight Traffic Associations, and will be referred to more fully in discussing the activities of those associations.

In discussing rates it will be shown that the carriers must coöperate in making joint and competitive rates. This cooperation is accomplished by means of traffic associations.

Freight Traffic Associations with pooling agreements antedated the Act of Congress of 1887 to Regulate Commerce which made the pooling of railroad traffic or revenue unlawful. The Transportation Act of 1920 legalized such pools as in the judgment of the Interstate Commerce Commission are "in the interest of better service to the public or economy in operation" and are not unduly in restraint of competition. The Freight Traffic Associations have, however, not resumed pooling. After 1887 rate agreements were entered into through the Associations, but this had to be discontinued after 1897 when the United States Supreme Court decided that the Sherman Anti-trust Act of 1890 prohibited such agreements. The traffic associations were reorganized and continued. They enable the

carriers to coöperate in rate-making without entering into formal agreements. The common understandings as to rates arrived at are not binding upon individual members, but in practice the officials of the several lines make such rates as their competitors are willing should be made. Action of this kind has received the approval of the Interstate Commerce Commission, which, after investigating the organization and operation of the Transcontinental Freight Bureau, announced that this bureau "serves many useful purposes, promotes economy and efficiency, and is of advantage to shippers as well as to carriers. The need for some organization of this character in the transcontinental field is demonstrated upon the record. . . . It is abundantly shown that the Bureau tends to obviate or remove the discriminations as between persons and localities which the law condemns."[2]

Besides the Transcontinental Freight Bureau there are six other major traffic associations in the United States: the Western Trunk Line Committee, the Southwestern Freight Bureau, the Central Freight Association, the Trunk Line Association, the New England Freight Association and the Southern Freight Association. A similar association, the Canadian Freight Association, has been organized in Canada. There are also several minor local or district freight traffic bureaus or committees that are limited to smaller territories or to defined classes of traffic.

To facilitate the accomplishment of its major purpose, which is the consideration of proposed freight rates, other freight charges, shipping rules and classification exceptions, a freight traffic association usually provides that the proposed changes shall be presented to the Chairman or other permanent association official by member lines or shippers in the form of applications or proposals. The Chairman may also be authorized to initiate proposals. The applications or proposals are docketed and docket advices are mailed to interested traffic officials, tariff publishing agents and to other associations, and a docket bulletin is mailed to the Interstate Commerce Commission, State Commissions, the commercial representatives of member lines,

[2] 77 I. C. C. 279, Feb. 3, 1923.

shippers' organizations, and various newspapers and periodicals. A "standing rate committee" then makes an investigation of the proposed change, shippers as well as carriers or carriers' organizations being given an opportunity to be heard orally and to submit relevant data in written communications. The committee makes a recommendation to a "committee of freight traffic managers," a "general committee of traffic officers" or otherwise designated committee upon which the several lines are represented by their traffic officials. This committee may be a definite part of the business organization of the freight traffic association, or merely be affiliated with it. In case it cannot dispose of the proposed change in rates, rules, etc., to the mutual satisfaction of all members, provision may be made for further consideration by the association's executive committee, which usually consists of the chief traffic officers of the association's members.

Several other uses are served by freight traffic associations. The standing rate committees are frequently called upon to interpret the meaning and application of tariffs. A tariff bureau may be maintained for the compilation, publication, filing and distribution of tariffs, and sometimes the Chairman or some other individual is given definite authority by the several lines to serve as their common tariff publishing agent. Traffic associations may also publish circulars stating the divisions of joint rates upon which participating carriers have agreed, and in some instances the determination of joint rate divisions is considered by the associations. They also maintain affiliated inspection and weighing bureaus or departments.

The Weighing and Inspection Bureaus or Departments that have been established in defined traffic territories as autonomous agencies have become of recognized importance. Their weighing services include the promulgation of working rules governing weighing, the recording and reporting of weights, the enforcement of the carriers' "national code of rules governing the weighing and reweighing of carload freight," the testing of scales, the check-weighing of freight cars, the supervision of the carriers' weighmasters or the actual weighing of carload freight through bureau weighmasters, the supervision of station em-

ployees who weigh L. C. L. freight and the making and supervision of weight agreements and industry track scale agreements. They also perform an inspection service intended to facilitate the enforcement of the carriers' classification and tariff rules. Their inspectors are specifically authorized to inspect billing and freight with a view to eliminating misdescription of freight by shippers, to enforce the rules as to packing, marking, loading, bracing and protection of freight, and to instruct shippers and freight agencies, and otherwise to supervise the enforcement of shipping rules and to safeguard the carriers' freight revenues. The inspectors police transit houses for the purpose of enforcing the tariff rules governing special transit services, and frequently take part in the investigation and adjustment of freight claims, particularly overcharge claims, concealed loss and damage claims, and claims arising in connection with commodities shipped under transit privileges. The bureaus may also employ special inspectors, veterinarians, etc., to determine liability in case of death or injury of livestock, to conduct inspections of produce, eggs, etc., en route or upon arrival at destination, to determine the condition of cotton before bills of lading are signed and to perform other special inspection services. In some instances the officials in charge of weighing and inspection agencies are also of assistance to the standing rate committees of traffic associations in the investigation of proposed changes in freight rates and tariff rules.

The Transcontinental Freight Bureau maintains two weighing and inspection departments, but elsewhere the carriers have organized special bureaus as follows: the Western Weighing and Inspection Bureau, the Central Inspection and Weighing Bureau, the Trunk Line Freight Inspection Bureau, and the Southern Weighing and Inspection Bureau.

Some of the major freight traffic associations, as was noted above, publish tariffs, the Chairman or another official being granted the necessary authority by the individual railroads, and the association maintaining a tariff department. Other associations have organized affiliated tariff bureaus that operate under separate names. Agency tariffs in such cases are issued

for the carriers by the head of the tariff bureau who acts as their joint agent. Still other agency tariffs are published by agents in charge of tariff bureaus not definitely a part of any major freight traffic association.

Tariff agents and bureaus have no voice in the determination of freight rates, but they relieve such carriers as prefer the agency plan of the work of publishing tariffs for their own account or for the account of other carriers. They also attend to the filing of agency tariffs, as required by law, and some of them have been authorized by the carriers to distribute tariffs to shippers as well as to carriers. Other bureaus refer shippers' requests for tariffs to the individual carriers.

The carriers' freight classification committees classify freight and perform other duties related to freight classification. Their major duty is to assign definite class ratings to the thousands of different kinds of freight that the railroads are required to carry, these class ratings being the basis of class rates. The three major classification committees—Official, Southern, and Western—consist of experts not employed by or identified with any particular carrier. They are appointed, and have their salaries and expenses paid, by all the railroads operating within the respective territories over which the committees have been given jurisdiction. Shippers are not represented on the classification committees but are given an opportunity to submit written communications and to be heard orally. The Interstate Commerce Commission in 1912 required classification committees to hold formal public hearings after due notice to interested parties, to keep records of facts and arguments, to publish their decisions promptly, and, in case of protest to the Commission, to transmit promptly their records to the Commission.[3]

The classification committees determine the descriptions for each item to which a class rating is assigned; the minimum carload weights for classified traffic; and the general shipping rules that were discussed in Chapter XII.

The three major classifications have since 1919 been published by the Consolidated Freight Classification Committee in one volume, the Consolidated Freight Classification, instead of in

[3] 25 I. C. C. 451-608, Dec. 9, 1912.

three separate books. The classification descriptions prepared by the three committees, and their general shipping rules, are uniform, the latter subject to certain exceptions. The class ratings are not uniform, but are published in parallel columns.

Classification exception sheets issued by individual railroads or by a traffic association or tariff agent take precedence over the Consolidated Freight Classification, and when special shipping rules are published in rate tariffs the general rules of the classification committees are also to that extent set aside. Separate classifications applicable to intrastate traffic, established by state commissions or by state statute are in force in several states, and the Canadian Freight Classification and the Mexican Classification apply in case of some shipments moving between points in the United States and Canada or Mexico, respectively. The widespread application of the Official, Western, and Southern Classifications and their publication in the Consolidated Freight Classification greatly facilitate the traffic work of both shippers and carriers. The final goal of the evolution of freight classification, the attainment of a uniform classification for the entire country, has not yet been reached. It is, however, a goal that will ultimately be attained.

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CHAPTER XV

INDUSTRIAL TRAFFIC DEPARTMENTS

AN industrial traffic department is charged with the responsibility of obtaining efficient and economical transportation service between areas of production, distribution, and consumption. It is primarily concerned with protecting the interests of the industries it serves but, in a broader sense, its duties include obtaining adequate transportation service at fair rates. This wider field of activity, usually accomplished through cooperative action with the traffic departments of other concerns, ultimately benefits each industry through the establishment of fair rates and efficient service for all shippers on an equal basis.

The position of Industrial Traffic Manager grew out of the needs of industrial and commercial establishments for technically trained men with broad knowledge of rates, classification, shipping procedure, routes, services, and the legal rights of shippers and carriers. The growing complexity of these problems and the increasing degree of coöperation between carriers make it imperative that the industries have the aid of such men.

The cost of distributing raw materials and finished products is of growing importance to American producers and consumers. Traffic management concerns itself with the problem of distribution and the traffic manager must be familiar with all the forms of transportation available, railroad, ocean, steamship, inland waterway, express, motor, and air, in order that he may secure the most advantageous services at the most favorable rates. Transportation by rail, water, or highway concerns manufacturing plants, wholesale distributors, jobbers, brokers, merchants, trade associations, and chambers of commerce, each of which may have a traffic department.

The term "industrial" or "commercial" traffic department is used to include all of the varying types of traffic organiza-

tions; a distinction may be drawn, however, between industrial and commercial traffic managers. Men engaged in traffic work as shippers' representatives are often indiscriminately called industrial traffic managers, and their departments, industrial traffic departments. More precisely, however, industrial traffic managers are those which represent industrial plants, and their functions include the superintendence of shipping, the handling of inbound and outbound freight at the factories, and the supervision, in many instances, of industrial switching facilities.

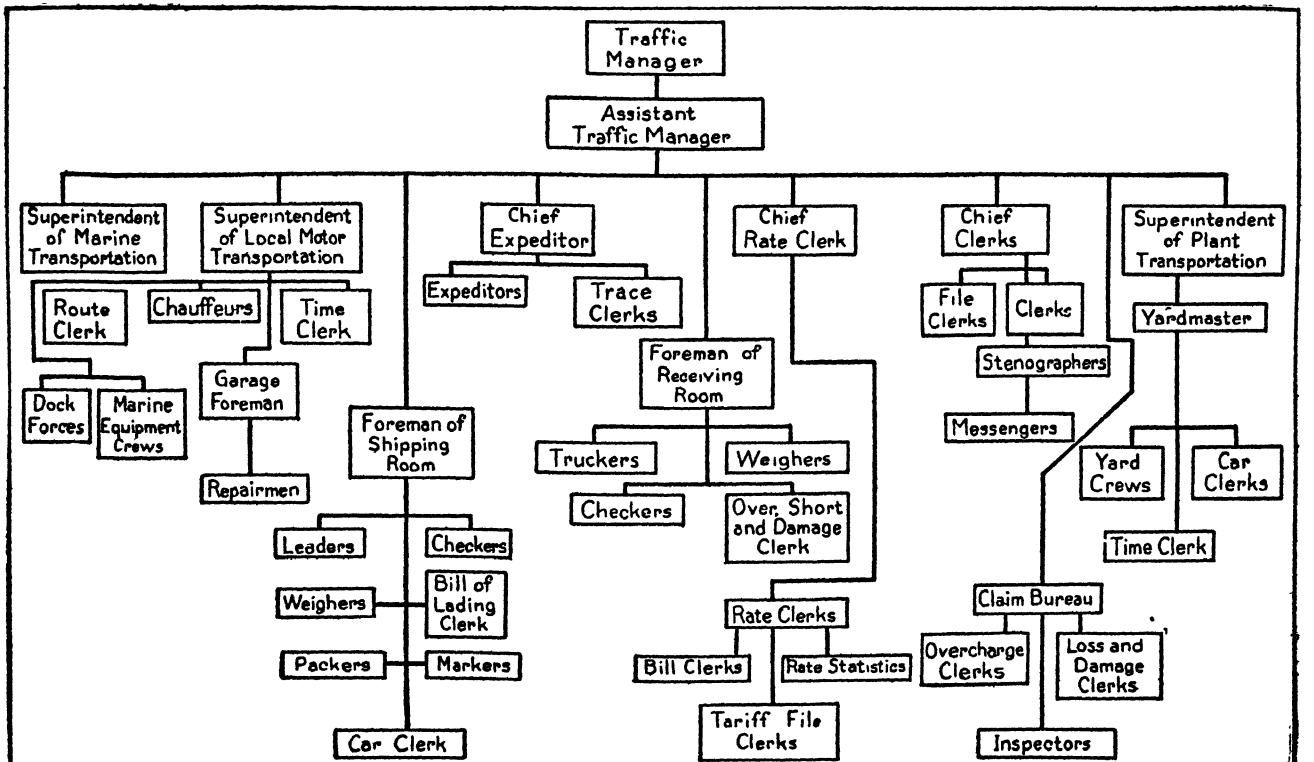
Commercial traffic managers supervise the traffic affairs of commercial organizations rather than industrial establishments, and include community traffic managers; commissioners of transportation of commercial organizations, such as chambers of commerce, boards of trade and commercial exchanges; and managers of transportation and traffic bureaus that serve groups of industries or commercial houses. In many respects the work of the two classes of traffic managers is similar, but there is sufficient difference in their functions to warrant a distinction being drawn.

Functions of Industrial Traffic Departments

There are great variations in the types of industrial traffic department organizations, the principal factors influencing the type required by an industry being the character of the goods dealt in, and the volume, nature, and direction of movement of the tonnage to be handled. The department needed may range from a single shipping clerk to the large organizations connected with the leading industries. Form 4 presents the organization of a typical industrial traffic department. The departments have three major groups of duties, one group having to do with service.

Service

Rates must be obtained from the rail, water, express, and highway carriers for the information of the departments interested in purchasing materials or distributing finished products. A file of rate tariffs sufficient to serve the needs of the industry must be collected and maintained. Well-organized



FORM 4.—ORGANIZATION OF A TYPICAL COMPLETE INDUSTRIAL TRAFFIC DEPARTMENT.

traffic departments are equipped with a collection of tariffs, classifications, billing books, territorial directories, and rate circulars, to provide the official rate information required. Requests for rate quotations are made of the carriers only when necessary to verify the information contained in the tariffs or when the tariffs containing desired rates are not at hand.

Many traffic departments also keep a file of tariffs applying to the traffic of competitors, so that the rate advantage or disadvantage may be taken into account in quoting prices on competitive business. Tariffs are used not only as sources of information as to the rates in effect at the present time but also to support claims arising after the tariffs have been superseded by other issues. Canceled issues are usually kept until the possibility of their being needed has passed.

Studies of prospective changes in rates or services may be made to determine in advance the effects upon the business of the industry. New rates which prejudice the industry unfairly may be protested before the tariffs go into effect by application to the Interstate Commerce Commission to suspend the tariffs, pending investigations as to the reasonableness of the proposed rates.

Freight bill auditing is another service closely akin to the general rate work of industrial traffic departments. The Transportation Act of 1920 provides that freight may not be delivered by the carrier at destination until all tariff rates and charges have been paid, except under rules prescribed by the Interstate Commerce Commission. This was done to insure prompt payment of charges by consignees and to prevent unjust discrimination by the carriers among consignees. The usual practice of the carriers is to consider forty-eight hours as cash payment, provided the consignees are on the carriers' approved credit lists. The charges must otherwise be paid in advance of delivery. Freight bills must, therefore, be audited quickly by the traffic departments if corrections are to be made before the payment of the bills by companies on the carriers' approved credit lists. A careful check is made of the rate assessed, the class rating, the weight and the extensions, and, if errors are discovered, the agents of the delivering carriers are re-

quested to make revisions before the bills are paid. If the errors cannot be rectified until after payments are made, overcharge claims must be filed by the industrial traffic departments.

The bills presented by the carriers are transmitted to the treasurers' departments or to other officers of the industrial companies for payment if correct, and if found to be in error are returned to the agents of the carrier for revision.

The railroad freight charges paid by American industries exceed $5,000,000,000 annually. This figure does not include the sum paid the smaller railroad companies, the water lines, the express companies, or the motor carriers. Large sums are reclaimed annually by well-managed traffic departments through audits of their freight bills.

Routing and shipment is another important service of industrial traffic departments. The selection of the type of service, whether rail, rail-and-water, all-water, express, or highway is obviously an important duty. Just as important, however, is the selection of the complete route over which the goods are to travel. The Mann-Elkins Act of 1910 granted shippers the right to choose the intermediate as well as the delivering carriers when joint routes are available. Proper selection of routes makes large savings in charges possible, as well as quicker delivery, the elimination of extra handlings at transfers, avoidance of congested terminals, elimination or reduction of cartage charges, reduction in likelihood of damage, utilization of special transit privileges available over one route but not over others, and most convenient delivery for consignees. Routing charts are often prepared to govern those attending to shipping. The charts show the complete preferred routes to destinations. Other traffic departments indicate the routes to be used on the packing lists which are sent to the shipping departments before the goods are packed for shipment. The routes selected are shown in full on the bills of lading tendered to the carriers.

Goods which do not arrive at destination within a reasonable time are traced by telegrams, telephone calls, letters, or personal visits to the proper offices of the carriers, in order that the location of the delayed goods may be learned and the goods, if found, may be hurried forward to destination.

Another important duty of the traffic department is to expedite shipments needed in emergencies. Arrangements are made with carriers to rush urgently required shipments forward so that shutdown of plants may be avoided, an important contract filled on the specified dates, or a special order completed on schedule. Industrial traffic departments must convince the railroad operating officials of the great urgency of the shipments and obtain "preference" movements on the road and special handling of the needed goods in the terminals.

The sizes and kinds of empty cars required for outbound shipments—which cars must be requested of the carriers in advance of the time they are needed—will depend upon the character and amount of goods to be shipped and upon the rules governing their classification. The ordering of cars of any size or of cars of a size larger than is required may result in the payment of considerable sums in extra transportation charges.

Records are kept of the exact time and date that empty cars are placed by the carriers for loading and that loaded cars are spotted for unloading. Records are kept showing when unloaded cars are released upon notices from shippers and when loaded cars are turned over to the carriers for forwarding. These data are used to verify or correct carriers' bills for car demurrage. Many industrial departments use the car records to determine the extent and causes of car detention which results in demurrage, and thus to reduce or eliminate loss.

The railroads and other carriers accept for transportation at standard rates only such goods as are packed in accordance with the rules of the freight classifications. Freight packing, therefore, requires expert supervision. Packing charts are prepared by industrial traffic departments specifying the types of containers, their sizes in proportion to the amount of goods, the methods of sealing or strapping, and of marking, and the kinds of goods to be combined with other to make up full shipments. Classification rules provide that mixtures of goods in one container are to be charged the rate applicable to the article of the highest class in the mixture and at the gross weight of the container and its contents.

Similar packing specifications are prepared for the guidance of the receiving departments. Packing standards are shown in detail and the receiver is made responsible for reporting exceptions to these standards. Suppliers who do not comply with the packing specifications are required to correct the fault and if deemed advisable, orders are placed elsewhere in the event of their neglecting or refusing to accede to the requests.

Bill-of-lading contracts and other shipping papers are prepared by or under the supervision of industrial traffic departments. The complete documents are drawn up together with extra copies and full shipping information, including the complete route is supplied the carriers. Many large shippers have their own bills of lading with their names on the bills and with blank spaces for the insertion of the names of the originating carriers. The name and address of shipper, consignee or party to be notified, the route, the complete description of the goods in the terminology used in the governing classification or the commodity tariff, the quantity, marks, valuation, when required, amounts prepaid, if the shipments are prepaid, and other identifying information must be included in the bills of lading to avoid the loss and delay of the goods in transit.

Industrial traffic departments are often given the responsibility of arranging for local cartage whether the establishment operates its own motor trucks and horse-drawn vehicles or engages the services of draymen. Materials purchased locally, goods sold to near-by customers, and freight to and from railroad freight stations and steamship piers are hauled in these vehicles under the supervision of the traffic department. Vehicles are routed, instructions are given drivers and helpers, and records of cartage cost are kept by the traffic departments. Large industries have railroad tracks within their establishments upon which cars are placed for unloading or loading inside the plants or mills. Many companies have their own locomotives, freight cars, and locomotive cranes with which freight is moved from place to place within the plants as required in manufacturing. Inbound carload shipments and empty cars ordered for loading are received from the rail lines at established inter-

change points and moved to the unloading or loading places within the plants by the industrial locomotives. Outbound loaded cars and empty cars are moved to the interchange tracks and turned over to the carriers in the same way.

The work of the industrial traffic department in connection with intraplant transportation includes the management and operation of the equipment, keeping of car records, routing of movements to eliminate congestion and wasted car and engine mileage, handling car orders, car releases, and interchange of cars between the carriers and the plant facilities.

Industries are often given allowances by the carriers for placing or spotting cars within the plants. The carriers are required to place inbound cars at the places within the plants where the cars are customarily unloaded or loaded. Arrangements are often made with the carriers whereby the industries use their own facilities for these services and receive therefor a fixed compensation per car. These allowances are filed as tariffs with the State Commissions and with the Interstate Commerce Commission. Industrial concerns with waterfront plants often have lighters, barges, tugboats, and other floating or marine equipment. The supervision of operation of equipment of this sort is often given to the traffic departments.

Claims

Claims for loss, damage, or delay to goods while in the possession of the carriers, as well as for overcharge are prepared by the industrial traffic departments and collected through the claim departments of the carriers or, if necessary, by resort to suits at law.

Carriers are liable for the safe and prompt transportation of goods, their responsibility being fixed by the provisions of the bills-of-lading or shipping contracts, and by the tariffs, classifications, and the requirements of the common law or of statutes. The precise extent of the liability of railroad, express, water, and highway carriers must be determined in particular cases when losses result to shippers or consignees through failures on the part of the carriers to transport the goods properly.

During the past ten years industrial traffic departments have

collected more than $600,000,000 in loss, damage, and delay claims from rail carriers alone, and the amount would have undoubtedly been much higher had it not been for the concerted efforts of the American Railway Association, the National Industrial Traffic League, and other organizations of carriers and shippers for the prevention of claims. These bodies have carried on campaigns to improve shipping and eliminate the improper methods of handling goods.

Ordinarily the person holding the title to the goods is entitled to file a claim if loss or damage is suffered. The amount that can be collected, in the absence of a released value, is the full actual loss caused by the act or failure of the carrier responsible for the loss.[1] Evidence must be presented by the claimant to prove the actual amount of loss and to show how it is determined. Invoices, contracts, market reports showing the value of similar goods in good condition at the time and place the goods should have been delivered in marketable condition, and sales reports are proper evidence of the measure of damage.

Claims in writing for loss, damage, or delay must be filed with the originating or delivering carriers within six months after the delivery of the goods in domestic traffic or nine months after delivery at the port in export traffic. If the claims are based upon the failure of the carriers to deliver the shipments they must be presented within six months in domestic traffic or nine months in export traffic after a reasonable time for delivery has elapsed. No notice of claim and no claim need be filed as a condition precedent to recovery if the loss, damage, or delay is due to negligence or carelessness on the part of the carriers while the goods were in transit or while being loaded or unloaded.

Suits at law for the collection of damages arising out of claims against the carriers must be presented within two years and one day after delivery or, if arising out of failure to make delivery, within this period after a reasonable time for delivery has elapsed. If claims are presented within six months after delivery in domestic traffic or nine months in export or within

[1] McCaull-Dinsmore Company *v.* Chicago, Milwaukee and St. Paul Ry. Co., 225 U. S. 96.

these respective periods after a reasonable time for delivery has passed, suits may be begun at any time not later than two years and one day after written notices have been received by the claimants from the carriers that the claims have been disallowed wholly or in part by the carriers against which the claims have been made.[2]

The Interstate Commerce Commission, the Freight Claim Division of the American Railway Association, the National Industrial Traffic League and the National Association of Railroad and Public Utility Commissioners have officially approved a standard form for presenting loss and damage claims against carriers to simplify and standardize claim procedure. The form provides complete identification of the claimant, the shipment, and the goods, a detailed description of the loss, damage, or delay suffered, a statement of the method used in determining the amount of the claim, and a list of the documents needed to support the claim.

Claims for straight loss or damage must be supported by an original paid freight bill, an original invoice, and a certified copy of an original bill of lading. Statements of nondelivery, of condition of goods when shipped, or inspection reports of damage or shortage, weighmasters' records, gaugers' certificates, and affidavits of those familiar with special features of the claims are recommended and sometimes required.

If the loss or damage is not noticed when the goods are received at the delivery stations and clear receipts are signed for the shipments in good condition, special statement forms for concealed loss and damage must be executed by the shippers and consignees and reports of inspection must be made by representatives of the delivering carriers after the discovery of the loss or damage. These additional documents are filed with the standard loss and damage claim and other supporting documents.

Claims for delay must be supported by market reports or other data showing the methods used in determining the amount of loss.

Overcharge claims are presented to the carriers to recover

[2] Interstate Commerce Act, Section 16, paragraph 3 as amended; Section 20; and Uniform Bill of Lading contract, Section 2, paragraph B.

amounts paid for transportation in excess of the proper amounts based upon effective freight rates. Carriers for many years paid overcharge claims whenever they were presented within the statutes of limitations of the states in which the claims arose. The Supreme Court held in 1923 that overcharge claims must be filed within the period of limitation provided in the bill-of-lading contracts, and by the Interstate Commerce Act for filing claims against the carriers and that the passage of this time not only barred the claimants from recovering but destroyed the liability of the carriers.[3] This period is now set at three years from the date the overcharge was made.[4]

The standard form for presenting overcharge claims is similar in many respects to the form used in loss, damage, and delay claims. This form must be supported by the original paid freight bill, the invoice or a certified copy when the claim is based upon weight, valuation or claim of misdescription, the original bill of lading if the shipment was prepaid or claim based upon misrouting or valuation, a certificate of weight, and by reference to tariff authority for correct rate if error in rate is claimed.

It should be stated in connection with claim procedure that carriers have the right granted by law to proceed against shippers to collect undercharges at any time within three years of the date of the collection of the improper amount.

Constructive Functions

A second type of duties of industrial traffic departments may be designated constructive. In performing these duties industrial traffic departments go beyond the limits of routine service and seek to devise new and improved methods of transportation that will improve methods of distribution. Sites are selected for new plants, warehouses, and other facilities to obtain locations offering the best transportation advantages and fair rate adjustments to and from the sites. Locations ideal in other respects often are seriously defective from a transportation standpoint.

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[3] Kansas City Southern Ry. Co. *v.* Wolf, *et al.*, 261 U. S. 133.
[4] Interstate Commerce Act, Section 16, as amended July 7, 1924.

Research work is undertaken in rate structures which affect the industry and its competitors so that unfavorable rate situations may be brought to the attention of the railroad, steamship, express, and motor freight carriers and corrective measures urged. Work of this sort entails the analysis of rate data, the preparation of charts, graphs, tables, and other exhibits to be used in arguing the complaints.

Analyses are made of the packing, marking, weighing, and handling of freight and of the selection of proper containers to protect the goods and to reduce loss and damage and transportation costs.

If the efforts of traffic departments to induce the carriers to make the necessary adjustments in transportation services and rates are unsuccessful, complaints against the carriers are prepared and filed with the State Commission or the Interstate Commerce Commission and argued before the appropriate body. Suits are brought in the courts against carriers when actions at law are necessary to protect the interests of the shippers.

Coöperative Functions

The third group of functions is coöperative. Industrial traffic departments coöperate with the heads of other departments of the same industry, with other traffic managers or with representatives of the carriers to improve the transportation service. Traffic departments coöperate with sales organizations to improve the distribution of the products of the industries seeking new markets, better routes, and rate reductions and to meet the transportation requirements of buyers. Purchasing departments are assisted in finding new sources of raw materials and supplies. Advertising departments are advised of the position of the industries with respect to the transportation and service or rate advantages or disadvantages of the industries, and their competitors in fields where advertising campaigns are contemplated. Production and works management departments are assisted by traffic departments in arranging routes to be taken by goods in the course of manufacture, to avoid cross routings and to improve the handling of goods through the use of mechanical handling devices, motor vehicles, marine

equipment, and plant railroad facilities. Traffic departments advise other departments in all matters connected with the handling of goods into, through, and out of the plants where transportation or traffic problems are encountered.

Some of the most important coöperation work performed by industrial traffic managers is accomplished by the concerted action of several or many traffic men acting in unison to achieve some result of value to all members of the group. A large number of important cases instituted before the Interstate Commerce Commission and the various State Commissions are prosecuted by groups of industrial traffic representatives, acting either as members of a permanently associated group or as members of an informal alliance banded together to achieve the particular result sought.

It is customary for traffic managers, who are interested in any particular case before the commissions, to petition for leave to intervene in the case, to lend their assistance to the petitioner in the preparation and presentation of the case as well as to impress upon the commissions the fact that other industrial and commercial concerns are sufficiently interested in the case to become parties to the proceedings. The decision reached by the commission affects all interested shippers and consignees, so that few important cases are investigated without interveners appearing to be heard in the matter.

Coöperation of this sort is more or less spontaneous and usually ends as soon as the matter of mutual interest is finally disposed of by the commissions or courts.

More permanent forms of coöperation are to be found in the traffic field. Trade associations have permanent committees and departments to protect the traffic and transportation interests of the members of certain trade groups. Organizations and traffic departments of this sort are found in many lines of business and in numerous sections of the United States.

Chambers of commerce, boards of trade, or commercial exchanges have similar committees and bureaus attending to the transportation interests of members. Commercial organizations of this class are to be found in virtually every city of importance. State, national and international chambers of

commerce function to advance the general business and transportation interests of the members in the territories served by the organizations.

The traffic managers of member companies are often appointed to the transportation and allied committees of the trade associations and chambers of commerce. Rate adjustments and transportation service conditions affecting all within the trade or district are discussed, and appropriate action is taken through the transportation committees or bureaus of the organizations so that adjustments, equitable to all the members, may be obtained.

The shippers' points of view may be presented in an informal manner to the officials of the carriers by the commissioners of transportation, general secretaries, or committee representatives, or formal and informal complaints to the Interstate Commerce Commission or State Commissions may be presented, or suits for relief may be entered in the courts.

The National Industrial Traffic League is the preëminent national organization of industrial traffic managers. Membership is confined to actual shippers of freight taking out bills of lading in their own names and to industrial and commercial organizations and associations representing such shippers. The traffic managers of the organizations are the official representatives of their respective companies or associations in the League.

Many of the leading industrial and commercial companies, trade associations and chambers of commerce are represented in the League by their respective traffic managers, and this gives the body a highly representative character. Shippers of all sorts of commodities with plants and markets in virtually all parts of the United States are represented and the deliberations and actions of the League reflect the consensus of the expert traffic men's opinions on transportation problems throughout the United States. No other shippers' organization has so representative a membership or so broad an industrial and commercial outlook. The carriers and the Interstate Commerce Commission recognize this fact and frequently seek the opinion of the League upon the involved transportation problems confronting them. Few matters of any considerable consequence are raised in the field of transportation without

the League investigating the matter thoroughly and expressing an opinion.

In several large cities and in a number of the other important transportation and industrial centers, traffic managers have local or district associations for the interchange of ideas upon transportation subjects and for joint action of the members in presenting matters of common interest to the carriers, the State Commissions, or the Interstate Commerce Commission.

Traffic problems are discussed in open meetings and matters of interest are referred to committees for investigation and action in the name of the association. Coöperation of this sort helps to keep all industrial and commercial traffic men informed as to developments in transportation in the local territory of the association and in the whole country, for problems confronting one large commercial or industrial center often affect other localities as well. Without the contact with other local shippers' representatives the traffic manager cannot hope to keep thoroughly in touch with transportation matters, many of which may vitally affect his own business and without the coöperation of other technical workers in the field the burden of the individual traffic man is harder to support. The interests of many industries are so similar from a transportation standpoint that the united action of their traffic managers tends to strengthen the position of all.

Local industrial and commercial traffic associations differ somewhat in purpose as well as in organization from local chambers of commerce, boards of trade, commercial exchanges and similar commercial bodies. The latter organizations are associations of executive heads, business houses, and industries, while the traffic associations are organizations of the traffic representatives of industrial and commercial establishments. Chambers of commerce and other like bodies speak for the industries while the commercial and industrial traffic associations speak for the technical men who represent the traffic and transportation interests of the concerns in the district. This distinction, while on the whole a valid one, is somewhat finely drawn, with the result that there is, in some cases, a duplication of the work performed by the transportation committee or

bureau of chambers of commerce and other commercial bodies and that done by the association of traffic men representing many industries and commercial houses, which are included in the membership of the commercial bodies. Such confusion and duplication, happily, are the exception rather than the rule.

In 1923, the American Railway Association, through its Car Service Division, organized a number of Regional Shippers' Advisory Boards composed of representatives of the leading shipping concerns of the districts in which the boards are located. Thirteen such boards have been constituted in as many sections of the United States.

These organziations are a common meeting ground for shippers and railroads for the better understanding of transportation operation questions, for adjusting informally car service difficulties which may arise between carrier and shipper, and for giving the shipping public a direct voice in the activities of the Car Service Division of the American Railway Association on all matters of mutual concern. Donald D. Conn, until 1927 the Manager of the Public Relations Section, Car Service Division, of the American Railway Association, was the originator of the plan, the purpose of which is to bring the representatives of all branches of shippers, consumers, and the public together periodically with the officers of the railroads to determine future transportation needs and the availability of railroad facilities, and to settle questions between the parties in an informal way. No railroad representatives are members of the boards although representatives of the transportation departments attend meetings and report operating conditions on their roads. The most important results achieved by the boards have been to bring railroad operating men in contact with the shippers and to prepare estimates of the transportation facilities needed by shippers for three months in advance.

The boards function through their general chairmen, vice chairmen, general secretary, secretaries of executive committees, and chairmen of commodity committees which represent each branch of industry in the respective districts.

The chairmen of the commodity committees make quarterly reports based upon canvasses by the members of their commit-

tees outlining future transportation needs for three months in advance. The Car Service Division of the American Railway Association established district offices with District Managers in charge at strategic points throughout the United States.

The full weight of the authority and prestige of the American Railway Association was given the regional boards, and wide publicity was given to their work to mobilize public opinion in support of the activities of the boards. Newspaper publicity, posters and placards placed in the headquarters of commercial and trade associations, banks and railroad stations, are used to promote coöperation in securing efficient transportation service to all who use the railroads.

Uniform rules of procedure have been adopted by each regional board. A general meeting of the secretaries and chairmen of the boards then in existence drafted a set of rules of procedure in a general meeting at Chicago, November 16, 1923. These rules were recommended for adoption by each regional board.

Informal negotiations between industrial traffic managers and the railroads' operating officers through the media of the advisory boards have tended to bring the railroads and their patrons closer together and have given to each a fuller appreciation of the problems of the other. The boards have proven a means of applying preventive rather than curative measures to the relief of transportation problems; they have been successful in keeping transportation service cases out of the courts and have obviated in a large measure the necessity of placing such cases on the dockets of the Interstate and State Commissions.

In a number of cities throughout the United States and Canada, traffic clubs composed of representatives of industrial and commercial concerns, transportation companies, and trade bodies have been organized to cultivate closer personal and business relations between those directly interested in the handling of traffic, both as shippers and carriers.

Briefly stated, the function of traffic clubs is to foster a professional spirit and solidarity among the workers in the several departments of transportation and they are successful to the

extent to which they develop this feeling. Through the instrumentality of traffic clubs, representatives of industrial and commercial concerns, railroads, steamship companies, express companies, warehouse companies, motor-truck lines, stevedoring companies, trades bodies, trade associations, and traffic bureaus are bound together into local traffic bodies resembling in many respects informal professional associations. These clubs, although largely social in nature, are nevertheless important institutions in the field of transportation.

Regular business and social meetings usually are held monthly during the year. An annual banquet or other social function and in many cases a spring outing are arranged by many of the clubs. A national association of traffic clubs, the Associated Traffic Clubs of America, binds the local clubs into a national body which is fostering professional education in traffic, advocating traffic and transportation legislation, and accomplishing the federation of traffic clubs.

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PART III

RAILROAD RATES

CHAPTER XVI

THEORY AND PRINCIPLES OF RATE-MAKING

RAILROAD rates and fares are the prices which carriers charge for their services. The schedules of charges on interstate traffic, the class-rate scales, the commodity rates, and the passenger fares are worked out by the carriers to be filed with the Interstate Commerce Commission and to become effective, usually after modification, when they have been approved by the Commission. Railroad carriers apparently fix the interstate charges subject to revision by the Commission, the rates and fares being what the carriers think they need and what the Commission will approve.

In a larger sense, however, railroad rates and fares are not fixed by the carriers and government officials, but by the forces, mainly economic and partly social, that determine the prices that the carriers may charge for their services. The laws that control, or possibly it may be more accurate to say the factors that affect prices apply to the prices charged for railroad services. To discuss the theory and principles of rate-making is to consider the application of certain economic laws, or at least certain economic facts, to price-fixing in one important field of business.

In businesses in which the producer or seller has a monopoly the prices charged are those that will yield the largest net profits, while in businesses where there is free competition the prices tend to become those that will yield the least advantageous producers or traders enough profit to cause them to continue in business. When there is complete monopoly the prices tend to become as high as the market will stand, while under free competition prices tend to become as low as producers and sellers can afford. As industry and trade are now organized and carried on, there are comparatively few businesses that are completely monopolistic or competitive; those that are

classed as monopolies usually are subject to some forces of competition, while men engaged in competitive enterprises are ordinarily able, by coöperative effort, to place some restraint upon competition. Most businesses are partial monopolies, the degree of monopoly varying widely.

Railroad transportation is quite generally classed as a monopoly. The typical railroad company is a big concern with a large amount of invested capital. It is very difficult for a new, rival company to enter the territory served by an existing railway, not only because of the heavy capital investment required, but also because a railroad that has been in existence for a long time usually has a more advantageous location, especially in large city terminals, than a new company could acquire even at a cost much in excess of the investment of a company that has grown up with the communities and cities it serves. Moreover, under the Transportation Act of 1920, no new railroads can be built in the United States without the consent of the Interstate Commerce Commission, which must be convinced of the public necessity for the proposed road.

Other factors that strengthen the monopoly power of the railroads are: (*a*) That most places are served by only one railroad line and shippers and passengers in those places do not have a choice of railroads. They can ship or travel by only one line and at such rates and fares as the carrier, with government approval, may fix for that line. (*b*) Producers, in most instances, are not free to move their place of business, to avoid high transportation charges, from one railroad line to another. Of course, farmers, or miners, or lumbermen, or quarrymen can not move at all; while most manufacturers would have to sacrifice a considerable share of their investment if they moved their industries to another location. Moreover, most families are more or less "rooted to the soil"; they do not care to leave their homes and live in new surroundings. (*c*) By forming associations, rival railroads are able to set limits to their competition with each other. For like services the same rates are charged. Indeed, this is necessary to avoid harmful discrimination among producers and traders. When several railroads serve the same locality or section of the country they

make their rates on competitive traffic by common action, and are encouraged by government authority to do so, because such common action is in the public interest. (*d*) Railroad systems in the United States have by long evolution become large, and the number of systems is being reduced by consolidations effected with approval of the Interstate Commerce Commission. The Transportation Act of 1920 contemplates the ultimate grouping of American railways into "a limited number of systems." The law does not state what the ultimate number shall be; but it is obvious that the further consolidation of railroads will reduce the number of systems competing with each other.

The foregoing facts are sufficient to show that the railroad business is largely monopolistic; and yet it is inaccurate to classify the railroads as either "natural" or complete monopolies. While a railroad company possesses strong monopoly powers it is also subject to far-reaching and effective competitive forces that influence its rate-making policies, the general level of its rate structure, and, to some extent, the individual rates for particular services.

The strongest influence affecting individual railroad rates and territorial rate structures, is economic or industrial competition. Each railroad is bound up with the section it serves. The carrier prospers along with the prosperity of the farms, the mines, the factories that produce goods to be sold on markets reached by the carrier. Interregional competition in industry is general and strong. Different grain-growing areas ship their products to the same primary domestic markets and to common ultimate foreign markets. The steel mills of Pennsylvania, Illinois, Alabama, and other states are rivals, and the same is true of the coal mines of Pennsylvania, West Virginia, Ohio, Illinois, and Alabama. The fruit growers and the hotel managers of California have their rivals in Florida. These are only a few instances of the prevalence of industrial competition of which the railroads must take account in working out their rate schedules and structures.

The competition of rival cities, of interior trade centers, and of rival seaports, or "gateways" of export and import trade, also involves the railroads that serve the cities. Some railroads

are interested in the North Atlantic ports, others in the Gulf ports; one road may have a large interest in Baltimore, while its rival may be interested mainly in Philadelphia or New York; one railway system may desire to haul traffic from Chicago to the Atlantic seaboard for export, another line may wish to take the traffic to the Gulf ports, while a third road may be eager to move the goods to a Pacific gateway, and the producers and shippers of Chicago and those of New York will zealously guard against either city being placed at a relative disadvantage, as regards transportation rates, in reaching the domestic and foreign markets in which they compete for trade. "Market or commercial" competition is an important factor in the determination of rates.

There are two other forces, one economic and one psychological, that limit the application of the monopoly principle in rate-making. Few, if any, railroads are content with the volume of traffic that they have at any given time as a result of existing rates and efforts to obtain businesss. This is due to the fact that the law of increasing returns or diminishing costs applies strongly in the railroad business where fixed charges and other "overhead" expenses are especially large. At least half of a railroad company's expenses are quite independent of the volume of traffic, and a part of the other half of the expenses does not increase proportionally to additions to the tonnage of freight or the number of passengers carried. Thus every railroad company wants to get more business, because by so doing it can more than proportionately increase its net earnings and profits. There are only two ways to get additional traffic: One is for road A to persuade shippers and travelers to patronize it instead of road B; the other is to create new traffic by stimulating production and shipments. Most of the large American railway companies have a department to promote the location and development of industries along their lines; and the rate-making officials are careful to coöperate as far as practicable by maintaining rates that will enable shippers to reach their necessary markets. It is the policy of the railroad to make "rates that will move the traffic," subject to the limitation that the rates shall be profitable to the carrier.

The psychological fact that leads to interrailway competition is the simple and natural one that railroad officials, like other men, want "to make good"; they want to show that as a result of their efforts their railroad is performing a better service than other roads are rendering and that under their management traffic has increased and net earnings have grown. A man may want to make good in order to secure promotion, but a still stronger incentive is the satisfaction and the just pride every normal man derives from having achieved success in his life work. The ambitions of men as well as the law of increasing returns cause men to strive for results as great as, or greater than, their rivals can show. This is competition.

From the foregoing facts one principle of rate-making becomes evident. While the railroad business is in large measure monopolistic, prices or rates are not those that would yield the highest possible net profits. To the extent that government regulation permits, rates may be higher than would be possible if free competition obtained in the railroad service, but the forces of competition keep rates below the level they would reach under conditions of complete monopoly.

In all kinds of business, the railroad business as well as others, those who fix the prices, or the rates for services, will be careful, first of all, to charge enough, if possible, to cover all costs and expenses. They will also try to make the charges yield profits; and, in the absence of the restraints of economic competition and government regulation, they will charge what they think the public can afford to pay or will pay rather than to go without the article or service desired. It is thus clear that as regards railroad rates and fares in general, the ascertainable costs (both operating expenses and fixed charges or "overhead") fix the minimum level of charges; while the value of the service to the shipper and the passenger establishes the maximum within which charges will be kept. It is also true that between these two rate levels, which for most kinds of traffic are some distance apart, both the cost of service and value of service are considerations affecting the determination of actual rates.

It would seem offhand that the logical basis or standard of

railroad rates ought to be the capital costs, operating and maintenance expenses, and fair profits; and probably that would be the principle followed in making many, though not all, class and commodity rates were it possible to determine the cost of particular railroad services. Charges are per hundred pounds or ton per mile or per passenger per mile, but there has been found as yet no way for ascertaining closely how much of the entire cost of maintaining and operating a large railroad system is due to, or should be allocated to, any one of the thousands of shipments or to any one of the thousands of passenger trips that are made or taken each day. In other words, railroad expenses are for the most part "joint costs" incurred in operating the railroad system as a whole for the performance of its services as a whole. There are certain obvious differences in the terminal handling and mere haulage costs for goods that are widely dissimilar, such as coal by the carload and shoes by the case; but how much of the president's salary or how much of the interest on the bonds shall be charged up to the carload of coal and to the case of shoes? It is partly because there is no definite answer to such a question as this, that individual railroad rates are not made by giving consideration solely to cost.

Nevertheless, cost becomes more influential with the evolution of rate systems and of government regulation of rates. The Transportation Act of 1920 directs the Interstate Commerce Commission to establish or adjust railroad rates so that the carriers as a whole, or in such rate-making groups as the Commission may establish, may, as nearly as possible, earn a fair return upon the aggregate value of the property devoted to the service of transportation. The theory of the law is that the general level of railroad rates and fares shall be such as to produce revenues for American railroads as a whole, or in the several rate-making groups, that will cover the costs of the services including a fair return on the aggregate value of railroad property; but the law is careful to provide "That the Commission shall have reasonable latitude to modify or adjust any particular rate which it may find to be unjust, or unreasonable." The Commission is not required to fix individual rates with reference to costs of particular services; and, as has just

been explained, the Commission would not be able to make cost of service the sole determinant of the charges for the different classes of freight and the many kinds of commodities. When it comes to deciding upon the class and commodity rates that any separate railroad company shall or may charge, the value of the service as well as cost data and other factors will be considerations affecting the decision.

The influence of cost upon rates is increasing as a result of present efforts of the carriers in the several rate territories (described in Chapters XVIII to XXV inclusive) to systematize rate systems by substituting one standard class-rate scale in each rate territory in place of the numerous scales formerly prevailing. The carriers, with the coöperation of the Interstate Commerce Commission, are standardizing class rates and are reducing the number of commodities given ex-class or individual rates. This process is causing rates to be based more definitely upon distance; and the effect of this is that rates increase or decrease as the cost of service is affected by the length of haul. Rates do not vary proportionately with distance, and in a country of continental proportions, distance will necessarily be a minor factor in determining rates on traffic moved over long routes subject to competition, interregional and often international in scope.

What the service is worth to the shipper or passenger has not only set the upper limit of railroad charges, it has also largely determined the point below that limit at which the carrier as the rate-maker and the government as the rate regulator has actually fixed the charges. What the shipper can afford to pay for transportation depends upon his production costs and the prices he can get in his markets. What he will pay a railroad for transportation will also depend upon what rates and service he can get from another railroad, if there be one available, or from carriers by water, if there be such that can serve him. At the present time, the value which a shipper will place upon railroad transportation will often depend upon the cost and conveniences of possible motor-truck services.

The railroad carrier is careful to make "rates that will move the traffic," and also increase it steadily. The carrier being

a co-worker with the farmers, manufacturers, and other producers in getting goods to profitable markets, is bound to consider the value to the shippers of the carriage service. If the carrier acts wisely he will look to the future as well as the present and will, so far as costs of service permit, further the development of the section served by fixing rates well under the maximum value of the service to shippers.

In the regulation of railroad charges, government commissions are charged with the duty of fixing or authorizing rates and fares that are "just and reasonable." The carriers propose to, and file with, the commissions the rates and fares they wish to charge and the charges thus proposed are subject to protest of the shippers and traveling public who are, of course, concerned primarily with the value of the services. The carrier is required to justify his proposed charges, the burden of proof is upon him. It is thus clear that the interests of the shippers and other users of transportation must have much weight in determining the rates proposed by the carriers and authorized by the commissioners. Indeed, value of service is the strongest determinant of railroad charges, more weight being given to it than to the cost of service in working out class-rate scales and commodity rates.

As will be explained in the following chapter, the first step in the practical work of making railroad freight rates is to group articles into a limited number of classes. Rates are made for classes, not for articles, and the rates grade down from the highest to the lowest class according to a definite scale, there being some bulky or low-valued articles that are given individual, ex-class, or commodity rates. In discussing freight classification it will be shown that the value of an article is one of the factors that determines to what class an article shall be assigned, and thus what rate shall apply to this article, as compared with articles in other classes. Goods of high value are placed in the higher classes, those of lower value in the lower classes. This is because articles of high value will stand a higher freight charge than can be put upon those of lower value. The shipper of high-valued goods can afford to pay a higher freight rate, because the margin between production costs and

obtainable market prices is wider than in the case of low-valued articles. The transportation of a ton of shoes from the manufacturer to the shopkeeper enhances the value of the shoes more than the value of a ton of coal is increased by shipment from mine to coal merchant; indeed, the value of the service to the shipper is greater. In a word, then, the value of articles, which affects the value created by the service of transportation, influences the classification given articles and thus their freight rates.

The factors that determine railroad rates include not only the economic ones thus far considered—competition, cost of service, value of the service, and value of the articles shipped; there are also social forces that influence public policy as regards rate regulation. This policy of adjusting certain rates and fares with a view to accomplishing desirable social ends meets with the approval of the railroad companies. As long as rates as a whole yield the several companies adequate revenues, the deviations made from normal rate schedules for the purpose of benefiting society are desirable from the carriers' point of view, provided the special rates for social ends do not interfere with the maintenance of the regular charges for the services not covered by the exceptional rates.

It has long been the practice of railroads having passenger terminals in large cities to establish relatively low commutation fares for the residents of near-by suburban towns. The railroads do this, primarily, to further the growth of the suburbs and thus to increase traffic; but the public authorities that regulate fares are interested in the distribution of urban population and the reduction of congestion in the poorer residential parts of the cities. The state regulatory commissions keep the suburban fares on a lower level than that on which they would be maintained by the carriers solely for reasons of traffic development.

A notable example of an adjustment of freight rates for the purpose of favoring the distribution of agricultural production over a wider area than the usual freight tariffs would make possible is found in the system of rates established by the Texas State Railroad Commission on traffic within the state. The rates increase with the length of haul, in the usual manner,

up to a certain distance beyond which the rates remain constant. It is possible, for example, to ship cotton from a point 560 miles from Houston for the same freight charge that would be paid from a plantation 160 miles from Houston. This enables cotton to be grown throughout an extensive area in the large state of Texas and under practically the same conditions as regards costs of transportation to the primary market for the staple. A similar plan of intrastate rates applies to the other commodities of special interest to the people of Texas. Whether this "graded and maximum" system of rate-making is entirely just to the carriers and fair to producers near the market (who of course bear more than their proportionate share of the carriers' total transportation expenses) may be debatable; but such an adjustment of rates has not been held to work an unlawful discrimination.

American railroads make rates lower than those on like domestic traffic for many kinds of exports and imports handled through the Gulf, South Atlantic and Pacific coast seaports of the United States. This is done both to enable those seaports to compete more successfully with the North Atlantic ports from Virginia to Maine inclusive and to make it possible for American producers and traders to compete with their foreign rivals under more favorable conditions. The general public looks with favor upon these export and import differential rates, because they help distribute trade among the three seaboards of the United States and favor the development of the foreign commerce of the country. These social or national results are the ones in which the public is interested.

To a limited extent some classes of passengers are accorded fares lower than the regular charges. Clergymen travel on half-fare tickets, and school children may be given reduced rates. These concessions are for philanthropic and educational reasons. There are, also, instances of laborers being carried on workingmen's tickets at reduced fares during certain hours of the morning and evening. In Great Britain, Parliament long required the railroads to carry laborers at reduced rates, and for this purpose the railway companies operated what were called "Parliamentary Trains." In many countries, especially

in those in which the government owns and operates the railroads, special fares for the clergy, workingmen, school children and other classes whose travel is deemed to be of social benefit are granted more generally than they are in the United States where the railroads are corporate enterprises whose managers are under stronger pressure than are government officials to earn interest and dividends on invested capital.

It is obvious that government railway authorities can go farther than private railway administrations can go with the "socialization" of rates and fares; nevertheless, even with private ownership of railroads the economic forces controlling rates and fares are appreciably modified by social factors. Indeed, public regulation, if fully exercised, can accomplish most of the result obtainable from government ownership and operation.

Throughout this discussion of the theory and principles of rate-making frequent reference has been made to the fact that, as regards interstate traffic, not only rates in general, *i. e.*, rate schedules and systems, but also individual rates whose fairness may be questioned, are subject to revision, adjustment and final determination by the Interstate Commerce Commission. State Commissions have similar jurisdiction over intrastate rates. All railroad charges are subject to government regulation, and must be in harmony with the rate-making policies adopted by Congress and the state legislatures, and enforced by the Interstate and State Commissions.

All rates and fares are required by law to be reasonable; the Interstate Commerce Commission decides whether the charges filed by interstate carriers are or are not reasonable; and the Federal Courts may decide whether the Commission's decisions are legal and constitutional. For the most part Congress has left the Interstate Commerce Commission free to determine standards of reasonableness; and, in general, the Commission has given such weight to the several factors or principles of rate-making as its judgment dictated. The Transportation Act of 1920, however, as stated above, stipulates that the Commission shall so adjust or fix rates as to enable the carriers under honest and efficient management, to earn, as nearly as possible, a fair

return on their aggregate property devoted to the service of transportation. Thus the cost of the services as a whole is made the test of the fairness or reasonableness of rates and fares in general. With this exception, there are few legal restraints upon the administrative discretion of the Interstate Commerce Commission in deciding what rates are reasonable and lawful—its interpretation of its statutory powers being always subject to review in the Federal Courts.

The railroad commissions, particularly the Interstate Commerce Commission, have been given comprehensive powers of rate regulation; and yet, broadly speaking, rates and fares are still mainly determined, not by the Government, but by the competitive and other economic and social forces to which rate levels and rate systems are subject. The authorities of the Federal and state governments modify, adjust and correct rates and fares; they protect the public against possible unreasonable charges and practices; they endeavor to keep the rates in the several sections of the country so related to each other as to enable all regions to enjoy, as fully as may be, their special economic advantages; but, although of much value and of wide scope, regulation is more largely a corrective than a constructive force in the making of railroad rates and fares.

REFERENCES

Much has been written upon the theory of railroad rates and upon the policies of government regulation of railway charges. It is sufficient to refer to the following books and to the authorities and sources listed in those books:

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CHAPTER XVII

CLASSIFICATION AND FREIGHT TARIFFS

CLASSIFICATION is the first step in rate construction. Approximately 25,000 different articles are classified by dividing them into a limited number of classes or groups in order to reduce the number of rates which must be made. All articles within each of these classes are given the same rates unless special or commodity rates are made as exceptions to the classifications or as commodity rates. The classifications are official publications of the carriers containing the class ratings of all articles and the special rules governing billing of freight, packing specifications, marking requirements, payment of charges, mixed shipment regulations, minimum weights for carload shipments, loading and unloading regulations, and other rights and duties of shippers, consignees, and carriers.

At one time there were 138 distinct classifications in the eastern section of the United States alone, and there were 130 just before the passage by Congress of the Act to Regulate Commerce in 1887. The multiplicity of classifications and the lack of uniformity in the descriptions of commodities and the ratings applicable to traffic caused confusion and discriminations that affected commerce adversely. The growth of long-distance traffic, of through joint routes, and of through billing of freight, and the enactment of the Law of 1887 forbidding unjust and unreasonable discriminations and undue prejudices made necessary a reduction in the number of classifications. The Act of 1887 to Regulate Commerce required each carrier to file a classification with the Interstate Commerce Commission. The rail lines in the East adopted the Official Classification Number 1, in 1887, and by the end of 1889 the railroads of the South had agreed upon the Southern Classification Number 1, while the roads west of the Mississippi River adopted the Western

Classification Number 1. These classifications revised, enlarged, modified, and republished from time to time are still in existence, and cover all traffic on American railroads, except the relatively small percentage moving in intrastate commerce in states having state classifications.

Classification Territories

The continental United States, except Alaska, is divided among three major classification territories. The Official Classification applies in the territory bounded by the Atlantic Ocean; the boundary line between the United States and Canada; a line south of the Atchison, Topeka and Santa Fé Railroad from Chicago to Peoria; the east bank of the Illinois and Mississippi rivers to and including St. Louis; the north bank of the Ohio River; the line of the Norfolk and Western Railway to and including Norfolk.

The Southern Classification governs traffic in the territory east of the Mississippi River and south of the Ohio River, and the Norfolk and Western Railway.

West of the line of the Atchison, Topeka and Santa Fé Railroad from and including Chicago, the west bank of the Illinois River and the Mississippi River, is the territory of the Western Classification, which also applies in Wisconsin and the upper peninsula of Michigan.

Each territory has a committee which formulates classification rules, classifies articles, and compiles the classification for the territories. The headquarters of these committees are at New York, Chicago, and Atlanta, respectively.

Texas, Nebraska, Iowa, Illinois, Virginia, North and South Carolina, Georgia, and Florida have classifications for intrastate traffic. The railroads of the Republic of Mexico use the Mexican Classification, while those in Canada have the Canadian Classification. Rates governed by the applicable Official or Western Classifications are published to and from border crossings by railroads of the United States while Mexican or Canadian Classifications and rates apply beyond the boundary. Rates "break" at the borders, through international railroad rates being uncommon.

Consolidated Freight Classification

The chairmen of the three major classification committees of American railroads form a Consolidated Freight Classification Committee which publishes the Consolidated Freight Classification containing in a single volume the rules, regulations and ratings of the Official, Southern, and Western Classifications. This publication was first issued effective December 30, 1919, when the railroads were under the control of the United States Railroad Administration. It is not a uniform classification although that was what the Railroad Administration desired. Complete unification was found to be impracticable because of the drastic nature of the changes required in descriptions of articles, rules, and class ratings for all territories. The volume is published jointly by the three classification committees, each territory being governed by its own classification. There is uniformity in the description of the articles, and the rules are virtually identical, but the articles classified may have different ratings. A consolidated volume is a long step toward uniformity and a great convenience for shippers and carriers. Differences in traffic and industrial conditions and commercial practices continue to be reflected in slight variations in the classification rules and in the classes to which goods are assigned. When such conditions do not require distinctions to be made the tendency is toward uniformity in rules and ratings. The Classification is adopted by concurrence by each railroad or other carrier using it.

The Official Classification provides five numbered classes lower than first class, two special classes or rules and several multiple ratings higher than first class. The Southern Classification until recently had six numbered and four lettered classes, but was given twelve numbered classes as well as several ratings higher than first class on a multiple and fraction basis by the decision of the Interstate Commerce Commission in the Southern Class-Rate Case. The Western Classification contains five lettered and five numbered classes and the usual ratings higher than first class.

Classification Ratings

OFFICIAL CLASSIFICATION

Higher than First Class	*First Class and Lower*
5½ times first class (5½t1)	1
5 times first class (5 t1)	2
4½ times first class (4½t1)	Rule 25 {20% less than 2nd but not less than 3rd class
4 times first class (4 t1)	
3½ times first class (3½t1)	3
3 times first class (3 t1)	Rule 26 {15% less than 3rd but not less than 4th class
2½ times first class (2½t1)	
2 times first class or Double first class { D1 }	4
	5
1½ times first class (1½t1)	
1¼ times first class (1¼t1)	6

SOUTHERN CLASSIFICATION

Higher than First Class	*First Class and Lower*
5½ times first class (5½t1)	1
5 times first class (5 t1)	2
4½ times first class (4½t1)	3
4 times first class (4 t1)	4
3½ times first class (3½t1)	5
3 times first class (3 t1)	6
2½ times first class (2½t1)	7
2 times first class or Double first class { D1 }	8
	9
1½ times first class (1½t1)	10
1¼ times first class (1¼t1)	11
	12

WESTERN CLASSIFICATION

Higher than First Class	*First Class and Lower*
5½ times first class (5½t1)	1
5 times first class (5 t1)	2
4½ times first class (4½t1)	3
4 times first class (4 t1)	4
3½ times first class (3½t1)	5
3 times first class (3 t1)	
2½ times first class (2½t1)	A
2 times first class or Double first class { D1 }	B
	C
1½ times first class (1½t1)	D
1¼ times first class (1¼t1)	E

Classification Factors

The classes to which the thousands of articles moved by railroad transportation are assigned are determined by the classification committees after analyzing the commercial and transportation factors involved in the production, distribution, and transportation of the articles. Classification is not an exact science. Articles cannot be assigned to classes through the use of the "yardstick, the scale, or the dollar."[1]

Class ratings must be based upon real distinctions in the nature of the articles from a transportation standpoint as interpreted by the classification committees from the data presented by the carriers, shippers, or consignees, or as developed through investigations of the committees.[2] The Interstate Commerce Commission may be appealed to, to determine the class ratings to which articles shall be assigned and to determine the factors which must be considered in giving ratings to articles transported by carriers subject to the Interstate Commerce Act.

The factors of greatest importance are:

1. The intrinsic value of the article;
2. Weight in proportion to the space occupied by the article, or the density of the article;
3. The quantity offered for transportation as one consignment; whether carload or less-than-carload quantity;
4. The state of manufacture, whether the articles are crude, rough or finished;
5. The condition in which the goods are offered for transportation —whether loose, in bulk, or in containers;
6. The manner of shipping, whether set up, partially knocked down, or completely knocked down, nested or in single pieces, in bundles, or otherwise specially packed to conserve space;
7. The market value of the goods;
8. The shipper's written declaration as to the released or restricted value of the goods;
9. The cost of performing the transportation service;
10. The volume, regularity, direction, and seasonal variations in the movement of the traffic;
11. The need of special or accessorial services, such as refrigeration, icing, ventilation, heating, diversion, reconsignment, preference freight

[1] Forest City Freight Bureau *v.* Ann Arbor R. R., *et al.*, 18 I. C. C. 205.
[2] Stowe-Fuller Co. *v.* Pennsylvania Co., 12 I. C. C. 215.

service, caretakers, transit privileges, cleaning or fumigation, special cars, or other service of this character;

12. The length of the haul;

13. The type of railroad equipment required—box, stock, flat, tank, poultry, gondola, or other special type of freight car;

14. The risk of the goods damaging railroad equipment;

15. The hazards of handling the goods and the degree of care required in handling the goods;

16. The danger of spoilage or contamination of the goods;

17. The quantity of the goods that can be loaded into cars so as to occupy the cars to their cubical capacity or maximum weight load;

18. The use of actual or estimated weights;

19. The type of container used, whether box, crate, barrel, drum, package, or bundle;

20. The material of which the container is made; whether steel, wood, fiber board, paper, cloth, or other substance;

21. The kinds of protection used to secure the packages by strapping or other device;

22. The competition of carriers or commercial or market competition;

23. Special considerations incident to the development of traffic or industry in given sections of the country; and

24. The increase and conservation of revenues of the carriers.[3]

Many of these factors are also considered in making rates, for although classification and the fixing of rates are not identical it is nevertheless impossible to dissociate the two in practice. Classification is the preliminary step. In making rates different emphasis is put upon the above factors in adjusting charges to and from given points.

The Classification Committees

The code of rules compiled by the committees and published in the Consolidated Freight Classification contains also the uniform bills-of-lading contracts, straight and negotiable "order notify," and the regulations of Congress governing the transportation of explosives, inflammables, and other dangerous articles.

The scope of the work of the Classification Committees is, moreover, not confined to articles moved at class rates. The

[3] See Annual Report of the Interstate Commerce Commission, 1897; also, 25 I. C. C. 608; 17 I. C. C. 197; 54 I. C. C. 8; 13 I. C. C. 474.

tariffs of exceptions to the classification and commodity tariffs published by individual carriers or jointly by "agents" for several carriers are governed in whole or in part by the rules and regulations established by the Classification Committees. Changes in rules or regulations are made by the exceptions to the extent specifically mentioned in these tariffs, but if not specifically amended by the tariffs of exceptions, the Classification rules govern.

The procedure followed by the Committees in classifying articles and in formulating rules and regulations governing transportation is prescribed by the Interstate Commerce Commission. The formal hearings are public, due notice being given to all parties interested in the proceedings including the state regulatory bodies and the Interstate Commerce Commission. Dockets on which matters to be considered are entered are prepared, and full records are kept of the evidence and arguments advanced for and against the proposals. The findings of the Committees are published in supplements or reissues of the Consolidated Freight Classification issued by the Consolidated Freight Classification Committee.

The record of proceedings in classification cases before the Committees is made from the testimony of competent witnesses and experts for the shipping public and for the carriers. The decisions of the territorial and Consolidated Classification Committees are based upon the conclusions of the majority of the members. Protests and exceptions to the findings may be made by the parties affected to the Interstate Commerce Commission. The records of the testimony and decisions of the Committees are used by the Commission for the review of the cases and for its decisions in these matters. Great weight is given to the testimony and findings of the Committees by the Interstate Commerce Commission in arriving at its conclusions.

Freight Tariffs

The charges for railroad transportation services arrived at by considering the factors that determine rates must be published and filed with the state commissions if they apply to intrastate traffic and with the Interstate Commerce Commission,

if they are for interstate shipments and travel. The publications containing the rates and charges are known as tariffs.

Class-rate tariffs set forth rates applying to the several classes into which articles are grouped by the classification governing the tariff. The appropriate classification must be used in connection with the class-rate tariff to ascertain the rate when a class rate is used.

Another type of tariff is the exception to the classification. Certain roads for various reasons publish tariffs stipulating that the rules, carload minimum requirements, or class ratings provided by the classifications governing the movement of traffic over their lines are changed to suit the requirements of certain descriptions of traffic.

Commodity-rate tariffs name the rates between specified points on certain kinds of freight offered in large volume and with regularity. Such rates are either general, that is, applying to a number of items of traffic, or specific, applying only to certain articles. Railroads publish both general and specific commodity tariffs. Class rates apply between every station in the United States and every other station either directly or by groupings. There is always an applicable class rate. Commodity rates and exceptions, remove the articles upon which the special rates apply from the class ratings and rates that ordinarily govern.

In seeking the proper rate to apply the shipper must search the following tariffs to find the lowest rate applicable to his freight from the shipping point to the final destination: the specific commodity tariff, the general commodity tariff, the exceptions to classification, the class-rate tariff, and the classification for rating.

Traffic moving between stations both of which are on one railroad is local, and the rates applying to such traffic are "local" and are sometimes published with the proviso that they are to apply only on traffic moving between points of origin and of final destination indicated. Such rates are strictly local; while other tariffs are used in combining the local rates from the point of origin to a junction point with the rates made by another railroad to final destination. Such rates are "pro-

portional." Many tariffs containing rates between points on one railroad publish rates which may be used either as local or proportional.

"Joint" or "interline" tariffs are of rates between stations on one line of railroad and those on another. The names of the participating carriers must be shown in the tariffs and the company issuing the tariffs must obtain the authority or concurrence of the other interested carriers. One railroad may publish rates between its stations and those either of only one other line or of a number of other carriers. The joint tariffs and evidence of the acceptance or concurrence of the carriers other than the issuing company must be filed with the Interstate Commerce Commission.

"Agency" tariffs, which are published by an individual or a representative of an association of carriers, quote rates between stations on the lines of many carriers. Such tariffs reduce the number required for interline rates. Virtually all long distance interterritorial traffic moves at rates made and published in agency tariffs which are a saving to the carriers and a convenience to shippers.

Agents publishing tariffs derive their authority through powers of attorney executed by officers of the railroads concerned, the rates named in the tariffs being concurred in by the parties thereto. The tariffs, powers of attorney, and concurrences must be filed with the Interstate Commerce Commission in order to make the tariffs legally applicable.

Agents sometimes join with other agents in publishing tariffs applying to traffic in which a number of railroads and several territorial associations are interested. The Consolidated Freight Classification, the Transcontinental, and a number of interterritorial tariffs are published in this way in the interest of economy and efficiency.

The Interstate Commerce Commission has authority to determine and prescribe the form of the tariffs whether local, joint or interline, agency or joint agency, and detailed rules and specifications have been promulgated by the Commission which require all tariffs to conform in contents, form, arrangement and application with its regulations.

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CHAPTER XVIII

THE NEW ENGLAND RATE STRUCTURE

THE New England traffic district includes New England and New York east of the Hudson River. It is a part of the Eastern Territory in which the New England Freight Association, the Trunk Line, and the Central Freight Associations are operative. The Official Classification is in force in the New England district.

Traffic Characteristics

The rail lines serving New England, for the most part, operate only in that district. The Boston and Maine, the Maine Central, the Central-Vermont, the Rutland, the New York, New Haven and Hartford, which are the most important roads, have comparatively few miles of line outside of the territory. These roads depend largely for traffic upon the railroads serving the Trunk Line and Central Freight Association Territories, and to some extent upon the Canadian railroads and the coastwise and intercoastal steamship lines operating to and from New England ports.

Traffic is relatively light; manufactured products constituting a larger percentage of the total in New England than in any other section of the country. The industries of the district depend upon other sections of the country for iron, steel, cotton, wool, and other raw materials, and there are but few raw materials shipped out of New England; forest and quarry products being the only important exceptions. The flow of raw materials of large bulk and heavy weight into New England and the shipment of lighter manufactured products from the district result in a regular outbound movement of empty cars. New England has no coal mines, and secures its fuel from Pennsylvania and West Virginia via all-rail or rail-and-water routes.

The rail hauls within New England are relatively short, and the territory, especially in the states of Connecticut, Rhode

Island, and Massachusetts, is well provided with good highways. The competition of motor trucks and busses with the railroads is active and has caused some of the railroads to organize subsidiary motor companies to supplement or to replace rail services.

Intraterritorial Rates in New England

Mileage class rates are made by the New England carriers to apply upon local traffic. The class-rate scales now in force, the Anderson Scales, were named for the attorney-examiner of the Interstate Commerce Commission who recommended them, and were prescribed by the Interstate Commerce Commission in 1918.[1]

New England is divided into two class-rate zones. Zone A includes Connecticut, Rhode Island, virtually all of Massachusetts, and portions of New York and New Hampshire; Zone B includes Vermont, a portion of northern Massachusetts, most points in New Hampshire, and all of Maine except the segment from Portland south.

Zone A is the area of greater traffic and population densities and embraces the important industrial and commercial sections of New England. Zone B is primarily an agricultural and lumbering district in which traffic is light and the population sparse.

Class rates in the New England territory are governed, as stated above, by the Official Classification, and in the 1918 Rate Case the Interstate Commerce Commission established between the classes the same percentage relationship as was prescribed in 1917 for the Central Freight Association Territory. The first-class rate is the base and the lower classes are fixed percentages thereof. The percentage relationships are as follows:

Classes:	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*
Percentages of first-class rate:	100	85	67	50	35	28

Class rates on traffic moving wholly within New England are based upon mileage, the distance rates increasing by a fixed number of cents per distance block. The distance by railroad

[1] In the case of Proposed Increases in New England, 49 I. C. C. 421.

between each station and every other station in New England is calculated, and the freight rates are based upon actual distances, not upon distances between rate-basing points or zones as is customary in some other parts of the United States.

The number of stations in New England is not so large as to prevent the calculation of individual station-to-station distances.

Mileage Scales

The Interstate Commerce Commission in the New England Rate Case of 1918 established the following scales of rates for Zones A and B. In Zone A a rate of 20½ cents per 100 pounds first class was established for hauls of not more than five miles. This rate was increased at the rate of 1 cent or 1½ cents for each additional five miles up to 100 miles, where a rate of 37 cents per 100 pounds was established. The rate then increased at the rate of 1 cent or 1½ cents per 100 pounds for each ten-mile block for distances between 100 and 300 miles where the rate was established at 54 cents per 100 pounds, first class. Between 300 and 480 miles, the maximum haul in Zone A, the rate was increased at the rate of 1 cent or 1½ cents per 100 pounds for each 20-mile block up to 480 miles where the rate was established at 64½ cents per 100 pounds first class. The rates on classes lower than first class are determined by the percentage relationship between classes.

Class rates for traffic moving within Zone B were made uniformly 10 per cent higher than the rates for hauls of the same distance within Zone A. On traffic moving between Zone A and Zone B, the rates applicable to Zone B were used.

Since the establishment of the original scales in New England in 1918, the railroads have been granted several horizontal increases and one horizontal decrease in freight rates. The Director General of Railroads ordered an increase of 25 per cent in 1918, the Interstate Commerce Commission authorized a 40 per cent increase in 1920 and a 10 per cent reduction in 1922. The present scales of rates for Zones A and B are set forth in the accompanying table of New England Class-Rate Scales.

It is impossible in all cases to make rates strictly according to

the mileage scales. Decisions of the Interstate Commerce Commission have tended to fix certain point-to-point rates within New England, especially rates between places on the boundaries, that will maintain the desired relationship between rates within New England and rates between New England and other sections. Some rates in New England are adjusted to the rates between New York and Boston and the same thing is true of the rates between other strategic points. Otherwise the rates fixed by the mileage scales are used exclusively.

Commodity Rates

Commodity rates on low-grade, bulky traffic are made to a considerable extent according to mileage, the mileage scales being determined by the nature of the commodity. Commodity rates are, however, frequently made a percentage of a class rate by making exceptions to the official classification. Interrailway, commercial, and steamship competition also account for some commodity rates that do not bear any definite relation to the class-rate scales and are not a percentage of a class rate. Commodity rates in New England, like those in other sections of the United States, are made to induce traffic to move and have no mathematical relationship with class rates on a mileage basis.

Rates between New England and Other Sections

Only the salient features of the rates between New England and other territories need be described, because these rates will be discussed in subsequent chapters dealing with rates in other sections of the country.

Rates between New England and the territory of the Eastern Trunk Lines are made for groups of cities. There are twenty-four groups of rate-making points in Trunk Line Territory and more than thirty basing groups in New England. There seems to be no definite relation between these intergroup rates. The rates are blanketed for a considerable distance around the basing points in each territory and are made to enable the carriers and the industrial and commercial enterprises of both territories to compete freely with one another. Both class and

commodity interterritorial rates are made from group to group.

Rates between New England and Central Freight Association territory are made according to the percentage plan described in the following chapter. Class rates, both eastbound and westbound, between New England and Central Freight Association points are a percentage of the New York to Chicago class rates. Among the important rate-basing points in New England are Boston, Massachusetts; Burlington, Vermont; Rutland, Vermont; Lowell, Massachusetts; and New London, Connecticut.

On westbound traffic from eastern basing groups in New England to percentage groups in Central Freight Association Territory the class rates are percentages of the class rates from New York to Chicago as shown in the accompanying table. Numerous exceptions are made, however, to these percentage rates because of carrier, industrial and commercial competition.

Class rates on eastbound traffic from percentage groups in Central Freight Association to eastern basing groups in New England are adjusted upon the basic scale of class rates applying between Chicago and New York, in a manner similar to the westbound plan. The two important basing groups in New England for eastbound traffic are Rockland, Maine, and Boston, Massachusetts. The rates from the western percentage group points to all parts of New England are made with reference to the rates to one or the other of these two important groups which cover a large part of New England.

Commodity rates on westbound traffic between New England and Central Freight Association points are made with reference to the class rates, although percentages are not so strictly applied. Low-grade commodities, such as grain, livestock, and iron and steel are given rates calculated to stimulate traffic and to give free play to carrier and commercial competition. As would be expected, the rates from the Middle West into New England are influenced by the class and commodity rates from the Middle West to Trunk Line Territory.

On both eastbound and westbound class and commodity traffic, differential rail-and-ocean, rail-and-lake, and rail-lake-and-rail rates are made between New England and Central Freight

NEW ENGLAND CLASS-RATE SCALES

(Anderson Scales)

Distance	Rates in Cents per One Hundred Pounds											
	Zone A						Zone B					
	1	2	3	4	5	6	1	2	3	4	5	6
Rates: 5 miles or less..... (5-mile blocks up to 100 miles)	32	27	21½	16	11	9	35	30	23½	17½	12½	10
Rates: 100 miles ..... (10-mile blocks up to 300 miles)	58½	49½	39	29½	20½	16½	64½	55	43	32½	22½	18
Rates: 300 miles ..... (20-mile blocks up to 480 miles)	85	72½	57	42½	30	24	93½	79½	62½	47	32½	26
Rates: 480 miles	101½	86½	68	51	35½	28½	111½	95	74½	56	39	31

WESTBOUND CLASS RATES

NEW ENGLAND—CENTRAL FREIGHT ASSOCIATION

From Eastern Basing Groups	To Percentage Groups	Differentials in Cents per 100 Pounds Based on Following New York to Chicago Scale *1* *2* *3* *4* *5* *6*
New York, N. Y...	Chicago, 100%	142 124½ 94½ 66 56½ 47½
Boston, Mass.	67%–70%	Same rates as from Boston to 71% groups
Boston, Mass.	71%–120%	Same rates as from New York City to these groups
Rutland, Vt.	67%–77%	Same rates as from Boston to these groups, but not to exceed rates from Ogdensburg, New York, to 78% groups
* Rutland, Vt. ...	78%	Same rates as from New York to this group less following differentials: 8 6 4 3 5 2
* Rutland, Vt. ..	80%–120%	Same rates as from New York City to these groups less following differentials: 10 8 6 4 4 3
* Burlington Vt..	67%–120%	Same rates as from New York City to these groups less following differentials: 10 8 6 4 4 3
* Lowell, Mass. ..	67%–120%	Same rates as from New York City to these groups less following differentials: 5 4 3 3 2 1

* Rates apply via differential all-rail routes.

Association points. These rates are made lower than the standard all-rail rates by fixed differences. The rates applying via the differential routes are discussed more fully in the two following chapters.

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CHAPTER XIX

THE RATE STRUCTURE IN TRUNK LINE TERRITORY

THE Trunk Line Territory embraces most of the territory of the Middle Atlantic states. It is bounded on the north by the Great Lakes and the line between the United States and Canada; on the east by New England Territory and the Atlantic Ocean; on the south by the Potomac River and the line of the Norfolk and Western Railway through the Virginia cities to and including Norfolk, Virginia; and on the west by a line through Buffalo, Pittsburgh, and Wheeling, the so-called western termini of the eastern trunk lines.

The territory takes its name from the important arterial or trunk-line railroads serving the Atlantic Seaboard and the Middle West. For many years these railroads, including the New York Central, the Pennsylvania, the Erie, and the Baltimore and Ohio, did not extend beyond these three terminal cities. The New York Central and the Erie terminated at Buffalo and Dunkirk; the Pennsylvania extended as far westward as Pittsburgh, while the Baltimore and Ohio maintained its western terminals at Pittsburgh and Wheeling. They later extended their routes into the Middle West over the rails of subsidiaries.

These strategically located railways are served by large numbers of tributary railroads, which, like streams flowing into great rivers, carry their traffic gathered throughout the surrounding country to the trunk line of one or more of the main systems.

The trunk lines from the earliest days of railroad transportation have been keenly competitive both for eastbound and westbound traffic. A large portion of the freight carried by these roads originates at or is destined to points located on other roads in the territory and in other traffic districts. The large as well as the smaller railroads in Trunk Line Territory serve many competing cities and towns including ports and great inland commercial and industrial centers, and rivalry between

competing rail lines has shaped the rate structure to a marked extent.

Artificial and natural waterways, including the Erie Canal, the canals in Pennsylvania and the Hudson, Delaware, Schuylkill, and Potomac Rivers, as well as many smaller natural waterways, have influenced rate trunk line rates in the past and the Erie Canal has some effect at the present time.

Trunk Line Territory includes the Pennsylvania coal fields, and many manufacturing centers, hence a very large percentage of the traffic consists of minerals and raw materials, including both the products of the district and those of other sections. The tonnage of manufactures carried is relatively large, and the agricultural products of the Middle West reach the seaboard over the trunk lines.

The Basis for Intraterritorial Rates

The trunk line rates have been determined by the competitive relationship of the cities and towns with one another which has brought about a group system of class rates. The territory is divided into a large number of rate groups and within certain limits the rates from all points within one group to all points within another are the same. Distance is often disregarded in adjusting these rates. The rate groups are not uniform in size, and points located in one group may be placed in another group for traffic moving to some destinations. The groups are really lists of shipping and receiving points and not fixed areas.

New York City, Philadelphia, Baltimore, Norfolk, Albany, Syracuse, Rochester, Pittsburgh, Buffalo, Erie, Parkersburg and Wheeling, Lynchburg and Richmond, are groups of large traffic importance.

The dominant factors in the adjustment of rates from group to group are interrailway rivalry and the competition of coastwise and inland water routes with the railroads, competition of industries with each other, and of ambitious cities and ports.

Commodity Rates and Individual Railroad Mileage Scales

Commodity rates, unlike those for classes, do not have a uniform or definite basis. The commodity rates are influenced

to a large extent by the charges in other territories, a large part of the commodity traffic being hauled long distances. The trunk lines publish commodity rates on low-grade material, such as brick, sand, and stone, on a more or less rigid mileage basis and the tendency is to give increasing weight to distance in fixing class and commodity rates.

Although most class and commodity rates on traffic moving between important centers within Trunk Line Territory are made from group to group, the railroads make mileage-scale rates to and from local points or on short-haul traffic between relatively unimportant shipping and receiving points. There is no uniformity in the scales used by different carriers, but the railroads have the common practice of making lower charges for traffic between main-line points than for similar distances on branch or lateral lines.

Trunk Line—Central Freight Association Rate Adjustment

Rates between points in Trunk Line Territory and Central Freight Association Territory are made on the Percentage System. The New York to Chicago or the Chicago to New York rates are the basic or 100 per cent charges. Rates between the two territories are fixed, as a rule, upon percentages of the basic rates. The territory west of the western termini of the trunk lines—Buffalo, Pittsburgh, and Wheeling—is divided into geographical groups of irregular size and varying areas. East of these termini there are groups or zones surrounding important commercial, industrial or railroad centers.

The percentage plan was first used by the railroads operating between Central Freight Association Territory and the Atlantic seaboard in 1871, and was first applied to a limited number of articles of competitive traffic. In 1876, and later in 1880 and 1885, the percentage plan was applied to all competitive tonnage in order to help keep within tolerable bounds the bitter competition between railways, rival centers, and water-and-rail carriers. Mr. John T. McGraham, a rate clerk in the traffic department of the Star Union Line, a subsidiary of the Pennsylvania Railroad, suggested that the percentage system be applied to all competitive traffic, and the plan bears his name.

Rates are now made between percentage groups or zones in Central Freight Association Territory and named rate groups or areas in Trunk Line Territory, each group being assigned a percentage of the eastbound or westbound rates currently in force between New York and Chicago, the percentage applying in a particular group or area being determined by distance and by railroad and commercial competition. On eastbound traffic the zone in which Chicago is located is given a percentage of 100 per cent, while zones east thereof have a lower percentage, gradually shading off to the zone including Pittsburgh and Buffalo which has 60 per cent. West of the 100 per cent group the percentages increase to 117 per cent at St. Louis and to 120 per cent at Cairo, Illinois. In northern Michigan are found zones taking 100 per cent to 116 per cent of the Chicago rate, although these points are east of Chicago and the 100 per cent zone. This is due to the relatively unfavorable location of these particular areas.

The Atlantic Port Differentials

The rivalry of New York, Philadelphia, Boston, Baltimore, and Norfolk for import and export traffic, and also their competition for freight originating in or destined to the Middle West have resulted in the establishment of a definite rate relationship between these competing cities. The earliest differentials were given these ports by the eastern trunk lines in order to equalize through rail and steamship rates to Europe via these rival centers. Philadelphia, Baltimore, and Norfolk were given lower rates than from New York on traffic moving from the Middle West, while Boston was put on a higher basis. Steamship rates as a rule were lower at Boston and higher at other "outports" than at New York. Distance was also considered in fixing these differential relationships.

Westbound Traffic

Class rates from the Philadelphia, Baltimore and Norfolk rate groups to all percentage groups in Central Freight Association Territory are lower than the rates from New York. From the Boston Group, class rates to 60 per cent group points, includ-

ing Buffalo and Pittsburgh, are made by adding a scale of differentials to the New York Group rate. Class rates from Boston to groups 67 to 70 per cent are the same as the class rates applying from Boston to 71 per cent group points. The rates from the Boston Group to 71 to 120 per cent territory are the same as the rates applying from New York.

The commodity rates westbound from the Atlantic port cities to percentage groups are constructed by adding or deducting differentials from the rates applying from New York to the percentage groups in Central Freight Association Territory. These differentials vary with the port and the location of the destination groups. Rates on commodities from Philadelphia, Baltimore, and Norfolk are consistently lower than the rates from New York, while Boston is given the New York bases or higher, as shown by the following table:

WESTBOUND CLASS RATE BASES,
NORTH ATLANTIC PORT DIFFERENTIAL GROUPS

Origin Basing Groups	Percentage Territories	Class Differentials in Cents per 100 Pounds, Official Classification					
		1	*2*	*3*	*4*	*5*	*6*
New York	100%	0	0	0	0	0	0
Boston	67%–70%	Same rates as from Boston to 71% Group					
	71%–120%	Same rates as from New York to these Groups					
Philadelphia	67%–120%	New York rates to these Groups less:					
		6	6	2	2	2	2
Baltimore	67%–120%	New York rates to these Groups less:					
		8	8	3	3	3	3
Norfolk	67%–120%	New York rates to these Groups less differentials.					

Rates from other eastern rate groups to percentage groups in Central Freight Association Territory are also related to the rates from New York to those groups. The most important eastern rate groups other than the port groups include: Rut-

land and Burlington, Vermont; Lowell, Massachusetts; New London, Connecticut; Albany, New Berlin, Rouses Point, Ogdensburg, Syracuse, New York; Williamsport and Scranton, Pennsylvania; Cumberland, Maryland; Delmar, Delaware; Lexington, Quantico, Richmond, and Norfolk, Virginia; and Richwood and Elkins, West Virginia.

These groups include not only the cities or towns for which they are named but also large numbers of near-by shipping points.

Eastbound Traffic

Class rates on traffic eastward from the percentage territories in Central Freight Association Territory to the eastern port groups and other rate groups in Trunk Line Territory are made upon the same plan as the westbound rates except that the eastbound differential relationships are not identical with the westbound and the western territories and eastern groups are not precisely the same for traffic in both directions. Class rates from points in the 60 per cent to 120 per cent territories inclusive are made to the New York, Boston, Baltimore, and Norfolk rate groups upon the port differential plan. These territories and groups include all points of origin between the Buffalo, Pittsburgh, and Wheeling groups and the entire North Atlantic seaboard. The New York rates are basic in the eastbound as well as in the westbound adjustment.

Rates to the Boston group from the 60 per cent territory are made by adding the following class differentials to the rates applying from the same territories to the New York group.

Class	*Rate*
First class	$.05
Second class	.04
Third class	.03
Fourth class	.03
Fifth class	.02½
Sixth class	.02

A higher scale of differentials is added to the rates applying to New York in fixing the rates from points in 66½ to 120 per cent territories to Boston. The following class differentials

are added to the percentage territories—New York group rates; except on export traffic:

Class	*Rate*
First class	$.07
Second class	.06
Third class	.05
Fourth class	.04
Fifth class	.03
Sixth class	.02

Eastbound class rates to Philadelphia are constructed by deducting the following scales of differentials from the rates applying to the New York group:

Class	*From 60 Per Cent Group*	*From 66½ to 120 Per Cent Groups*
First class	$.06	$.02
Second class	.06	.02
Third class	.02	.02
Fourth class	.02	.02
Fifth class	.02	.02
Sixth class	.02	.02

Class rates to the Baltimore port group are the following differentials under the rates to the New York group:

Class	*From 60 Per Cent Group*	*From 66½ to 120 Per Cent Groups*
First class	$.08	$.03
Second class	.08	.03
Third class	.03	.03
Fourth class	.03	.03
Fifth class	.03	.03
Sixth class	.03	.03

Class rates to interior rate groups are constructed by taking differentials of a fixed number of cents per hundred pounds or percentages of the rate applying to New York or of rates to other groups which in turn are based upon the New York rates. The interior groups do not coincide in all cases with the interior eastern groups for westbound traffic. The most important east-

bound groups in addition to the port groups include Rockland, Maine; Albany, Mount Morris, Rochester, Syracuse and Utica, New York; Cumberland, Maryland; Belington-Elkins, West Virginia; and the Virginia cities group and Strasburg, Virginia.

Commodity rates from the percentage territories are generally made on bases similar to the class-rate adjustments. On certain low-grade commodities, including grain, grain products, and livestock, special low-commodity rates are made from a number of competitive groups to enable many producing districts to compete. Reshipping rates are made from certain market centers so that shipments may be made to these market centers and reforwarded to the seaboard markets and consuming centers at rates lower than the sums of local rates from the producing centers to the middle western markets and the local rates from these centers to the seaboard cities.

Rail-and-Water Rates

Class and commodity rates on a lower basis than all-rail rates are made eastbound and westbound between the eastern rate groups and Central Freight Association percentage territories, via rail-lake-rail, lake-and-rail, and rail-and-lake routes. These rates are arrived at by deducting differentials from the standard all-rail rates.

Class and commodity rates lower than standard all-rail rates are also made by the so-called differential all-rail routes. These routes are made up of combinations of rail lines which are not operated directly between the territories but are circuitous routes offering slower and inferior service compared with the standard direct lines. Lower rates are offered shippers to attract traffic to these "differential" routes.

COMPARISON OF CLASS RATES, NEW YORK TO CHICAGO

Routes	Rates in Cents per One Hundred Pounds					
	1	*2*	*3*	*4*	*5*	*6*
Standard All-Rail	142	124½	94½	66	56½	47½
Differential All-Rail	134	118½	89½	62	52½	44½
Standard Rail-and-Lake	129	113	85½	61	51½	43½
Differential Rail-and-Lake	124	109	82½	58	49½	42½

NOTE

The tentative report of the attorney-examiner in the Eastern Class Rate Investigation recommending a number of changes in Eastern Class Rates was submitted to the Commission in April, 1928.

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(Note: See also references following Chapters xvi, xvii and xviii).

CHAPTER XX

CENTRAL FREIGHT ASSOCIATION RATE STRUCTURE

THE section of the United States north of the Ohio and Potomac Rivers, west of the western termini of the trunk line railroads at Buffalo, Erie, Pittsburgh, and Wheeling, south of the Great Lakes, and east of the Mississippi and Illinois Rivers, and a line through Peoria and Chicago extended to include the ports on the western bank of Lake Michigan is, for railroad rate-making purposes, known as Central Freight Association Territory. It includes the western portion of Pennsylvania, all of the states of Ohio and Indiana, the southern peninsula of Michigan, the southern two-thirds of Illinois, a narrow strip of Wisconsin along Lake Michigan and a portion of Missouri adjacent to St. Louis. The Central Freight Association with headquarters at Chicago has jurisdiction over the district.

Traffic Characteristics

This territory embraces the important eastern manufacturing and commercial cities of the upper Mississippi Valley, the great agricultural region in the Ohio-Mississippi-Great Lakes area, as well as the mines and forests about the Lakes other than Lake Superior, Wisconsin and Minnesota being in Western Trunk Line Territory. The traffic is well diversified and very heavy, especially in the central and southern parts. In the northern section of the lower peninsula of Michigan the traffic is lighter and less diversified, minerals and forest products predominating. The lumber resources of this district have, however, been rapidly exploited and agriculture is getting a start in the cut-over districts. The territory as a whole is divided like a checkerboard by the lines of more than fifty important railroads which connect the important cities and towns with each other and with those in all other important districts. The traffic is composed in large part of shipments originating in

other territories or destined to other districts and of freight moving through the territory to and from outside points.

Bases for Rates Within the Territory

The Interstate Commerce Commission, in 1917, in the Central Freight Association Class Scale Case, prescribed the basis for class rates for traffic moving between points in the territory. Four zones were provided within which four scales of interrelated class rates were applied. Each set of rates was based upon the scale of mileage rates provided for Zone A.[1]

Zone A originally included the central and southern sections having relatively higher density of traffic and population. In this district are the manufacturing and distributing cities south of and including Chicago and Detroit. Zone B, in the southern part of the lower peninsula of Michigan has fewer manufacturing and commercial centers, lighter traffic and lower density of population. Zone C in central Michigan has still less traffic per mile of line, fewer inhabitants per square mile of territory and not so many cities and towns. Zone D comprised the northern tip of Michigan's lower peninsula where traffic is very light and population sparse. Railroad operating costs in Zones B, C, and D were relatively higher than in A.

The class rates in all zones bear the relationship to the first class rate that obtains in Zone A.

Classes:	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*
Percentage of First-Class Rate:	100	85	67	50	35	28

The rates provided for Zone A are made by mileage blocks starting with a basic first-class rate for a haul of 5 miles or less. Charges for classes lower than first are determined by applying the percentage relationships shown above. First-class rates for hauls of more than 5 miles are arrived at by adding 1c per hundred pounds for each 5-mile block up to 50 miles or less; ½c for each 5-mile block between 50 and 100 miles; 1c for each 10-mile block between 100 and 200 miles; ½c for each 10-mile block between 200 and 300 miles; and 1c for each 20-mile block over 300 miles.

[1] 45 I. C. C. 254, I. & S. Docket 965, decided June 29, 1917.

Rates in Zone B were fixed by adding differentials to the first-class rates applicable for similar distances in Zone A. Rates for Zones C and D were fixed by adding arbitraries to each class rate applicable upon traffic moving similar distances in Zone A. Intrastate traffic in Michigan was governed by scales of class rates made upon the same plan but differentially higher than the charges prescribed for intrastate commerce in Zone A. Zone E, included intrastate commerce moving between points in Zones A, B, and a portion of C, and Zone F, the second intrastate zone, corresponded to the territory included in the remaining portion of Zone C and in Zone D.

In a later case the Interstate Commerce Commission revised the boundaries of all of the zones, extended Zone C to include the territory formerly included in Zone D, and eliminated Zones E and F in intrastate commerce.[2]

Interstate rates in Zones B and C are made by adding 2c per hundred pounds to the first-class rate applying in Zone A for a corresponding number of miles in Zone B, and 6c per hundred to Zone A rates for hauls in Zone C. Rates for classes lower than first in each zone are determined by the percentage relationships of lower and first-class rates as prescribed by the Disque scale, named after Mr. Disque, an attorney-examiner for the Interstate Commerce Commission.

Class rates for hauls per hundred miles per hundred pounds are as follows:

Classes:	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*
Zone A	54c	46c	36c	27c	19c	15c
Zone B	56c	47½c	37½c	28c	19½c	15½c
Zone C	60c	51c	40c	30c	21c	17c
Percentage relationship of classes to first class	100%	85%	67%	50%	35%	28%

Class rates on traffic moving between different zones are those of the zone having the higher scale. This is true of both interstate and intrastate freight.

[2] Michigan Traffic League *v.* Ann Arbor R. R., *et al.*, 98 I. C. C. 660, decided June 2, 1925.

Commodity Rates

Commodity rates in Central Freight Association Territory are usually made on one or another of five plans.

1. Many such rates bear a fixed percentage relationship to class rates and are affected by changes in class-rate mileage scales. Wood pulp and numerous other forest products have charges 90 per cent of the sixth class rate; sulphate of iron 83⅓ per cent; calcium chloride 85 per cent; and wet beet pulp 70 per cent of sixth class.

2. Other commodities are given a lower rating than they would have in the Official Classification. Paper bags normally rated at fifth class are made sixth class for carload lots in Central Freight Association Territory; cardboard is sixth class; condensed or evaporated milk, fifth class; mortar color, sixth class; and puffed rice and puffed wheat, fourth class, in place of their normal classification ratings.

3. A third method of constructing commodity rates is to give some articles the lower rating provided for certain analogous commodities. Ferrosilicon in pigs is rated the same as pig iron; antimonial lead, in pigs or slabs, as pig lead; and speltz as barley.

4. Certain low-grade articles are given commodity rates based upon mileage scales much lower than the class-rate scales. Brick, clay, gravel, sand, slag, and stone are so treated.

5. Some special commodity rates are made without regard to class-rate relationships, analogous commodity ratings, or distance or exceptions to the classification. Such exceptional charges apply between specific points of origin and destination, and are not generally applicable throughout the territory.

The Computation of Distances

Mileage calculations used in determining the distance between points in Central Freight Association are not the actual distances from station to station as is the case in the New England mileage computations. The great size of the territory and the large number of stations and railroads make the measurement of precise distance from station to station im-

practicable. Rates between stations on the line of an individual railroad are commonly made on mileage scales of exact distances, but joint rates are based upon distances between basing points or groups, usually railroad junctions or large cities or towns. Rates between other than basing points are made on the mileage separating the basing points between which the nonbasing points in question are intermediate.

For example, class traffic moving between points C and D, nonbasing points intermediate between A and B, are made at the class rates applying between A and B, basing points having highest mileage and longest distance.

Rates between Boundaries and between Territories

Class and commodity rates between the important points on the boundaries of Central Freight Association are made on a group-to-group basis. Rates between the cities on the Trunk Line-Central Freight Association boundary—Buffalo, Erie, Pittsburgh, Wheeling, Chicago, and St. Louis are influenced by the percentage system applying on traffic between the territories. These group-to-group rates are used whenever they are lower than the class or commodity charges made upon the C. F. A. class rate or commodity distance scales.

The rate adjustment between Central Freight Association, Trunk Line, and New England Territories on the percentage system of rate-making was discussed in Chapters XVIII and XIX.

Rates on traffic moving between places in C. F. A. Territory and the Ohio River Crossings are usually made on the basis of the mileage scales provided for Zone A traffic for the distance over the shortest railroad route between the points. These so-called "short-line mileages" are used to determine the distance regardless of the actual route used; since all railroads strive to obtain as much of this traffic as possible.

Proportional rates between certain C. F. A. points or groups and the Ohio River Crossings are constructed for traffic moving between Central Freight Association and other territories reached via the Ohio River gateways. These rates are made the same via all crossings so as to permit the roads serving all

crossings to participate in this highly competitive traffic. Similar proportional rates are also made by the roads south of the Ohio River so that the combinations or proportional rates via any Ohio River Crossing between points in C. F. A. and Southern Territories are the same, with certain limitations.

The rates between the C. F. A. and Southern Territories are also based upon the rates applying via all-rail and combined water-and-rail routes between New England and Trunk Line points and the South to enable shippers on the Atlantic seaboard and in C. F. A. Territories to compete for the business between their respective territories and the South.

Class and commodity rates between Central Freight Association Territory and the Southwestern Freight Bureau, Western Trunk Line, and Transcontinental Territories are made in one of three ways: first, by adding differentials to the rates applying at the Mississippi or Missouri River Crossings; second, by combining proportional rates applicable to and from these crossings; or, third, by combining zone-to-zone or group-to-group rates. Each of these adjustments is discussed in another chapter.

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(Note: See also references following Chapters XVI, XVII and XVIII.)

CHAPTER XXI

THE RATE STRUCTURE IN SOUTHERN TERRITORY

THE Southern Rate Territory coincides in general with that of the Southern Classification and includes the United States east of the Mississippi River, and south of the Ohio and Potomac Rivers, and the line of the Norfolk and Western Railway from Kenova, West Virginia, to Norfolk, Virginia. It is divided into the western half along the Mississippi River, known as Southeastern Mississippi Valley Territory, and the eastern section which is designated Southeastern Territory. Each of these larger subterritories is further divided into smaller rate districts. The Lower Mississippi River Crossings, the Jackson-Meridian Group in Mississippi, and the Kentucky Junction points are important rate groups in Mississippi Valley Territory, while Atlanta and Birmingham Sub-Territories, Carolina Territory and the Virginia Cities, lying on the border between the Southern and Trunk Line Territories, are the more important rate divisions of the Southeastern Territory.

Economic Factors Influencing Southern Rates

The highly complex freight-rate structure in the South is a direct legacy of the economic history of the section. The district is almost entirely surrounded by navigable water, while inland streams afford water transportation facilities. The competition of ocean carriers exerts a compelling influence upon railroad freight rates, and in the past river craft were effective rivals of the rail lines. Freight rates when once adjusted to meet water competition are with difficulty adjusted to a "dry-land" basis, and potential competition of inland waterways still influences charges via railroad routes.

The earlier railroads in the South connected interior points with waterways with which traffic was exchanged while at the

same time the rail lines were competitors of the waterways in a very keen fight for traffic. Cities and towns located upon the coast or upon inland waterways were given relatively low rates, while other localities were given relatively higher rates. Another factor of great importance in the fixing of the southern rate structure was that the South from earliest colonial days has been agricultural and primarily monocultural. Cotton, since the invention of the cotton gin in 1793, has been "king" of southern crops. Other plantation staples, including tobacco, rice, indigo, sweet potatoes, together with the forest products, naval stores and lumber, constitute a large proportion of the outward traffic flow of the South; while manufactured goods, machinery and grain move into the territory in large quantities. The extensive system of agriculture and especially the plantation system has made the interior of the South dependent upon such primary distribution and commercial centers as Norfolk, Richmond, Savannah, Atlanta, Wilmington, Charleston, Jacksonville, New Orleans, Mobile, Memphis, and Vicksburg for markets for the products of the soil, sources of supplies of implements and other necessities, and for credit to carry the planters between harvests.

The Basing Point System of Rate-Making

As a direct result of these economic causes the railroads established, and until recently have quite generally maintained, rates which increased rapidly with distance and rose to relatively high levels. At competitive points the scales were cut and the rates to local points were made by adding to the rate from the point of origin to the competitive point the local charge from the competitive point to the final destination points.

Thus if the rate from A, a point of origin, to B, a competitive point, were 50 cents per hundred pounds, and the local charge from B to C were 20¢, the through rate from A to C would be 70¢, although C might be intermediate between A and B on the direct route of movement.

The competition between railroads and steamships was so severe that the rail carriers could not reduce all of their rates and maintain a profitable existence. The charges at the points

of water competition were reduced as much as was necessary to attract freight while the rates at other points were maintained at higher levels. It frequently happened that rates for transportation over the entire length of a railroad to a competitive water terminus did not exceed the rates charged for transportation for a much shorter distance to a local noncompetitive point between the point of origin and the terminal.[1]

Interrailroad and commercial competition, as well as that between rail and water carriers, caused the rail lines to accord lower rates to the basing points than were given to local noncompetitive points although the hauls might be longer to the basing cities than to the noncompetitive towns. Basing points were those where there was a considerable volume of freight traffic,[2] the earliest ones being the ports on the South Atlantic seaboard and the Gulf of Mexico and the larger cities and towns along the Mississippi and other navigable rivers. The low charges accorded these favored points were later extended to interior junction points and commercial centers by keen railroad and commercial competition.

Gradual Modification of the Basing-Point System

The fourth or long- and short-haul section of the Act to Regulate Commerce, as amended by the Mann-Elkins Act of 1910 and the Transportation Act of 1920, has caused the carriers in the South to modify the basing point system. It is now illegal, without specific authorization by the Interstate Commerce Commission, for carriers to charge higher rates for shorter hauls than for longer, over the same route, in the same direction, the shorter haul being included in the longer. Applications of the carriers for "fourth section relief" have been granted in many cases by the Commission but denied in many others. The tendency has been toward the elimination of rates that are combinations of charges from the points of origin to the basing points and the local rates therefrom to the final destinations. In the place of such combinations of rates there has gradually been substituted the plan of granting basing-

[1] I. C. C. 254, 280.
[2] Montezuma *v.* Central of Georgia Ry. Co., 28 I. C. C. 280.

point rates to local places tributary thereto. In other words, the basing-point rates have tended to be blanketed over a number of towns surrounding the base. Rate "groups" have thus been substituted for charges formerly applying in many basing-point territories.

Rail-and-Water Rates

The steamship lines and chartered steamers plying between the North Atlantic and the South Atlantic and Gulf ports have exerted a controlling influence upon rail rates to and from the South. The coastwise lines have for many years joined with the railroads in the New England and Trunk Line Territories in the North, and with the rail carriers in the South, in forming through rail-and-water, water-and-rail, rail-water-rail routes, and through rates thereon between points in the North and South. The combination steamship-railroad rates are lower than the all-rail rates, and interterritorial rates generally are based upon the water-rail schedules.

The water-rail rates from Baltimore to points in the South are basic. Water-rail, rail-water, and rail-water-rail charges from other points in Trunk Line and New England Territories are made by adding differentials to the Baltimore rates. All-rail rates to southern destinations from Trunk Line and New England rate groups are made by adding differentials to the through rail-and-water rates.

The first class all-rail rate from New York to Atlanta is thus found by the following process:

Water-and-rail rate, Baltimore to Atlanta	$1.69½	(basic)
All-rail rate, Baltimore to Atlanta	$1.78½	(differential 9c over water and rail)
Water-and-rail rate, New York to Atlanta	$1.80	(differential 11½c over Baltimore)
All-rail rate, New York to Atlanta	$1.89	(differential 9c over water and rail)

In the same way, rates into the South from points in Central Freight Association Territory via the Ohio River Crossings are

based upon the rates applying between Louisville and southern points. Rates between the Ohio River Crossings and points in the South are made by adding differentials to the Louisville rates. The all-rail rates between Louisville and Atlanta and many other southern points were until 1917 the same as the water-rail rates between Baltimore and the same southern points. This parity was then discontinued by the Interstate Commerce Commission, which fixed rates from Lousville lower than the charges from Baltimore.

Rates from and to Mississippi River Crossings, Memphis, Tennessee, to New Orleans, Louisiana, are made by subtracting differentials from the Ohio River Crossing rates, or by using the same rates. Charges from St. Louis are made by adding differentials to the Ohio River Crossing point rates or by using the same schedules depending upon the Crossing and the location of the place in the South.

Changes in the South

Economic conditions in the South are at present in a state of evolution and the southern rate structure is in a state of flux. The South is becoming industrialized; new industries and changed methods of production and distribution are being introduced. Cotton mills and steel plants are springing up, river navigation has been relegated to a place of minor importance, coastwise steamship lines have concentrated their activities at a limited number of primary ports such as Norfolk, Charleston, Savannah, Jacksonville, Miami, Mobile, and New Orleans. The railroads of the South through consolidations have become longer, stronger, and better equipped to meet steamship competition and to join the ocean carriers in making through route and rate arrangements. These sweeping changes in industrial, commercial and transportation conditions are modifying the basing-point system and extending the group system of rate-making.

The New Structure in the South

The Interstate Commerce Commission in a searching investigation instituted on its own initiative in 1922 undertook to bring order out of the chaotic southern class-rate structure. This

investigation was not undertaken to change the revenues of the carriers but to simplify the rate structure with due regard for the interests of the public, the shippers, and the carriers.

The rates submitted by the carriers and those prescribed by the Commission sought to harmonize all class rates, intrastate, interstate, and interterritorial between the South and other rate territories. The scales adopted are based fundamentally on mileage. They are not determined wholly but are largely influenced by distance; competition, intercarrier, commercial, and industrial, being given weight.

A single scale of distance rates to be used as maxima is prescribed for all standard carriers, excepting those in the peninsula of Florida where the comparatively light traffic justifies higher charges. Arbitraries are added to the standard scale for the portions of hauls within the state of Florida south of a line drawn through Jacksonville.

Weak railroads or short lines which require greater revenue are given special arbitraries to be added to the standard mileage scale for local traffic and for traffic hauled by the weak roads or short lines in connection with standard lines. Subject to certain restrictions as to the number of rail lines that may be used in the construction of routes of certain lengths, the distances used in making rates are the shortest ones over which cars move through interchange facilities.

A uniform class-rate relationship was ordered established for intraterritorial and interterritorial hauls. The Southern Classification is taken as the basis and there is a fixed relationship between the first-class rate and each of the other eleven classes, as follows:

Classes:	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*	*11th*	*12th*
Percentage of the first-class rate:	100	85	70	55	45	40	35	30	25	22½	20	17½

The lower classes of this scale obviate the necessity for the large number of exceptions formerly made to the Southern Classification and to less-than-carload commodity rates for which the low class ratings have been substituted.

Through class-rate scales not higher than those in southern

intraterritorial traffic were ordered applied on traffic between the Southern and the Official Classification Territories. Through rates by water-rail and all-rail routes were ordered to be established between key rate groups in the North and in the South, and these through charges were ordered to be not higher than the sums of the local rate to or from any recognized gateway between the North and South plus the differential class rates applicable to or from these gateways.

Arbitraries to be added to the rates applicable over standard lines are provided for the portions of interterritorial movements over weak or short lines.

Many water-rail, rail-water, and rail-water-and-rail rates between points in the South and North were made in the past on the nonconcurring plan. The steamship lines published the through rates and paid to the rail lines in the South and in the North the full local rates between the interior shipping points or destinations and the ports. The steamship lines received as their compensation whatever was left after the railroads had been paid their local rates to or from the ports. The Interstate Commerce Commission in the Southern Class-Rate Decision ordered the nonconcurring plan to be discontinued in making rail-water-rail rates between interior points in Trunk Line and New England Territories and interior Southern Territory points. Joint rail-water-rail class rates were found to be necessary and desirable and ordered to be established and maintained between points in the New England and Trunk Line Territories and those in the South; and maximum, reasonable rail-water-rail rates are prescribed by the Commission.

It will doubtless be years before the rate structure in the South and between the South and other rate territories is fully remodeled to the basis prescribed by the Commission in the Southern Class-Rate Decision of 1925 as amended by the supplementary orders of 1926 and 1927. That decision is of great significance, being based on a most thorough rate investigation. Upon the foundations laid in this decision the commodity rate structure in the South will be erected and the finished adjustment will without doubt serve as a pattern for other territorial rate readjustments.

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(Note: See also references following Chapters xvi, xvii and xviii.)

CHAPTER XXII

RATE ADJUSTMENTS IN WESTERN TRUNK LINE TERRITORY

THE group of northwestern states west of Lake Michigan and the boundaries of the Central Freight Association and Southern Territories, north of the Southwestern Territory, east of the Rocky Mountains and south of the boundary line between the United States and Canada comprises Western Trunk Line Territory. The northern peninsula of Michigan; virtually all of Wisconsin, excepting the narrow strip along the western bank of Lake Michigan; Northern Illinois; all of Minnesota, Iowa, North and South Dakota, Nebraska, Missouri and Kansas north of the northern boundary of Southwestern Territory; Colorado east of Denver and the eastern Colorado Common Points; and the southwestern corner of Wyoming adjacent to Cheyenne are included in the territory.

The Western Trunk Line Committee with headquarters at Chicago has jurisdiction in the territory and the Western Classification is used in connection with intraterritorial traffic and quite generally in interterritorial shipments.

Traffic Characteristics

The district embraced in Western Trunk Line Territory is primarily agricultural, the heart of the cereal belt in the United States. It is the district served by the Granger railroads which have heavier tonnages, than the roads in other territories, of agricultural products and of animals and their products and relatively smaller quantities of manufactured goods and the products of mines and forests. Long hauls are characteristic, the important cities and towns being scattered. The district has a large area, a relatively small population per square mile and per mile of railroad, and a comparatively light traffic density. There is an especially keen commercial rivalry between the cities and towns for the business of the interior and keen competition between the railroads for the traffic between the several centers.

Railroads serving the section have not been able to do so much as the carriers of other parts of the country have done to improve their financial condition since the passage of the Transportation Act of 1920. Many of the western roads have failed to earn a "fair return" because of the depression in agriculture in the territory at the close of the World War and because of necessary reductions in rates upon agricultural products.

Intraterritorial–Intrastate Rates

Class rates on traffic between local points in Missouri, Wisconsin, Minnesota, Iowa, Kansas, Nebraska, and the Dakotas are made upon scales of mileage rates prescribed originally by the respective state regulatory commissions and changed by the horizontal rate increases of 25 per cent in 1918, and of 35 per cent in 1920, and by the decrease of 10 per cent in 1922.

These scales are constructed upon the principle of a constant sum to cover the terminal freight services at each end, and variable line-haul charges which decrease per hundred pounds per mile as the distances lengthen. The mileages are graded upward by blocks in the Minnesota scale which is a typical Western Trunk Line intrastate scale and is as follows:

5-mile blocks for hauls up to 200 miles
10-mile blocks for hauls of more than 200 miles up to and including hauls of 400 miles

Joint intrastate rates made by the carriers in Western Trunk Line Territory are percentages of the combinations of local class rates between the points on their lines. Thus a joint movement of traffic from A to B in intrastate commerce, A being on the line of the Northern Railroad and B on the line of the Central Railway, with C on a common junction point would be rated as follows:

Rates	*Cents*
Local rate Northern Railroad, A to C, 100 pounds first class, 50 miles, @ 31½ cents per hundred pounds	31.5
Local rate Central Railway, C to B, 100 pounds first class, 50 miles, @ 31½ cents per hundred pounds	31.5
TOTAL	63.0
Joint rate 90 per cent of sum of local rates, plus transfer charges if any are provided for in tariffs	56.5

Several states, Iowa, Illinois, and Nebraska, have classifications applicable to intrastate traffic.

Local and joint commodity rates on distance scales similar to those used in constructing class rates, but lower per ton per mile and increasing less rapidly with distance, are prescribed for basic commodities such as grain, livestock, animal products, forest products, and minerals.

Interstate Rate Adjustments

Class and commodity rates for interstate traffic vary in method of adjustment but have a few well-defined characteristics. There are group-to-group class rates between the more important competing commercial centers and between them and the markets in which the traders of those cities do business.

An unusually important feature of the rate adjustment in Western Trunk Line Territory which has developed directly from the unusually keen commercial and railroad competition is the use, by all carriers serving the Mississippi and Missouri River Crossing cities, of the scales of class and commodity rates applicable between Hannibal and St. Louis, Missouri, the shortest distance between the rivers. This is via the Chicago, Burlington and Quincy Railroad, and is 187 miles, while by some routes the distance is three times as great. The rates by the shortest route apply via all routes.

Rates from the important groups in the eastern portion of Western Trunk Line Territory, including Chicago, Eau Claire, Duluth, Minneapolis-St. Paul, and St. Louis to the groups in the western section of the district, including Kansas City, Omaha, Sioux City and Sioux Falls, were originally made by adding scales of differentials to the rates between the Mississippi and Missouri River Crossings. Horizontal changes between 1917 and 1922 have disturbed many of the differential relationships between these rates, although the principle has not been altered.

The Interstate Commerce Commission in the Grand Island Case in 1923, established scales of maximum class rates between Chicago, and the Mississippi River Crossings on the east, and Grand Island, Hastings, and other western groups in Nebraska. The effect of this order has been to base the charges between

other eastern and western groups upon these scales in order to proserve the relationship of all groups with each other.[1]

From the western groups in Western Trunk Line Territory to those in the eastern section rates are also constructed for classes and commodities on the group-to-group plan with differential relationships between the groups and with the rates between competing centers blanketed to cover points in the surrounding territory.

The carriers publish individual scales of mileage rates to be used in local and joint interstate commerce between points other than those located in competitive groups. These rates are maxima that are applied only when there are no lower scales between the points of shipment. Rates are graded upward by distance blocks, there being no uniformity among the distance scales either in the percentage relationship of the classes or in the rate of progression of charges from block to block.

Interterritorial Rates

Rates between the Western Trunk Line and other territories are either combinations or proportional rates to and from the Mississippi River Crossings or are through interterritorial group-to-group rates. These plans are used for both classes and commodities.

Rates between Trunk Line Territory east of the Illinois-Indiana line and the eastern portion of Western Trunk Line Territory are made by combining the rates to the Mississippi River Crossings (which are percentages of the New York-Chicago rate) with the proportional rates between the Mississippi and Missouri River Crossings. From New York to Kansas City the rate is the sum of that from New York to St. Louis, which is 117 per cent of the New York-Chicago charge, plus the proportional between St. Louis and Kansas City. These proportional rates between the Mississippi and Missouri River Crossings, like the local rates, are based upon the charges over the shortest route between the rivers.

There are proportional distance rates from the Upper Missis-

[1] Grand Island, Nebraska, Chamber of Commerce *v.* Aberdeen and Rockfish R. R. *et al.*, 85 I. C. C. 502.

sippi River Crossings, for combination with the charges between these crossings and groups in interior Iowa and points west of the Mississippi River.

Rates between points in Trunk Line and New England Territories and in Wisconsin are constructed on the group plan. Rates higher than the New York-Chicago rates apply between eastern rate groups and five important groups in Wisconsin and Minnesota—Beloit, LaCrosse, Madison, St. Paul-Minneapolis, and Winona. Other points in Wisconsin, Minnesota, and the northern peninsula of Michigan have proportional rates made by combining rates east of and west of the gateways to the Northwest, *i. e.*, the Chicago junctions, Milwaukee, and other points of connection between the Eastern and Western lines.

Between Central Freight Association Territory and Wisconsin, Minnesota, and northern Michigan, rates are made from group to group. Duluth, St. Paul-Minneapolis, LaCrosse, Winona, Houghton-Hancock, Marquette-Michigamme, Munising and Sault Ste. Marie are important groups. All of these rate groups are interrelated in order to maintain the equilibrium of commercial and railroad competition.

Through commodity rates are made between important producing and consuming centers in Central Freight Association and Western Trunk Line Territories. Less important commodity traffic is given combinations of proportional rates applying via the Chicago junctions or Milwaukee.

Traffic to and from the Dakotas takes combinations of proportional rates applying via the Upper Mississippi River Crossings, or of local rates to and from other rate groups on the eastern boundary of Western Trunk Line Territory. The part of Western Trunk Line Territory that lies west of the Missouri River although it is an integral part of that Territory is sometimes considered as Trans-Missouri Territory. Rates between points east and west of the Missouri River are made from group to group. The eastern section of the territory is divided into 25 numbered rate groups and the western portion into 13 lettered groups. All rates are based upon those applying between group 1 and the lettered groups; for other groups differentials are added to the basic rates.

Colorado Common Points

On the extreme western boundary of Western Trunk Line Territory at the base of the Rocky Mountains, are Denver, Pueblo, Trinidad, and Cheyenne. Rates between the "common points" and other points in Western Trunk Line and other territories are adjusted in harmony with the general plan of making rates in Western Trunk Line Territory.

Between the Colorado Common Points and groups in the eastern section of Western Trunk Line Territory rates are combinations made on the Missouri River Crossing groups. A scale, applying between the Missouri River and Colorado Common points, was prescribed by the Interstate Commerce Commission in 1913, and this scale, as changed by horizontal increases and decreases since 1913, still applies in both directions.

Between other important groups in Western Trunk Line, Central Freight Association, Eastern Trunk Line, and New England Territories rates are combinations based on Chicago or the Mississippi River Crossings whichever affords the lower charges.

Differentials are added to the rates applicable to and from the Colorado Common Points on traffic originating at or destined to other than the Common Points.

Two other territories west of the western boundary of Western Trunk Line Territory affect the adjustment of rates in that territory. Local and proportional rates are made between Utah and Montana Common Points and the Mississippi and Missouri River Crossings and between those points and Chicago. The local rates or proportionals of western proportionals are added to the rates applying between the river crossings or Chicago to construct combination through rates to the common points in Utah and Montana. Rates between other less important cities and towns in Montana and Utah on the one hand and the river crossings are constructed by adding arbitraries to the common point rates.

Rail-and-Lake and Rail-and-Water Rates

The section of Western Trunk Line Territory within several hundred miles of the ports on Lake Superior and Lake Michigan

have lake-rail, rail-lake, and rail-lake-rail class and commodity rates adjusted on a lower basis than the standard all-rail rates. Great quantities of grain, ore, and coal, as well as merchandise traffic are moved at these differential rates.

Other sections of the territory further to the south are accorded combination rail-and-water rates via the Mississippi River, and in certain sections lower rates are made into and out of the territory by combination rail-and-ocean routes applicable via the South Atlantic and Gulf Ports.

The Present Status of Western Trunk Line Rates

The carriers, shippers, and the Interstate Commerce Commission are working upon the complicated rate structure in Western Trunk Line Territory and in the West generally, with a view to removing some of the incongruities in the rate adjustments, to improving the condition of the carriers, and to putting carrier and commercial competition upon a more orderly basis.

The Commission as a result of the Hoch-Smith Resolution is seeking in Docket 1,700 to ascertain the extent to which rates in this and other territories are unjust, unreasonable, unjustly discriminating, or unduly preferential. The purpose will be to adjust rates with due regard to general and comparative values of various kinds of class and commodity traffic in different markets.

REFERENCES

Interstate Commerce Commission: Burnham-Hanna-Munger Dry Goods Co *v.* C., R. I., and P. Ry., 14 I. C. C. 299.
——, Grand Island Chamber of Commerce *v.* A. and R. Ry. *et al.*, 85 I. C. C. 502.
——, Interior Iowa Cities Case, Iowa State Board R. R. C. *v.* A. E. R. R., 28 I. C. C. 193, 28 I. C. C. 563.
——, Memphis-Southwestern Investigation, 55 I. C. C. 515.
——, Mississippi River-Nebraska Cases, 40 I. C. C. 201.
——, Rate Structure Investigation, I. C. C. Docket No. 1700.
——, Watertown Chamber of Commerce *v.* C. and N. W. Ry. *et al.*, I. C. C. Docket No. 14743.
——, Wisconsin Rate Cases, 44 I. C. C. 602.
LaSalle Extension University, *Railroad Freight Rate Structures, Western Territory* (1926).
Act of Congress, June 20, 1925, Hoch-Smith Resolution.
(Note: See also references following Chapters xvi, xvii and xviii.)

CHAPTER XXIII

THE SOUTHWESTERN TERRITORY RATE STRUCTURE

WEST and south of St. Louis is the Southwestern Rate Territory embracing the southern half of Missouri, Louisiana west of the Mississippi River, Arkansas, Oklahoma, Texas, and traffic to and from the Republic of Mexico. This is the territory of the Southwestern Freight Bureau which maintains headquarters at St. Louis.

The Southwestern Section is characterized by a limited number of widely scattered distributing and primary market centers in an agricultural and oil-producing district of great area, relatively sparse population and comparatively light traffic density. The hauls are long. Agricultural products, livestock, mineral oils, hides and skins are shipped out of the territory, while agricultural implements, iron and steel, oil-well supplies, and manufactured articles move into the territory. The Western Classification applies and provides for 5 numbered classes, 1 to 5 inclusive, and 5 lettered classes, A to B inclusive.

The Territory is entered through three gateways: St. Louis, the great jobbing center, is the local point for several lines radiating from that city into the Southwest; New Orleans and the Lower Mississippi River Crossings form another gateway; while the Gulf ports of Texas, Houston, Galveston, Beaumont, Texas City and Port Arthur, form another avenue to the Southwest. The competition of these three gateways results in a highly complicated system of conflicting rate adjustments with cross currents of traffic moving into and out of the southwest by all-rail and rail-and-water routes via the Gulf ports, via St. Louis and via the Lower Mississippi Crossings in connection with the southeastern roads and the South Atlantic ports. There are group rates, mileage scale rates and differential relationships in confusing number.

Intraterritorial Rates

Within the Southwestern Territory there are intrastate and interstate mileage rate scales, the most important of which are the Shreveport Scale prescribed by the Interstate Commerce Commission in 1918 for use between Shreveport, Louisiana, and points in Texas,[1] and the Memphis and Southwestern Scale formulated by the Commission in 1919.[2] These scales have, subject to modifications, been extended to other intraterritorial traffic both intrastate and interstate, until virtually all freight is moved within the territory at rates made on or affected by them.

The Shreveport and Memphis-Southwestern Scales are based on mileage progressions with increases in rates for each additional distance block. The two scales are identical up to 250 miles, the Shreveport runs out at 500 miles, there being no increased charge for hauls of more than that distance. The Memphis-Southwestern Scale extends to 600 miles. Basic rates are provided for traffic over railroads under the same management and control, or on single lines. Differentials are added if more than one line is used. Thus the first-class rate is 78½ cents per hundred pounds for 100 miles over a single line, and 90½ cents for hauls of the same distance over two or more independent railroads.

The Texas Rate Structure

Texas is the largest and most important state in the Southwestern Territory and has an unusual intrastate and interstate rate adjustment. It is divided for rate-making purposes into two sections. The eastern portion of the state is a district of greater density of population, commercial activity and traffic density and is known as Common Point Territory, while the less populous, and less developed section from a commercial and transportation standpoint to the west is Differential Territory.

Mileage rates on the Shreveport Scale as modified by horizontal rate increases and decreases and by supplemental orders

[1] The Shreveport Case, 23 I. C. C. 31; 34 I. C. C. 472; 48 I. C. C. 312; 205 Fed. 380, and 234 U. S. 342. (Houston, East and West Texas Ry. *v.* U. S.)

[2] 55 I. C. C. 515.

of the Interstate Commerce Commission are published for both class and commodity traffic moving between places in Common Point Territory by the Texas Lines. Basic rates are provided for single line-hauls and differentials are added for joint-line shipments governed by the Western Classification and under the supervision of the Texas Railroad Commission.

Traffic moving over single or joint-line routes between points in Differential Territory is subject to differentials to be added to rates applicable for single or joint line-hauls of the same distance in Common Point Territory. Thus a rate of $1.17½ per hundred pounds, first class, is provided for movements of 200 miles over a single line in Common Point Territory. A 12-cent differential is added for movements in this territory over a joint-line route, or a rate of $1.29½. The rate for a single line haul of 200 miles in Differential Territory is 30½ cents more than for a haul of the same distance in Common Point Territory, or $1.48 for a single line and $1.60 for a joint-line movement.

The distance or mileage rates provided for classes and commodities in both Common Point and Differential Territories are constructed on the graded and maximum plan. The rates increase by an increment of 1½ cents to 2½ cents per mileage block of 5 to 25 miles up to 500 in the case of class rates, while the commodity rates are graded up to distances which vary with the nature of the commodity and the peculiar needs of the industries which produce the goods. After the maximum mileage limits are reached rates are then not increased for additional distances.

Rates between the states in the Southwestern Territory are made upon mileage scales or by group-to-group adjustments. When the charges for classes or commodities from group to group exceed the mileage scales, the lower mileage scales of rates are used. In the absence of specific group-to-group rates, the mileage rates apply. The short railroad line mileages are used in calculating the distances to be used in connection with the mileage scales, provided there are actual facilities for the transfer of traffic at the junction points used in computing the mileage.

TEXAS CLASS-RATE SCALES AND DISTANCES

COMMON POINT TERRITORY [3]

Rates in Cents per Hundredweight

DISTANCE IN MILES		CLASSES					
		Single Line			Two or More Lines		
		1	*5*	*E*	*1*	*5*	*E*
10 and less	5-mile blocks	35	15½	8	47½	21	11
25 and over 20		44½	21	11	56½	27½	14
50 and over 45		55½	26½	14	67½	33	17
75 and over 70		67	32½	17	79	38½	20½
100 and over 95		78½	37	20½	90½	43	23
150 and over 145		101	48½	25	113	55	28
200 and over 190	10-mile blocks	117½	56½	29½	129½	62½	32½
250 and over 240		132½	64	33	144½	70	36
300 and over 275	25-mile blocks	140	67	35	152	73	38½
400 and over 375		155	74½	38½	167	81	42
500 and over 475		170	82	43	170	82	43
500 and over, blanketed		170	82	43	182½	88	45½

Class Differentials

Differentials as follows are added to rates shown in the table above to find rates to, from or between points in Differential Territory, for the total distance from origin to destination via the route used in determining the rate, and for the actual distance in Differential Territory via the route used.[4]

DIFFERENTIALS

Distance in Miles		Classes		
		1	*5*	*E*
20 and less	10-mile blocks	3	2	2
50 and over 40		8	2	2
100 and over 90		15½	9	5
150 and over 140		23	14	8
200 and over 190		30½	17	11
250 and over 200	50-mile blocks	38½	21	15½
300 and over 250		45½	23	15½
Over 300		45½	23	15½

[3] Governed by Western Classification. Item No. 1210–Texas Lines Tariff No. 2-1, Agent A. C. Fonda, I. C. C. No. 174.

[4] Item No. 1005, Texas Lines Tariff No. 2-1, Agent A. C. Fonda, I. C. C. No. 174.

Interterritorial Rate Adjustment

Between the Southwestern Territory and the rest of the United States, excepting the far West and Atlantic seaboard, and the territory tributary to the North Atlantic ports, class and commodity rates are constructed on the Defined Territory System. These defined territories, of which there are 18 important ones, are rate districts of considerable and varying size centering around the most important cities or districts that have traffic for the Southwest. The boundaries of the defined territories vary in order to reflect the geographical relationships between the defined territories and the destination groups in Arkansas, Oklahoma, Texas, Missouri, or Kansas, and to take account of differences in commercial or railroad competition in these territories.

Five primary destination groups are recognized in the Southwest:

1. The Oklahoma-Southeastern Kansas group
2. The Arkansas group
3. The Fort Smith group
4. The Texarkana group
5. The Texas-Louisiana group

The Defined Territories rates bear a fixed relationship to those applying from the St. Louis district to the destination territories in the Southwest. Rates from the Memphis and Little Rock-Fort Smith Defined Territories are made by deducting differentials from the class rates applying from St. Louis to the same destinations. Rates from other Defined Territories are made by adding class differentials or arbitraries to the St. Louis rates.

The present scale of class rates and differentials for first-class and Class E rates from St. Louis and Defined Territories to Texas points are shown in the accompanying table (page 262). These rates and differentials are representative of those applying from Defined Territories to other southwestern destination groups.[5]

[5] Item No. 5215, Southwestern Lines Tariff No. 1-P., I. C. C. No. 1807.

RATES FROM ST. LOUIS AND DEFINED TERRITORIES TO TEXAS VIA STANDARD ALL-RAIL ROUTES

Class Rates: St. Louis, Mo., to Texas Common Points, in Cents per 100 Pounds	*1*	*2*	*3*	*4*	*5*	*A*	*B*	*C*	*D*	*E*
	223½	190½	158	146	114½	120	106	88	70	59½

Origin Groups	Basis	1st Class Differential	1st Class Rate	Class E Differential	Class E Rate
St. Louis, Mo., Group	flat	0	223½	0	59½
Little Rock-Fort Smith Group	deduct	35	188½	12	47½
Memphis Group	deduct	15	208½	7½	52
Carolina Group	add	40½	264	12½	72
Cincinnati Group	add	30½	254	7½	67
Chicago Group	add	30½	254	7½	67
Dayton-South Bend Group	add	48½	272	15½	75
Detroit-Cleveland Group	add	61	284½	16½	76
Fox River Group	add	61	284½	15	74½
Louisville Group	add	16½	240	3	62½
Macon Group	add	13½	237	2	61½
Middlesborough Group	add	57½	281	15½	75
Milwaukee Group	add	30½	254	7½	67
Nashville Group	add	6½	230	½	60
Omaha-Davenport Group	add	22½	246	4½	64
Pittsburgh Group	add	76	299½	23	82½
Raleigh Group	add	66½	290	23½	83
Sioux City Group	add	42½	266	10½	70

Commodity rates from the Defined Territories to the Southwest do not in all cases bear such a definite relationship to the St. Louis rates as are maintained in the class-rate differential adjustments. The distributing centers of the Middle West and the manufacturing districts of many sections compete with one another for business in the southwestern market. The iron and steel manufacturers of Chicago and the Middle West are in competition with the Pittsburgh mills for the large trade of the Southwest. Through commodity rates, which are closely related to the rates from other producing and distributing centers or combinations of proportional rates to and from the St. Louis, Mississippi River Crossings or Gulf ports, are maintained to encourage competition. Many commodity rates are made into the Southwest on comparatively high-grade manufactured goods, including dry goods, drugs, iron and steel goods, agricultural implements, canned goods and other manufactures.

Rates from the Southwest Territory

Class rates from southwestern points of origin to destinations in other territories are made by adding differentials to or deducting them from the charges applying from St. Louis to the destination territories. The same basic plan of differential adjustment is followed, with slight modifications, as is used in fixing inbound rates into the Southwest from the Defined Territories. If no through rates are published the rates to and from St. Louis or the other gateways are used as proportionals to construct combinations.

Commodity rates from the Southwest follow the same general plan as is used in making commodity rates into the territory. Through or proportional schedules are constructed between southwestern points of origin and destinations outside the territory on such important native products as cotton, cotton linters, cottonseed products, rice, salt, livestock, animal products, hides and skins, lumber, sulphur, and mineral oil.

Kansas Jobbers' Scale

An unusual result of the effect of commercial competition upon railroad freight charges is the comparatively low scale of mileage rates applying between Kansas and Oklahoma groups. The jobbers in Kansas are in competition for the interior southwestern trade with St. Louis, Memphis, and other cities on the border of southwestern territory. The wholesalers in Kansas as well as those in the rival cities obtain their goods from widely distributed eastern and middle western manufacturing points from which rates are often made by adding proportionals to those applying to St. Louis, Memphis, or other rate-breaking points on the Mississippi River. Consequently the Kansas jobbers pay higher freight charges to bring the goods to their distributing centers than do their rivals farther east.

The carriers serving the Kansas distributing cities make their class rates into the Oklahoma southwestern markets on a comparatively low basis per ton per mile for the purpose of equalizing rates for the Kansas and St. Louis jobbers. The reduced scale has been extended and made to include class traffic moving

in both directions between Kansas, parts of Missouri, and Oklahoma.

Rail-and-Water Rates

One of the most important sources of supplies for the Southwest and one of its most important markets is the Atlantic seaboard region which includes New England and virtually all of Trunk Line Territory. A number of steamship lines connect New York, Philadelphia, and Baltimore directly with the Texas Gulf ports—Galveston, Houston, and Beaumont. These lines publish through all-rail, rail-water, water-rail, and rail-water-rail rates in connection with the lines serving the New England, Trunk Line and Southwestern Territories. The steamship lines connecting the North Atlantic ports with those on the South Atlantic also maintain through routes and through rates between points in the North and those in Southwestern Territory, particularly in the section removed from the Gulf ports. Rates over combination rail-and-water routes between the Southwest and other territories are sometimes constructed by combining proportionals published to and from the North and South Atlantic or Gulf ports. If these combinations of proportionals are lower than the through rates, the tariffs frequently provide that the lower charges may apply.

The charges made by the steamship lines into the Southwest bear a close relationship to the all-rail rates from St. Louis and Memphis into the Southwest and from the Southwest to those rate-breaking points. The relationships have, however, been disrupted by frequent changes, so that there is no precise differential relationship as there is in the rates via all-rail routes between the Defined Territories and St. Louis.

The all-water, rail-water, water-rail and rail-water-rail rates between the North and East and Southwest via the South Atlantic and Gulf ports are considerably lower than the rail charges between the same points.

Many of these combination rail-and-water rates are published by the steamship lines on the nonparticipating basis. The rail carriers in Trunk Line and New England Territories in many cases are not parties to the tariffs although the traffic originates

at or is destined to interior points on their lines. The steamship companies and the southwestern rail lines, however, join in the tariffs and divide the proceeds of the through rates after the northern railroads have been paid the full local for the portions of the hauls in their territory.

This rather unusual method of rate construction is due to the reluctance of the New England and Trunk Line railroads to content themselves with shares of relatively low rail-and-water or rail-water-rail rates for the short hauls between their ports and interior points when the traffic moves via water. The roads in the northeastern section would prefer their share of higher all-rail rates via their western rail termini. The Pennsylvania Railroad, for example, receives pay for a relatively short haul of less than 200 miles when traffic from Harrisburg, Pennsylvania, to Dallas, Texas, moves via a rail-water-rail route either via New York, Philadelphia, or Baltimore, and thence via a North Atlantic-Gulf line in connection with a southwestern carrier serving the Gulf ports. If the same traffic were to move over an all-rail route the Pennsylvania could haul the goods nearly 800 miles to St. Louis. The eastern roads have quite generally refused to accept a division of a joint rate via rail-water, water-rail, or rail-water-rail and have required the parties to the through rates to pay the full local rates between interior northern points and the ports before the proceeds are divided among the carriers parties to the through rates; but there are some instances in which the eastern carriers join with the steamship lines and the southwestern railroads in publishing joint through rates via rail-water-rail routes, each carrier receiving a division of the rate for its share of the haul.

A third type of rate arrangement between the East and the Southwest is the nonconcurring plan. The steamship lines in such cases publish rail-water-rail rates and pay the eastern and southwestern carriers the full local charges between the interior shipping or destination points and the ports and retain whatever is left as the steamship companies' shares of the rates.

The all-water and many combination rail-water rates do not include marine insurance. Shippers may arrange for this

protection either under their own policies or under the open policies maintained by the steamship companies. A premium is charged by the steamship lines for this insurance coverage.

Southwestern Rate Investigation

The Interstate Commerce Commission has the matter of all southwestern rate adjustments before it in the Consolidated Southwestern Rate Cases. The examiner's proposed report was submitted to the Commission in 1924 and a decision was made by the Commission in 1927 which established a system of group-to-group class rates based upon mileage between important groups in the Southwest and important commercial and industrial centers in other territories, and with commodity rates based upon percentages of established group-to-group class rates.[6]

The new rate adjustment is a comprehensive system of distance rates embodying uniform class percentages and groupings of related points of origin and destination. A maximum distance scale of class rates is provided for traffic moving over standard all-rail lines, starting at 36 cents per hundredweight first-class for movements of 5 miles or less. Additions of 2 or 3 cents per 100 pounds are made for each additional 5-mile block up to 100 miles. From 100 to 200 miles, additions ranging between 2 to 4 cents are made for each extra 10 miles of haul up to 240 miles. Increments of 3 to 5 cents are made for each additional 20 miles of haul between 240 and 800 miles. The first-class rate from this distance to 1500 miles grades upward at the rate of from 3 to 4 cents for each 25-mile block.

A lower scale than the southwestern scale is provided for certain traffic in the Kansas-Missouri district by the Kansas-Missouri Scale. Differentials are to be added to the standard scale rates for traffic moving in Texas and Oklahoma differential territory and for traffic moving over short or weak lines.

Representative first-class rates of the major distance scales, and the differentials to be added are shown in the accompanying table.[7]

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[6] 123 I. C. C. 203, decided April 5, 1927, effective Dec. 5, 1927.
[7] Appendix 18; 123 I. C. C. 203, Column 100.

REPRESENTATIVE RATES AND DIFFERENTIALS IN SOUTHWESTERN TERRITORY

DISTANCE	DIFFERENTIALS			
	Southwestern Scale of Rates	Kansas-Missouri Scale	Texas and Oklahoma Differential Territory	Differentials for Fort Smith and Western Railway
	First-Class Rates, Western Classification, in Cents Per 100 Pounds			
5 miles or less.	36	33	7	5
100 miles.....	79	73	16	12
240 miles	119	110	24	18
800 miles	227	211	45	—
1500 miles	318	296	64	—

The territory of the Southwest and other districts is divided into a number of related rate groups and through rates based upon distance are provided between these origin and destination groups.

Maximum ocean and rail rates between the Southwest via Gulf and South Atlantic ports and interior points in the East are based primarily on the total rail-ocean-rail or ocean-and-rail distance but are lower than the all-rail rates. The water and rail rates include the marine insurance premiums to most southwestern points.

REFERENCES

Interstate Commerce Commission Decisions: Consolidated Southwestern Cases, 123 I. C. C. 203.

——, The Shreveport Cases, 23 I. C. C. 31; 34 I. C. C. 472; 48 I. C. C. 312.

Natchez C. of C. *v.* Louisiana and Arkansas Ry., 52 I. C. C. 105.

——, Southwestern Shippers Traffic Ass'n *v.* A., T. and S. F. Ry., 24 I. C. C. 570.

——, Memphis Southwestern Case, 55 I. C. C. 515.

——, Southwestern Class Rate Case, 48 I. C. C. 379.

LaSalle Extension University, *Railroad Freight Rate Structures, Western Territory* (1926).

United States Supreme Court Decisions: Houston, East and West Texas Ry. *v.* U. S., 234 U. S. 342.

CHAPTER XXIV

THE RATE STRUCTURE IN THE MOUNTAIN-PACIFIC TERRITORY

WEST of the boundaries of the Western Trunk Line and Southwestern Territories is the section designated by the Interstate Commerce Commission as the Mountain-Pacific Rate Territory. Several subdivisions of this large area are made for convenience in adjusting intraterritorial and interterritorial freight rates.

The first subdivision, that of the Pacific Freight Bureau, embraces California, Nevada, Arizona, Utah, and portions of Wyoming, Colorado, and New Mexico.

North of this the North Pacific Coast Freight Bureau has jurisdiction over traffic in Washington, Oregon, Idaho, and western Montana—the so-called "Inland Empire."

Both of these territories were included within the general intermountain rate adjustment territory by the Interstate Commerce in *Ex Parte* 74, decided in 1920, and also within the territory of the Transcontinental Freight Bureau which publishes rates applicable to movements of rail traffic between points east and west of the Rocky Mountains.[1] The boundaries of each of these territories are vague and there is some overlapping due to the difficulty of making the traffic of each division mutually exclusive.

Traffic Characteristics

Railroads and industries in the Mountain-Pacific Territory are much newer than those in other sections of the United States. The commerce is dependent upon traffic moving to and from other territories; the population as a whole is small, although the cities along the coast and at the railroad junctions are growing very rapidly; while the eastern part has relatively

[1] 58 I. C. C. 220, July 29, 1920.

few cities or towns, a sparse population, no water transportation facilities, light traffic, steep grades, and difficult and costly railroad operation. The Pacific coast section, however, has many towns and large growing cities, a number of excellent harbors used by coastwise, intercoastal, and transpacific steamship lines and by chartered steamers, relatively heavy traffic, and less difficult operating conditions. The rivalry between the larger distributing centers and primary markets of the territory is unusually keen as also is the competition of the carriers for traffic at points served by more than one railroad or steamship line. Motor-truck competition has been very active in the coastal states due to the excellence of the highways.

Intrastate Rate Structures

Traffic between points within the several states is moved at rates based upon distance scales, although water competition at the coastal cities and for some distance back from the ports prevents strict observance of distance. Straight distance rates are made applicable to traffic moving between local points, but a so-called "distributive scale" used in Washington and another in Montana, are applied to traffic between the principal distributing centers and the market districts. In other states standard distance scales are made for main-line traffic with higher mileage scales for branch-line movements. Such scales are found in Oregon and California.

The scales of mileage rates are by no means uniform. Those of the interior states, Arizona, Nevada, New Mexico, Wyoming, Colorado, Utah, Idaho, and Montana are on a higher basis than those applicable on traffic in Washington, Oregon, and California. Some of these scales have been prescribed by the respective state regulatory commissions while others have been established by the rail carriers.

Distance scales of commodity rates or commodity rates based on relationships to class rates are found in many states as a result of state regulatory commission orders or action of the carriers. There are exceptions to the Western Classification, and it is the practice to make specific commodity rates to move traffic and to meet competition.

Interstate Intraterritorial Rates

Rates between the 11 states in Mountain-Pacific Territory are made upon several different bases. Relatively high charges based upon distance are often made on local traffic between non-competitive points of slight commercial importance, while lower group-to-group local and proportional rates are established between the major centers of commerce and railroad competition. Still lower class rates are in force between ports and surrounding "groups" when there is steamship competition. These rail tariffs and the port-to-port steamship rates are maintained as nearly as possible on a differential relationship. The steamship lines, by establishing through rail-water-rail rates in connection with the rail carriers and by providing all-water proportionals to and from the ports to be used in conjunction with rail rates, form joint rates, and thus, in reality fix all rail rates for considerable distances into the interior. The all-rail interstate tariffs are forced downward by competition. Interior and especially local points in the states not bordering upon the Pacific Ocean and not served by the Pacific coast rivers are without the benefit of the water competitive rates.

The most important single scale of class rates in the Mountain-Pacific Territory was originally established by the Interstate Commerce Commission in 1911[2] for interstate commerce in the North Pacific Coast Territory. This was a mileage scale of maximum rates; it was graded for distances up to 700 miles; and is now used in Washington intrastate traffic, being known there as the Washington distributive scale. At places where water competition is active, it has been modified to enable the carriers to compete with the steamship lines.

The scale is modified in other instances and differences in distance are ignored in order to facilitate the competition of large commercial centers. Seattle, Tacoma, and Portland are placed upon a competitive basis by deviation from distance scales in adjusting the class rates applying between the cities and the district in which they compete. The same device is used to facilitate competition at other points.

[2] 21 I. C. C. 640.

MOUNTAIN-PACIFIC TERRITORY—INTRASTATE—CLASS-RATE SCALES

STATE	SCALES	ESTABLISHED BY
Arizona	Maximum distance scale	Arizona Corporation Commission
California	Based upon distance but not strict mileage scales. Interstate scales prescribed by I. C. C. observed as Minimum in Central and Northern California	Railroad Commission of California, modified by Interstate Commerce Commission
Colorado	Graded with distance, but not strict mileage scales	Railroads
Washington ...	Distributive scale (Lower mileage basis) Distance scale (Higher mileage basis) Exceptions to these scales on C., M. and St. P. Ry. competitive Traffic	Public Service Commission of Washington C., M. and St. P. Ry.
Wyoming	Distance scale of Maximum rates	Public Service Commission of Wyoming
New Mexico ...	Distance scales for individual carriers	New Mexico State Corporation Commission
Idaho	Distance scales	Railroads
Montana	Distance scales Distributive scales	Railroads
Nevada	Individual main- and branch-line distance scales for specified carriers	Public Utility Commission of Nevada
Oregon	Main-line distance scale Branch-line distance scales Exceptions due to water competition	Oregon Railroad Commission Railroads
Utah	Graded with distance, but not strict mileage scales	Railroads

Transcontinental Rate Adjustment

Traffic moving between the 11 states in the Mountain-Pacific Territory and the rest of the United States, and the rates thereon are known as "transcontinental."

The territory west of the Rocky Mountain states is in the jurisdiction of the Transcontinental Freight Bureau, with headquarters at San Francisco. The territory is divided for transcontinental rate-making purposes into four groups: (1) the North Pacific Coast Terminals including the territory adjacent to the ports, Portland, Seattle, and Vancouver; (2) North Pacific Intermediate or Intermountain Territory centering around Helena, Boise, and Spokane; (3) the South Pacific Coast or California Terminals, including San Francisco, Los Angeles, and San Diego; and (4) South Pacific Intermediate or Intermountain Territory.

The territory east of the boundaries of the Transcontinental, excepting North and South Dakota and portions of Minnesota and Nebraska, is divided into 12 groups designated by the letters A to M inclusive, the letter I being omitted. The boundaries of the lettered groups east of the Rockies are not the same for eastbound as for westbound transcontinental traffic because of differences in carrier and commercial competition, but the principle upon which the rates are constructed is the same.

Rates between points of origin in the lettered groups and the Transcontinental Territory are made on the graded group-to-group principle, and are blanketed over large areas, the same rates being made from all points within each respective group to the same destination in Transcontinental Territory. The highest class rates are made from the most easterly rate groups, except that certain port cities are given lower rail-water rates. The rate groups further west are stepped down gradually until the lowest transcontinental rates apply from the most westerly rate group, Group J. The graduation of rates is shown in the accompanying table.

The western destinations are not divided into fixed rate groups to which blanket rates are made, there being instead a large number of scales of rates to various destinations in the four major sections.

The basic rate scales, which are those in force to the California Terminals, are applied not only to the ports and important railroad competitive points but also to many local main-line

TABLE OF WESTBOUND CLASS RATES: EAST END RATE GROUPS TO A CALIFORNIA TERMINAL GOVERNED BY WESTERN CLASSIFICATION

Rates in Cents per One Hundred Pounds

FROM	CLASSES									
East End Group	1	2	3	4	5	A	B	C	D	E
	RATES									
A and K.....	555	480	398	338	285	288	228	180	173	158
B and L.....	540	465	390	330	277½	281	222	176	168	150
C and M.....	525	455	378	322½	270	273	218	173	165	147
D	510	443	367½	311	263	266	210	165	158	135
E	495	428	357	300	252	258	203	158	153	128
F	450	390	330	275	240	240	185	142½	140	117
G	420	363	308	255	225	225	173	135	131	117
H	420	363	308	255	225	225	173	135	131	117
J	366	317	267½	225	197	197	151	117	112½	95

Agent, H. G. Toll, Westbound Transcontinental Tariff, 1-A, I. C. C. 1177, effective Jan. 1, 1927.

points east of the terminals, local rates being in some cases added to the through charges applicable to the junctions in constructing rates to destinations on branch lines.

The scales of class rates to South Pacific Intermediate or Intermountain points are lower than those to the terminals. Reno and Winnemucca, Nevada, are granted scales differentially lower than the terminal rates and the rates are blanketed over large areas in Intermediate Territory. A number of destinations in this territory are given rates higher than those to Reno or Winnemucca and higher than those to the California Terminals. This is done where railroad operating conditions are especially difficult and operating expenses are high at branch-line and minor main-line stations.

Westbound class rates to the North Pacific are made from lettered groups and the rates are blanketed to include large expanses of territories by applying scales graded off from east to west in much the same manner as are the rates to the South Pacific or California Terminals and to the South Pacific Intermediate Territory. The same rates are usually applied to all terminals from each lettered group. The terminals' territory includes the Canadian and United States North Pacific ports

and many local main-line points, railroad junctions and commercial centers east of the coast. From many points in the lettered groups of origin the same rates are applied to the North Pacific and to the South Pacific Terminals, but this is not done where there are great variations in distance.

The basic terminal rates are applied to many interior points in British Columbia, Oregon, and Washington, while the rates to relatively unimportant local and branch-line points are made by adding arbitraries to the rates to the terminals or junctions nearest the local points of destination.

Class rates from the lettered groups in the East to destinations in North Pacific Intermediate or Intermountain Territory are, because of the shorter distance, usually on a lower basis than those to the North Pacific Terminals. Spokane and Walla Walla, Washington; Boise, Pendleton, and Idaho Falls, Idaho; and La Grange, Oregon, for example, have rates lower than the terminals. These rates are applied to many other main-line and junction points in eastern Washington and Oregon, and in Idaho. Still lower rate bases prevail to the Montana Common Points and other important Rocky Mountain communities.

Arbitraries are added to the nearest main-line or junction-point rates in fixing charges to relatively less important destinations on the branch lines of railroads in North Pacific Intermediate Territory, as in the case of South Pacific Intermediate or Intermountain Territory.

A large share of the tonnage across the continent is commodity traffic consisting of articles exempted from the Western Classification and given commodity rates from eastern to western groups. There is a greater tendency to blanket rates on commodities than on classes, although commodity rates are sometimes lower to the important Intermountain rate groups than to the Pacific Coast Terminals.

The transcontinental destinations are divided among six numbered groups; three in the South and three in the North Pacific Territories. Lower commodity rates are established from eastern groups to the Pacific Coast Terminals on goods especially susceptible to water competition than are made to Rocky Mountain branch-line or local points. Important competitive centers

are usually given lower commodity as well as class-rate adjustments.

Traffic moving eastward at class rates from points in Transcontinental Territory to points east of the territory is carried at rates made on the same principles as control in westbound class traffic. The east-end territory is divided into groups designated by letters A to J inclusive (omitting the letter I), corresponding generally to the originating territories for westward traffic, although there are certain variations of minor importance. The west-end territory includes the same four subdivisions for eastbound as for westbound traffic—South Pacific Coast or California Terminals, South Pacific Intermediate or Intermountain Territory, North Pacific Coast Terminals, and North Pacific Intermediate or Intermountain Territory.

Commodity rates from Transcontinental Territory to the east are blanketed to a far greater extent than are the westbound rates. Not only are identical commodity rates made from all four originating districts to eastern group points, but the eastern groupings are often disregarded and blanket or "postage stamp" rates are made to all points east of the Mississippi or Missouri Rivers or other rate-breaking lines. This system of commodity rate-making is extensively followed in tariffs on native products of the Pacific coast that are competitive in all middle western and eastern markets with the products of other sections of the United States.

Water Competition

The transcontinental rate structure has a development as long as the history of the competition of rail and coastwise water carriers. The rate structure of to-day is the resultant of the rivalry of carriers by rail, rail-and-water routes and all-water routes, of commercial and industrial competition, and of the limitations thereon imposed by the Federal Government through the decisions of the Interstate Commerce Commission.

Before the opening of the Panama Canal in 1914 there were all-water routes via Cape Horn or the Straits of Magellan, water-rail-water routes via the Isthmus of Tehuantepec or the Isthmus of Panama, and water-rail routes via the South Atlantic

ports or New Orleans or Galveston. All were circuitous and slow compared with the all-rail lines, but the rates were lower than the railroads could afford to charge.

The rail carriers sought to meet this competition by making rates to the Pacific Coast Terminals and adjacent territory lower than to points in Intermountain Territory which were charged rates made by adding the back-haul rates from the Pacific coast ports to destination points to the rates applicable through to the more distant coast cities. From New York to Reno, Nevada, the rates were once the sum of the charges from New York to Sacramento and from there back to Reno, although the all-rail distance from New York to Reno is several hundred miles less than to Sacramento.

The opening of the Panama Canal and the great increase in the number of vessels and the tonnage of cargo passing through the Canal since the close of the World War, when shipping used in overseas service was diverted to the intercoastal domestic trade, has made competition a more powerful factor in the transcontinental rate adjustment. The tariffs of intercoastal steamship companies are not regulated by the Interstate Commerce Commission, and have been kept so low by the very active competition of the coastwise lines as to cause the railroads to lose much tonnage.

The Interstate Commerce Commission has permitted the railroads in certain instances to reduce rates to the terminals while maintaining higher rates in the interior. This was done when the competition at the seaboard was actual, and when the terminal rail rates were compensatory and the interior rates were not unreasonable or unduly discriminatory. In most instances, however, applications of the railroads have been denied. Rates via water-and-rail routes to the Pacific from New York and Philadelphia via Gulf ports were established in 1924 to enable shippers to meet the all-rail transcontinental rates from Chicago and other middle western cities. Low proportional rates from Chicago and the Middle West to South Atlantic and Gulf ports to be used with water rates in making combined rail-and-water rates between these sections and the west coast had been allowed by the Interstate Commerce Commission in 1922.

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(Note: See also references following Chapters xvii, xviii and xix.)

CHAPTER XXV

EXPORT AND IMPORT FREIGHT RATES

SPECIAL rates, lower than the normal charges, are made by American railroads on many exports moving between inland points and the seaboard. The purpose of these special rates is to enable the competing areas of production, markets, transportation routes, seaboards, and ports to participate in the export and import trade under equalized conditions—to enable the Gulf and west coast ports to compete with the North Atlantic ports.

The fixing of special railroad rates on export and import traffic lower than on like domestic traffic is a kind of discrimination that has been sanctioned by the Supreme Court of the United States. In the Import Rate Case the Interstate Commerce Commission decided that it could not properly consider the circumstances and conditions of competition which might justify the carriers in establishing lower rates on import than on domestic traffic of the same character between the same points, and found that the placing of higher rates on domestic than on identical import traffic was an unjust and unreasonable discrimination and as such illegal under the Act to Regulate Commerce of 1887. However, on appeal, the Supreme Court, in the case of the Texas and Pacific Railway Company versus the Interstate Commerce Commission (162 U. S. 197) March 30, 1896, held that under the Act of 1887 the Commission was bound to consider the circumstances under which foreign trade was conducted and that the Act did not expressly prohibit discrimination in rates in favor of foreign commerce.

In the domestic trade the rates on grain from the Middle West to the eastern seaboard cities are based on the rates to New York. The rates to other seaboard cities are made by applying the New York rates or by adding differentials to the New York rates in the cases of the ports north of New York, and

by deducting differentials in the cases of traffic moving to Philadelphia, Baltimore, and Norfolk rate points. Export grain rates, however, are based on the domestic rates applying to Baltimore. The rates to the other ports, excepting Norfolk, are made by adding small differentials to the Baltimore rates. In the case of Norfolk, export rates are usually fixed on the same basis as the rates to Baltimore, except at points in the eastern section of Central Freight Association Territory. From this district export rates are made on a lower basis than the domestic rates.

Export rates from the Middle West to the North Atlantic seaboard ports, excepting those of New England, are, for most commodities, those for domestic traffic. Special export rates to the North Atlantic ports are restricted to a few special commodities of great importance in the export trade of the United States, including grain, grain products and flour, iron and steel articles and certain other exported commodities.

Import rates, although they are of some assistance in encouraging the import trade in certain commodities through the establishment of lower railroad rates on imported commodities than on domestic traffic, are not made with the primary purpose of offsetting or neutralizing the customs duties. The prime consideration in establishing import rates has been the equalization of the competition of ports, seaboards, and routes. No relationship has been shown between the levels of import rates and tariff duties. Some of the greatest differences between the railroad rates on domestic traffic and imports are made for commodities upon the duty-free list.

Rates upon import and export traffic lower than those applied to identical movements of freight in the domestic trade are made with some intent to apply the principle of rate-making that freight rates should be made to increase with distance but not in direct proportion thereto. The inland railroad transportation of traffic moving in foreign commerce should, according to this principle, be charged lower rates than those applied to the same movements in the domestic trade where the railroad hauls between the points of origin and destination represent the total movement and not merely a portion of a longer one, as is the case of foreign commerce. Thus, the railroad rates between

New York and Chicago on domestic commerce may be higher than the import or export rates between the same points because the latter represent not the total transportation charges but only one part of the combined railroad and ocean rate between Chicago and Liverpool.

Several methods of making import and export rates are used to equalize the competition of seaboards, routes, and ports. One plan is to select a key or pivotal port on each seaboard which has the lowest basis of domestic rates. No special import or export rates are established between this port and the hinterland; the domestic rates are used as import and export rates as well. The import and export rates at other ports in the range are made the same as the domestic rates applicable at the key port. Each port has its own domestic rates which, with the exception of the key port, are higher than the rates on exports and imports. Each port is given the benefit of the lowest rates applicable at any port in the group and all are placed upon the same basis.

A second plan is to select a key or pivotal port where basic rates are established for traffic moving to and from the interior. Import and export rates applicable at this port are usually made on a lower basis than the domestic rates and there is no immutable relationship between the rates applicable to foreign trade and those used in domestic commerce. Rates to and from the other ports in the range are made by adding differentials to the key port's schedule or by deducting differentials therefrom.

A third plan involves the selection of a rate applicable to some port not in the group as a key rate and using that rate as a basis in constructing export rates to the ports of the other seaboards. Differentials are subtracted in some cases in making rates under this plan. The key rates selected are not always the lowest domestic rates. The plan is followed in some cases at South Atlantic, Gulf, and Canadian ports where rates to selected North Atlantic ports are used as bases. This method is used primarily to enable the ports of one seaboard and the carriers serving this group of ports to compete with other groups of ports and the carriers serving them.

A fourth plan relates import and export rates applicable at ports at one seaboard, with the import or export rates, or with the domestic rates applicable at another seaboard. There is no definite basis used in constructing rates under this plan. The export and import rates applicable at Pacific coast ports are often made in this way for the purpose of enabling these ports to meet the competition of rival eastern seaboards and the carriers serving them.

Port Differentials and Import and Export Rates

There is a close connection between the establishment of relationships by means of special import and export rates at various ports and the system of rate adjustments between competing ports in domestic commerce, as discussed in Chapter XIX. The application of the principle of fixing rates to enable rival ports to compete does not result in the same relationships between the ports in domestic and foreign commerce for the conditions of competition are not the same.

Port rivalry is usually broader and more intense in foreign trade than in domestic commerce. All of the ports compete in the import and export trades for the traffic to and from great producing and consuming districts at a considerable distance from the ports. In domestic commerce the ports seek, as a rule, to control only the traffic to and from relatively restricted areas tributary to the port cities. A large share of the import and export trade moving through one city is the goal not only of the merchants, railroads, and steamship carriers of the ports but of the entire foreign trading organization. This organization includes in addition to the merchants and the rail and steamship lines, import and export commission houses, customs brokers, export and import merchants, brokers, banks, foreign exchange houses, marine insurance companies and brokers, freight forwarders and brokers, ship brokers, chartered vessel operators, tug and tow boat operators, cartage and drayage concerns, lighter and barge operators, pilots, ship chandlers, fuel-bunkering companies, dry docks, marine railways, wharf and dock companies, warehouses, bonded draymen, stevedore contractors and others in allied businesses.

The rivalry of the rail carriers serving the North Atlantic, South Atlantic, Gulf of Mexico, North Pacific and South Pacific seaboards, is closely connected with the competition of the ports on these seaboards. As the ports prosper so profit the railroads which serve them. As a rule different railroads and combinations of lines making through routes serve the rival ports and are intent upon building up the foreign trade of the ports they serve. The rail carriers connecting the Middle West with the South Atlantic ports compete with the lines serving the North Atlantic, Gulf and the Pacific seaboards. Traffic which moves to and from the Middle West in foreign commerce via these competing seaboards is lost to the lines serving the South Atlantic range of ports. Hence, special import and export rates are made to induce a fair share of the traffic to move via these lines to and from these ports. Similar action is taken by the lines serving the other ports which tends to bring about a more or less stable equilibrium in the import and export rate structures from and to each seaboard.

The complete equalization of freight charges in effect by way of competing ports is not attained unless the steamships freight rates as well as the inland rail rates, cartage or drayage charges, lighterage charges, marine insurance premiums, wharfage dues, and other freight charges are adjusted so as to place the total inland, terminal, and foreign ocean charge via each port on an equal basis. This is seldom completely accomplished. Originally many ports were given lower bases of inland railroad import and export rates than rival ports because of higher ocean freight that obtained at the former ports. These relationships have been destroyed by fluctuations in ocean rates and by changes in railroad rates. The steamship lines as well as the railroads serving certain ports are eager to develop import and export traffic and each is willing to assist in establishing and maintaining proper rate relationships among competing ports. Ocean and railroad rates, as a result, are often adjusted with reference to each other so that a substantial equalization is maintained. Efforts are made, moreover, to equalize cartage, transfer, lighterage, wharfage, and insurance charges so as to preserve the relationship. The degree of equalization attained,

however, is by no means complete nor is the relationship maintained strictly at all times.

The adjustment of railroad and ocean rates at competing ports is not always sought to bring about equality in rates via all competing ports. In some instances, lower import and export inland railroad rates are established from and to certain ports where the ocean freights are the same as at other ports where higher railroad charges prevail. Lower rail rates are sometimes made to ports where the ocean transportation services and facilities are inferior in order to offset the deficiencies. Ocean steamship sailings from them are less frequent, slower and smaller ocean vessels use the ports and regular line services are available to a very much more limited number of foreign countries from certain differential than from the standard ports.

Import Rate Adjustments

Relatively few special rates are made on import traffic from the North Atlantic ports to interior points in the United States, the regular domestic rates being usually applied and the regular domestic port differentials deducted at ports where they are granted. Special class and commodity import rates are made from Portland, Maine, to middle western destinations via the Grand Trunk Railway and its connections, and from Norfolk, Virginia, special import commodities rates are made to interior southern destinations on a number of imported goods. New York or Baltimore are the key or pivotal ports in the North Atlantic range upon which the import rates from other ports are based usually by deducting differentials. Canadian ports, Montreal, Halifax, St. John, and Quebec, are given specially low import rates on traffic destined to points in the middle western states of the United States.

Special import rail rates are made on a very much longer list of commodities imported via South Atlantic ports to destinations in the southeastern states and the Middle West. These rates are made on different bases depending upon the foreign points of origin of the traffic. The primary purpose of the rates is to afford the South Atlantic ports and the southern rail carriers an opportunity to compete with the North Atlan-

tic ports and Eastern Trunk Line railroads for import traffic destined to middle western markets.

Gulf of Mexico ports, including New Orleans, Mobile, Gulfport, Pensacola, Houston, and Galveston, are given special import class and commodity rates to apply upon traffic imported via these ports for certain southern and middle western destinations. These rates vary with the sources of the traffic and with the destinations, and are made to equalize the distribution of traffic among the competing gateways and the railroads serving them, to enable the Gulf ports to compete with those of the North and South Atlantic seaboards and to make it possible for the gulf coast rail routes to share middle western import traffic with the North and South Atlantic port routes. Special import rates are also made via the Rio Grande gateways—Brownsville, Laredo, Eagle Pass and El Paso, Texas—on traffic from Mexican points of origin.

Special import railroad commodity tariffs are made from the Pacific coast ports in both the North Pacific and South Pacific groups. The rates vary with the country from which the traffic originates and are materially lower than commodity rates from the same Pacific Coast Terminals. Many of these rates are blanketed to all points of destination east of the Rocky Mountains in order to enable the North and South Pacific gateways and the transcontinental rail routes to compete with the Atlantic and Gulf of Mexico ports and their rail lines for import traffic.

Export Rate Adjustments

Special export rates lower than those on like domestic traffic from middle western and near-by points to the North Atlantic ports are comparatively rare with the exception of the many export rates to Boston, Portland, and the ports of eastern Canada. Grain, grain products and flour, iron and steel, and certain other articles, are examples which have been mentioned previously as commodities granted export rates at other North Atlantic ports.

A large number of commodity rates and special export class rates are made from interior points in the South, from Missis-

sippi and Ohio River Crossings and from points in the Middle West to the South Atlantic ports. These rates are often restricted as to territories of destination, and are made, for the most part, to enable the South Atlantic ports and the southern railroads to compete with the North Atlantic ports and rail carriers.

Many special export class and commodity rates are made from middle western and from the interior South and Southwest to the Gulf of Mexico and to the Rio Grande. Some of the export rates to the Gulf ports apply only to the foreign commerce to specified countries. The Rio Grande gateways' rates are restricted to traffic destined for points in Mexico.

Special export commodity rates are made by the transcontinental railroads from western, middle western, and eastern points of origin to the North Pacific and South Pacific ports. Many of these export rates are the same from a large number of points of origin east of transcontinental territory.

The Merchant Marine Act and Import and Export Rates

The Merchant Marine Act of 1920 contains a section intended to promote the development of the American merchant marine through the restriction of inland rail import and export rates to goods imported or exported in vessels documented under the laws of the United States. Section 28 of the Act provides that whenever the United States Shipping Board is of the opinion that adequate shipping facilities to or from any port in the United States, in the possessions or dependencies of the United States or foreign countries are not afforded by vessels documented under the laws of the United States, the Shipping Board shall certify this fact to the Interstate Commerce Commission. The Commission by order may suspend the operation of the provisions of the section of the Act for the length of time and under conditions and terms provided for in the order or supplemental orders. The suspension of the provision may be terminated by order of the Interstate Commerce Commission whenever the Shipping Board certifies to the Commission that adequate shipping facilities under United States documentation are available at specified ports.

The provision of the Act remained suspended from 1920 to 1924. The Shipping Board in the latter year certified to the Interstate Commerce Commission that the operation of Section 28 of the Act should not be further suspended and certified that adequate shipping facilities were available at a number of ports. Formal hearings were held before the Shipping Board and the Interstate Commerce Commission. Testimony at these hearings, and before a committee of Congress on a bill to suspend the application of the section, indicated that adequate shipping facilities under the American flag were not available and that importers and exporters were almost unanimously against the lifting of the suspension. The Shipping Board then withdrew its resolution approving the lifting of the suspension. The Chamber of Commerce of the United States in 1924 unanimously adopted a resolution advocating the suspension of the effective date of Section 28, because of the grave disturbances and hazards its suspension would raise in the production, manufacturing, commercial, railroad, and ocean-shipping industries in the United States. The Interstate Commerce Commission in 1924 recommended that the section be repealed.

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(Note: See also references following Chapters xvii, xviii and xix.)

PART IV

GOVERNMENT REGULATION OF RAILROADS

CHAPTER XXVI

THE REGULATORY POWERS OF THE STATES AND THE FEDERAL GOVERNMENT

THE Federal constitution vests in Congress the power "to regulate commerce with foreign nations and among the several states and with the Indian tribes," while each of the 48 states possesses authority over intrastate commerce beginning and terminating within its own boundaries. Conflict of authority almost necessarily arose when Congress as well as the states began to regulate the railroads, for interstate and intrastate commerce are frequently interrelated so definitely that neither can be regulated without affecting the other.

State regulation preceded Federal regulation, and really began in the state railroad charters which not only granted rights to the corporations but imposed obligations upon them. Additional legislative supervision was soon found necessary; the New England states supervised the railroads, and New York, New Jersey, and Ohio appointed officers for the collection of statistics concerning railroad finances and traffic.

Shortly before 1870 a demand for railroad regulation arose. The eastern states depended mainly upon public opinion and competition to correct abuses, and they established railroad commissions with the power to investigate railroad practices, to report their findings to the legislatures and the public, and to suggest legislation. Western and southern states created commissions with power to make rates and to enforce orders, and some states fixed rates by statute. This action of certain western and southern states was due to the fact that public sentiment underwent a sudden change in the later sixties and early seventies when the prices of farm products declined. Moreover, beginning in 1869, when through railroad lines were opened from Chicago and the Mississippi River to the Atlantic seaboard,

competition forced down rates on through traffic while the rates on the noncompetitive traffic from the small towns and the farming districts remained disproportionately high. In these states the National Grange organization was strong and laws to regulate railroads were called "Granger legislation." The railroad companies contended that the state legislatures did not have power to fix rates by law or through commissions and that the Granger laws were unconstitutional and invalid. The question reached the Supreme Court of the United States in 1876, and in Munn *v.* Illinois,[1] a case involving an Illinois statute fixing public grain elevator rates, the court decided that the determination of what constitutes a reasonable rate and the fixing of such a rate are functions of the legislature. It also decided that this power of the state legislature applies, subject to qualifications, not only to intrastate commerce but also to traffic that may be moving in interstate commerce. The regulation of interstate commerce by a state legislature must be incidental to the regulation of intrastate commerce, but a state may thus incidentally regulate interstate commerce only until Congress undertakes Federal regulation. The principles laid down in the Munn decision were at the same time applied in Peik *v.* Chicago and Northwestern Railroad Company,[2] and other railroad cases to the state regulation of railroad rates.

Ten years later the Supreme Court, in the Wabash Case,[3] held that while the state of Illinois might regulate intrastate traffic, it could not regulate rates on traffic from points within the state to points outside thereof. This decision was one of the influences that caused Congress, in 1887, to enact the Federal Act to Regulate Commerce.

The decision of Federal and state authority established by the Wabash case, however, did not prevent a conflict of jurisdictions when the Federal Government began to fix rates on interstate traffic. Congress first gave the Interstate Commerce Commission definite power to make rates by laws passed in 1906 and 1910. Congress, in 1887, in the Interstate Commerce Act,

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1 94 U. S. 114, 1877.
2 94 U. S. 164, 1877.
3 Wabash, St. Louis & Pacific Ry. Co. *v.* Illinois, 118 U. S. 557, 1886.

Section 1, had provided that the law should "not apply to the transportation of passengers or property, or the receiving, delivering, storage or handling of property, wholly within one state and not shipped to or from a foreign country from or to any place in the United States. . . ." But it was found that if the states fixed such rates as they might choose to make on state traffic, they would indirectly limit the fixing of rates by the Federal Government on interstate commerce as provided in the Acts of 1906 and 1910. Could the states by regulating commerce within their borders limit the power of the United States over interstate commerce?

The stockholders of the Northern Pacific Railway Company and several other railroads raised the question in the Federal District Court by petitioning for a restraining order to prevent the Minnesota Railroad Commission from putting into effect the maximum rates that it had prescribed for intrastate traffic. The petitioners alleged not only that these rates were confiscatory and that the penalties imposed by the state were so severe as to constitute a denial of the equal protection of the laws and a confiscation of property without due process of law, but also that, as the territory of Minnesota, Wisconsin, and the Dakotas comprise an economic unit, the state-made rates of Minnesota interfered with interstate commerce. The case[4] was decided by the Supreme Court in 1913. The Court ruled that the power of Congress to regulate interstate commerce is "supreme and plenary," but that the states may be permitted to regulate intrastate rates, even though interstate commerce may be affected, until such time as Congress may see fit definitely to exercise its plenary powers. In the opinion of the Court the intent of Congress when enacting and amending the Act to Regulate Commerce had been to regulate commerce that was purely interstate in character and not to authorize the Interstate Commerce Commission to prescribe rates in intrastate commerce. In considering Section 3 which prohibits common carriers subject to the Act from giving any undue or unreasonable preference to any person, company, firm, corporation, locality, or any particular description of traffic, the Court,

[4] Simpson *v.* Shepard, *et al.*, 230 U. S. 352.

however, ruled that the Interstate Commerce Commission then possessed the power to order the carriers to discontinue such unreasonable preference or discrimination. The decision in the Minnesota rate case was not conclusive as to the scope of state jurisdiction, because the question of fact as to the discriminatory relation of state and interstate rates had not been considered by the Interstate Commerce Commission. The Court declined to pass on this question of fact, and it was made clear that the case should first have been brought before the Commission.

The issue was soon settled, however, as the result of a controversy between the Interstate Commerce Commission and the Railroad Commission of Texas. Complaint was made to the former by the Railroad Commission of Louisiana to the effect that the Texas intrastate rate scale resulted in unlawful discrimination against shipments from Shreveport, Louisiana, into Texas. The Interstate Commerce Commission after investigation of the facts involved, ordered the railroads to discontinue the unjust discrimination which it found to exist. When the railroads took steps to raise their intrastate rates within Texas to the level of those applicable on interstate shipments from Shreveport, the state of Texas protested. In 1914 the Supreme Court in its Shreveport decision[5] ruled that "wherever the interstate and intrastate transactions of carriers are so related that the government of one involves the control of the other, it is Congress, and not the state, that is entitled to prescribe the final and dominant rule . . . ," and it upheld the Interstate Commerce Commission's order. It held that the Commission, under Section 3, had the power, for the purpose of preventing unlawful discrimination against interstate commerce, to force a readjustment of rates within Texas so as to bring them into line with the interstate rates that the Commission had prescribed on traffic moving from Shreveport to Texas points.

Subsequent court decisions followed the lead of the Shreveport decisions but defined somewhat more precisely the plenary power of the Commission over intrastate regulation. In 1917, the Supreme Court in the South Dakota express rate decision,[6]

[5] Houston, East and West Texas Ry. Co. *v.* U. S., 234 U. S. 342.
[6] American Express Co. *v.* Caldwell, 244 U. S. 617.

ruled that the Commission's express rate order lacked definiteness in that it did not state explicitly the discriminations against interstate commerce that required correction and did not define with sufficient exactness the territory to which its order referred. In 1918 the Supreme Court, in the Illinois passenger fares decision [7] again made it clear that when the Interstate Commerce Commission issues an order that in fact results in the setting aside of state-made charges, its order may not be vague and indefinite.

The Shreveport and subsequent Supreme Court decisions, in which Section 3 of the Interstate Commerce Act was so interpreted as to give to the Commission a large measure of authority over intrastate rates, obliged the Commission to act indirectly by ordering the carriers to refrain from unjust discrimination against interstate commerce. It could not directly set aside a state-made rate applicable to intrastate traffic. Congress took cognizance of this round-about procedure in the Transportation Act of 1920. Section 13 of the Interstate Commerce Act was amended by authorizing the Commission, after conducting an investigation which discloses unjust discrimination against interstate or foreign commerce, to prescribe directly the railroad rates, classification, regulation or practice that shall thereafter apply in intrastate commerce. It also authorizes the Commission to conduct such an investigation even though a specific complaint has not been filed. Congress, moreover, instructed the Commission to notify the interested states of all proceedings involving intrastate rates, and authorized it to confer with the proper state authorities, to hold joint hearings with state regulatory agencies and to avail itself of the coöperation of such agencies. Under the plan that has been adopted, the Interstate Commerce Commission necessarily retains the exclusive power to decide upon the final disposition of proceedings in which intrastate and interstate rates are alleged to be in conflict, but it invites the coöperation of the state commissions in informal conferences and in formal hearings and arguments before the Commission.

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[7] Illinois Central R. R. Co. *v.* State Public Utilities Commission of Illinois, *et al.*, 245 U. S. 493.

Although the intent of this amended legislation of 1920 may have been definitely to end all doubt concerning the relative jurisdictions of the Federal and state commissions, controversy arose in connection with the general rule of rate-making contained in Section 15a of the Transportation Act of 1920. In this rule, which is more fully stated elsewhere,[8] the Interstate Commerce Commission is instructed by Congress to adjust railroad charges, so far as practicable, so as to yield a fair rate of return upon the value of the transportation properties of the carriers as a whole or of the carriers as a whole in each of such rate territories as the Commission may define.

When the Commission in its general rate advance decision of 1920 ordered horizontal freight-rate advances on intrastate as well as on interstate traffic, many states protested and some of them refused to advance any of their intrastate rates. The Commission then investigated the rates and rate structures in these states and in 28 related cases decided that its power to regulate intrastate charges is not limited to specific discriminations that affect injuriously persons or localities in interstate commerce. It decided that it had power to regulate intrastate rates as a whole when general discrimination against interstate commerce as a whole is apparent, and it contended that the application of Section 15a to interstate rates only would result in wholesale discrimination.[9] The Wisconsin and New York rate cases were appealed to the courts and when they reached the United States Supreme Court the contention of the Interstate Commerce Commission was upheld.[10] The fair rate of return on the value of transportation properties provided for in Section 15a contemplates that intrastate as well as interstate commerce shall bear its fair share of the burden. These opinions rendered in 1922, were followed during the same year in several other Supreme Court decisions of like tenor,[11] and in 1924, when the constitutionality of the recapture clause of Section

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8 See Chapter XXVII.

9 See 59 I. C. C. 290, the New York rate case; 59 I. C. C. 350, the Illinois rate case; 59 I. C. C. 391, the Wisconsin case.

10 R. R. Commission of Wisconsin *v.* Chicago, Burlington & Quincy R. R. Co., 257 U. S. 563; State of New York *v.* U. S. *et al.*, 257 U. S. 591.

11 257 U. S. 485, and 258 U. S. 158.

15a under which one-half of the net returns of the carriers in excess of 6 per cent must be paid into a contingent Government fund, the Supreme Court again upheld the general appplication of Section 15a to all railroad traffic—intrastate as well as interstate. The language of the Court was as follows:

> The combination of uniform rates with the recapture clauses is necessary to the better development of the country's interstate transportation system as Congress has planned it. The control of the excess profit due to the level of the whole body of rates is the heart of the plan. To divide that excess and attempt to distribute one part to interstate traffic and the other part to intrastate traffic would be impracticable, and would defeat this plan. This renders indispensable the incidental control by Congress of that part of the excess possibly due to intrastate rates, which if present, is indistinguishable.[12]

As interpreted to date the relative powers of the Federal and state governments over railroad rates may be summarized somewhat as follows: The Federal Government has the exclusive power (1) to regulate interstate commerce, (2) to require the states to raise particular intrastate rates when they discriminate against interstate commerce to a material extent, (3) to control intrastate rate levels as a whole so that intrastate as well as interstate traffic will each bear its due share of the total revenue that is secured by applying the rule of rate-making contained in Section 15a of the Interstate Commerce Act, and (4) to require the states to raise a particular intrastate rate when such rate does not produce its fair share of the revenue necessary to maintain the adequate national railroad system contemplated in Section 15a. Subject to these limitations the states retain the power to determine intrastate rates and rate structures. As is aptly stated by Dr. Hobart S. Perry in a recently published monograph:

> Discriminations between individual interstate and intrastate rates, or as between interstate and intrastate rate levels come within the provisions of the Act to Regulate Commerce only when such discriminations injure interstate commerce to a material extent. It is only when intrastate rates affect interstate commerce to the detriment of the latter that the Federal Commission will issue orders correcting the situation.[13]

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[12] Dayton Goose Creek Ry. Co. *v.* U. S. *et al.*, 263 U. S., 455.
[13] H. S. Perry, *Federal Intrastate Railroad Rate Regulation*, 1927.

The Federal Government has also restricted to narrower limits the regulatory powers of the states concerning matters other than freight rates, classification, passenger fares and related traffic affairs. The nature of some forms of railroad regulation is such that regulation by several separate agencies is quite impracticable while in other instances a division of jurisdiction is feasible. In conferring extensive powers upon the Interstate Commerce Commission relative to car service, Congress provides in Section 1, paragraph 17, "that nothing in this act shall impair or affect the right of a state, in the exercise of its police power, to require just and reasonable freight and passenger service for intrastate business, except in so far as such requirement is inconsistent with any lawful order of the Commission made under the provisions of this Act." In requiring railroads subject to the Interstate Commerce Act to obtain from the Commission certificates of convenience and necessity before extending or abandoning lines or constructing new lines, Section 1, paragraph 19, provides that the Commission shall notify the governor of each interested state and give each state an opportunity to be heard, but the decision rests with the Federal Commission. Section 5 similarly grants to the Commission the power to approve or disapprove consolidations of railroads subject to the Act, "the law of any state or the decision or order of any state authority to the contrary notwithstanding." In this instance the Commission is required to notify the governor of each interested state "of the time and place for a public hearing." Such notice is also required in connection with the Commission's power over security issues of railroads that are subject to the Act, and the states are granted "the right to make before the Commission such representations as they may deem just and proper for preserving and conserving the rights and interests of their people and the states," but Section 20a specifically provides that "the jurisdiction conferred upon the Commission by this section shall be exclusive and plenary, and a carrier may issue securities and assume obligations or liabilities in accordance with the provisions of this section without securing approval other than as specified herein."

Court Review

This conflict between the Federal and state regulatory authorities has had its counterpart in the controversy over judicial review of rate-making laws and commission decisions by the Federal and state courts. The courts have declared that the making of railroad rates by public authority is a legislative function that may be exercised by Congress and the state legislatures directly or through commissions or other agencies created for that purpose. The courts, however, are concerned not only with the interpretation of regulatory statutes, but also with the review of Federal or state-made rates. The general principle established by the Supreme Court of the United States is that, in reviewing such rates, the courts will confine themselves to considering whether rate laws or commission orders are lawful and constitutional. State courts are confined to review of state-made intrastate rates, while the Federal Courts may and do review rates that are determined either by Federal or state rate authorities.

In its early Granger decisions the Supreme Court denied that the courts were vested with the power to review state-made rates. This view was expressed in Munn *v.* Illinois and in Chicago, Burlington & Quincy Railroad Co. *v.* Cutts, and in Peik *v.* Chicago and Northwestern Railway Co., the Court expressly stated that the power of legislature to determine reasonable rates for a carrier that "has been clothed with a public interest . . . binds the courts as well as the people. If it has been improperly fixed, the legislature, not the court, must be appealed to for the change." In 1886, however, the Supreme Court in its Mississippi Railroad Commission decisions [14] declared that this legislative "power to regulate is not a power to destroy, and limitation is not equivalent of confiscation. Under pretence of regulating fares and freights, the state cannot require a railroad corporation to carry persons or property without reward; neither can it do that which in law amounts to taking of private property for public use without just compensation, or without due process of law."

[14] 116 U. S. 307.

This was the official beginning of the doctrine of court review. In 1890 the Supreme Court in considering a Minnesota rate law which prohibited court review, declared the law unconstitutional and held that the reasonableness of a railroad rate "is eminently a question for judicial investigation, requiring due process of law for its determination."[15] In 1894 it again expressed this view with respect to the reasonableness of state-made rates and upheld a lower court in setting aside certain state-made rates in Texas on the ground that they were so low as to violate the fourteenth amendment of the Federal constitution, which provides that no "state shall deprive any person of life, liberty, or property without due process of law."[16]

While the position of court review in the regulation of railroads by the states was gradually being determined in these Supreme Court decisions, the right of the Federal Courts to take original jurisdiction was questioned. In 1898, when considering a Nebraska rate law which permitted the carriers to bring action in the Supreme Court of the state, the United States Supreme Court not only set aside the rates prescribed in the Nebraska statute on constitutional grounds, but declared that "one who is entitled to sue in the Federal Circuit Court may invoke its jurisdiction in equity whenever the established principles and rules of equity permit such a suit in that court, and he cannot be deprived of that right by reason of his being allowed to sue at law in a state court on the same cause of action."[17] In the *ex parte* Young decision of 1908 the Supreme Court, when considering a Minnesota rate act, strengthened this opinion by definitely declaring that state-made rates may in any case be taken directly to the Federal Courts for review because state-made rates must come within the limits set in the fourteenth amendment of the Federal constitution.[18]

The judicial review of rate orders issued by the Interstate Commerce Commission is vested in the Federal Courts. The grounds upon which the Commission's orders may be set aside by the Federal Courts are not specified in the Interstate Com-

[15] Chicago, Milwaukee and St. Paul Ry. Co. *v.* Minnesota, 134 U. S. 418.
[16] Reagan *v.* Farmers Loan & Trust Co., 154 U. S. 362.
[17] Smyth *v.* Ames, 169 U. S. 466.
[18] 209 U. S. 123.

merce Act because Congress does not possess the constitutional power to prohibit or restrict court review. The Supreme Court obtains its powers directly from the Federal constitution, and the Federal Courts are concerned in reviewing rate laws and decisions, particularly with the interpretation of the fifth amendment of the Federal constitution which provides that a person may not be deprived of property "without due process of law" and prohibits the taking of private property "for public use without just compensation."

In its Illinois Central decision of 1910,[19] the Supreme Court stated the doctrine of court review as follows:

> We must consider (*a*) all relevant questions of constitutional power or right; (*b*) all pertinent questions as to whether the administrative order is within the scope of the delegated authority under which it purports to have been made; and (*c*) a proposition which we state independently, although in essence it may be contained in the previous one, *viz.*, whether, even although the order be in form within the delegated power, nevertheless it must be treated as not embraced therein, because the exertion of authority which is questioned has been manifested in such an unreasonable manner as to cause it, in truth, to be within the elementary rule that the substance, and not the shadow, determines the validity of the exercise of the power. Plain as it is that the powers just stated are of the essence of judicial authority, and which, therefore, may not be curtailed, and whose discharge may not be by us in a proper case avoided, it is equally plain that such perennial powers lend no support whatever to the proposition that we may, under the guise of exerting judicial power, usurp merely administrative functions by setting aside a lawful administrative order upon our conception as to whether the administration power has been wisely exercised. Power to make the order and not the mere expedience or wisdom of having made it, is the question.

The Supreme Court will consider the facts at issue only if it is deemed necessary in order to determine the legality or constitutionality of an order of the Commission, and not for the purpose of judging as to the wisdom or expediency of the order. In 1914 the Supreme Court stated even more definitely that the Commission's conclusions of fact are not open to review and that the Court will not "substitute its judgment for that of

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[19] 215 U. S. 452.

the Commission upon matters of fact within the Commission's province." [20]

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[20] Los Angeles Switching Case, 234 U. S. 294.

CHAPTER XXVII

GOVERNMENT REGULATION OF RAILROAD RATES AND FARES

THE earliest concern of the Federal Government in railroad transportation was to aid rather than to regulate railroad construction by private companies. In 1850 Congress made the first of the Federal land grants by which assistance was given to corporations that constructed several western and southern railroads. Congress allowed drawbacks on customs duties on imported iron intended for use by railroads; and the six companies that constructed the first transcontinental route to the Pacific seaboard were aided by loans of government funds as well as by extensive grants of public lands. For some years both the Federal Government and the states aided the railroads.

Agitation for Federal regulation of railroad rates did not arise until 1872 when President Grant in his annual message to Congress recommended an investigation of the rates on western and southern products moving to the Atlantic seaboard. A Senate committee was appointed which made a comprehensive report in 1874. In this Windom report (so named from the chairman of the committee) the committee favored competition rather than direct government regulation as a means of reducing excessive freight rates, and recommended that waterways be improved and constructed and that the government construct a double-track freight railroad from the Mississippi River to the Atlantic seaboard. A second important Senate committee report, the Cullom report, was made in 1886. By this time the paramount rate problem was no longer excessive charges, but was discriminations between persons, places, commodities, and particular description of traffic. The Cullom Committee recommended the regulation of interstate rates by the Federal Government. It was recognized that competition was rather the cause of, than the cure for, rate discriminations. The regulation of interstate rates by the states having been declared un-

constitutional by the Supreme Court in its Wabash decision of 1886, Congress in 1887 passed the Interstate Commerce Act.

Although this Act was, when enacted, considered to be a large exercise of Federal power, it really granted but limited authority to the Interstate Commerce Commission. Many subsequent amendments and additions to the Act have been found necessary. For a few years the Commission issued orders fixing maximum rates, but the Supreme Court in 1897 decided "that the power to prescribe rates or fix any tariff is not among the powers granted to the Commission."[1] Congress passed a law in 1893 compelling witnesses to testify, and granting them immunity against civil and criminal prosecution. This law was upheld by the Supreme Court in 1896, and then the Commission was able to conduct compulsory investigations. The Elkins Act of 1903 abolished the penalty of imprisonment in case of rebating, but strengthened the law against rebates by making corporations as well as their agents liable, and by making illegal any rate different from the published tariff of the carrier. After this amendment was upheld by the court the standard of comparison was the published rates lawfully in effect rather than the amounts actually paid by different shippers. In 1903, Congress also enacted an "expediting act" for the purpose of expediting cases when they are appealed to the courts.

Demands for more comprehensive commission regulation of rates and services by both the Federal and state governments became insistent during the years 1902 to 1906. Additional state commissions were created and the powers of state commissions generally were increased, and by the Hepburn Act of 1906 Congress extended the scope of the Interstate Commerce Act by enlarging and clarifying many of its provisions, and by definitely authorizing the Commission to prescribe reasonable maximum rates and fares, to establish through routes, joint rates and joint rate divisions and to prescribe a uniform system of accounts. The Mann-Elkins Act of 1910 further increased the rate powers of the Commission by authorizing it to suspend

[1] I. C. C. *v.* Cincinnati, New Orleans & Texas Pacific Ry. Co. (Maximum Rate Case), 167 U. S. 479.

proposed railway tariffs pending their investigation; by amending the long-and-short-haul clause in such a manner as again to make it an important factor in rate-making and rate regulation; by authorizing the Commission to establish and enforce reasonable freight classifications and to prescribe maximum rates not only after hearings held upon complaint but also after hearings held on its own motion. This Act of 1910 also created a special Commerce Court for the handling of Federal Court proceedings involving the enforcement of Commission orders other than those calling for the payment of money, the review of its decisions, and the enforcement of the provisions of the Elkins antirebating act. The Commerce Court, however, met with general disfavor and was abolished in 1913.

The Panama Canal Act of 1912 further amended the Interstate Commerce Act, not only by prohibiting railroad control of competing carriers by water but by authorizing the Commission to require the physical connection of rail and water carriers, to establish through rail-water routes and joint rail-water rates in interstate commerce, to prescribe maximum proportional railroad rates to and from ports, and to require railroads that enter into traffic arrangements with one ocean carrier in the foreign trade to enter, when so requested by a shipper, into similar arrangements with other steamship lines. During the following years Congress enacted a law requiring the Commission to undertake a valuation of railroad property. It was intended that such valuation should, when completed, be made the basis of railroad rates.

For 26 months, 1918 to 1920, the railroads were operated by the United States Government through the Railroad Administration. Although the Commission, under the terms of the Federal Control Act of 1918, had the power to change rates fixed by the Director General of Railroads, the Commission's policy was to coöperate with the Railroad Administration. Upon the return of peace the railroads could not be returned to private management until provision was made for increasing their revenues for the purpose of enabling the private companies to regain such a financial standing as would permit them to make necessary improvements and to render improved services.

It was also realized that some of the regulatory powers exercised by the Railway Administration should be incorporated in the Interstate Commerce Act and be made a permanent part of the Government's policy of regulating interstate commerce. The Transportation Act of 1920 amended the Interstate Commerce Act in important respects and conferred additional duties and powers upon the Interstate Commerce Commission. One of the especially important provisions of the Act of 1920 was a rule of rate-making in accordance with which the general level of freight rates in defined rate territories has since 1920 been adjusted by the Commission.

General Rate Provisions of Interstate Commerce Act as Amended

The Interstate Commerce Act has been amended so frequently that a better conception of the present statute and of its rate provisions can be gained by summarizing the present provisions of the Act than by considering each amendment. The scope of the original Act, as defined in Section 1, has gradually been extended, and now includes common carriers that transport passengers or property in interstate commerce wholly by rail or partly by rail and partly by water "when both are under a common control, management, or arrangement for a continuous carriage or shipment," and also common carriers engaged in pipe-line transportation of commodities other than water or gas, and in the transmission of intelligence by wire or wireless.

The "common carriers" defined in the Interstate Commerce Act as it now stands include pipe-line companies, telegraph, telephone and cable companies, express companies and sleeping car companies operating for hire. "Railroads" are defined to include bridges, car floats, lighters and ferries used in connection with railroads, and also all switches, tracks, terminals and terminal facilities. "Transportation" is so defined as to include "locomotives, cars and other vehicles, vessels, and all instrumentalities and facilities of shipments or carriage irrespective of ownership"; also all "services in connection with the receipt, delivery, elevation, and transfer in transit, ventilation, refrigeration, or icing, storage, and handling of property trans-

ported." In Section 6, moreover, the Commission's jurisdiction over interstate traffic handled partly by rail and partly by water is in certain particulars extended beyond the limitation set in Section 1 as to "common control, management or arrangement for a continuous shipment." Section 15, in defining the Commission's power to establish through routes, joint rates, etc., excludes shipments made wholly by water, but covers through rail-water routes, and also through routes via steam and electric street railways, with the exception that the Commission may not regulate electric street railways "not engaged in the general business of transporting freight in addition to their passenger and express business."

The application of the Interstate Commerce Act to traffic moving beyond the borders of the United States is limited to shipments moving "from any place in the United States through a foreign country to any other place in the United States," and to import and export traffic "in so far as such transportation or transmission takes place within the United States." Its application to intrastate traffic under certain conditions has been discussed in the preceding chapter.

Some of the provisions of the Interstate Commerce Act as amended impose duties upon the carriers with respect to rates and matters closely related to rates, and other provisions prohibit unlawful rate practices. Section 1 lays down the general principle that all charges "shall be just and reasonable," and prohibits "every unjust and unreasonable charge. . . ." It also makes it the duty of the carriers to establish and observe "just and reasonable classifications . . ." and "just and reasonable regulations" affecting classifications, rates, tariffs, tickets, receipts, bills of lading, marking and packing, delivery, storage, handling, and transporting freight, and it expressly prohibits unjust and unreasonable classifications, regulations, and practices. It requires the carriers to establish through routes and "just and reasonable" rates, fares, charges, and rules applicable to such routes, and, in case of joint rates, to establish "just, reasonable and equitable" rate divisions between the several participating carriers. Section 1 also contains an antipass clause which prohibits the granting of free transportation

except to specific classes of persons such as railway officers, employees and their families; necessary caretakers of livestock, poultry, milk and fruit; Railway Mail Service employees; postal, customs and immigration inspectors; newsboys on trains; witnesses attending legal proceedings in which the carrier is interested; ministers of religion; inmates of hospitals, charitable and eleemosynary institutions; and other persons or groups of persons defined in this section and in Section 22 of the Interstate Commerce Act.

Several sections of the Interstate Commerce Act apply to rate discriminations, it being the intention of Congress not only to prohibit excessive charges but to prevent unjust discriminations in railroad rates. Section 2 prohibits carriers from directly or indirectly, by "any special rate, rebate, drawback or other device," charging any person a greater or less amount for the performance of a given service than it charges any other person under substantially similar circumstances and conditions; and Section 3 declares it to be unlawful for any carrier subject to the Act to give any "undue or unreasonable preference or advantage to any particular person, company, firm, corporation, or locality, or any particular description of traffic, in any respect whatsoever." Rebating or personal discrimination is declared to be unlawful in Section 10 which prohibits carriers from permitting any person from obtaining transportation for less than the regular rates then in effect by means of false billing, false classification, false weighing, or any other device or means. Shippers and consignees are similarly prohibited from obtaining or attempting to obtain rates other than those regularly in effect by means of false billing, false classification, false weighing, false representation, or any other device or means, and from obtaining or attempting to obtain refunds or claim payments that are knowingly supported by false supporting documents. Penalties of fine or imprisonment or both, in the discretion of the court, are prescribed for carriers, shippers and consignees who violate this section. Specific penalties are also stipulated for persons who by means of bribery, solicitation or otherwise, induce or attempt to induce carriers to grant an unjust personal discrimination.

The provisions relative to rebating were strengthened by the Elkins Act of 1903 which has been referred to in naming the several amendments to the Interstate Commerce Act. It was a separate act but applied specifically to carriers subject to the Interstate Commerce Act. Rebating was extended beyond the definition of personal discrimination given in Section 2 of the Interstate Commerce Act, by including any departure from the lawfully filed and published rates of the carriers. Shippers or consignees accepting rebates, as well as carriers giving rebates, are punishable, and companies as well as their officers or employees are subjected to penalties. The original Elkins Act repealed the imprisonment penalty; but, as amended in 1906, both fines and imprisonment penalties are provided for, and injured parties are also authorized to bring suits for the recovery of damages.

All unjust place discriminations are prohibited in Section 3 of the Interstate Commerce Act, but higher rates for shorter intermediate hauls are made unlawful by the long-and-short-haul clause contained in Section 4. This clause, as enacted by Congress in the original law, was so interpreted by the courts as virtually to make it noneffective, but the clause was later amended and strengthened by the Mann-Elkins amendment of 1910 and the Transportation Act of 1920. It is now unlawful to "charge or receive any greater compensation in the aggregate for the transportation of passengers, or of like kind of property, for a shorter than for a longer distance over the same line or route in the same direction, the shorter being included within the longer distance," except when a specific waiver is granted by the Interstate Commerce Commission. The Commission, in granting carriers exemption from observance of the long-and-short-haul section, is to be guided by several general principles which are included as parts of the section: (1) All rates to or from the more distant point must be "reasonably compensatory for the service performed"; (2) if a circuitous line or route is granted authority to charge higher rates to intermediate points than to more distant competitive points because of its circuity, "the authority shall not include intermediate points as to which

the haul of the petitioning line or route is not longer than that of the direct line or route between the competitive points"; (3) permission to waive the long-and-short-haul clause shall not be granted "on account of merely potential water competition not actually in existence"; and (4) when railroad rates are reduced to or from points subject to water competition, the Commission may not permit a subsequent advance unless it finds that the proposed rate increase "rests upon changed conditions other than the elimination of water competition." Section 4 also regulates the relation between through rates and the combination of intermediate rates. It prohibits the carriers from charging "any greater compensation as a through rate than the aggregate of the intermediate rates. . . ." The fourth section has become an important factor in recent rate revisions.

Section 6 requires the carriers to file with the Commission, and keep open to public inspection, tariffs or schedules showing all of their freight rates, passenger fares, terminal, storage, icing, and other transportation charges of every description. The content of these tariffs is prescribed in part in this section of the law, and the Commission is granted authority to prescribe the form in which tariffs shall be prepared and arranged. Carriers are specifically prohibited from collecting or demanding any charges or extending any privileges or facilities other than those specified in their tariffs.

This section also prohibits the carriers from changing any of their rates, fares, or other published charges except after giving a notice of 30 days to the Commission and to the public. Realizing, however, that emergencies warranting greater flexibility may arise, Congress authorized the Commission, when good cause is shown, to permit changes upon shorter notice. Section 6, moreover, requires the agents of the carriers, when requested in writing, to quote the rates lawfully in effect between stated places. Section 25, which was added in 1920, similarly authorizes shippers to obtain, through the railroads, quotations of ocean rates and port charges and to make sailing arrangements with vessels registered under the laws of the United States.[2]

[2] See Chapter LIV.

Rate-Making Powers of the Interstate Commerce Commission

Experience in the regulation of railroad rates has made it clear that general prohibitory and mandatory provisions, even when specific penalties are imposed, do not fully accomplish the purpose of Congress or the state legislatures unless administrative agencies with adequate powers are created to supervise the enforcement of the statutes. The Interstate Commerce Commission is the agency provided by Congress for this purpose and its rate-making powers and duties have gradually been increased by legislation. Many of the rate provisions of the Interstate Commerce Act are intended to provide a legal background or basis that will enable the Commission effectively to regulate railroad charges.

Section 15 confers mandatory rate-making powers upon the Commission. The Commission, acting either upon complaint or upon its own initiative, and after full hearing and investigation, is empowered to act when it finds the rates of carriers to be either unjust or unreasonable in themselves or "unjustly discriminatory or unduly preferential or prejudicial or otherwise in violation of any provisions of this Act." It may prescribe just and reasonable individual or joint rates, fares, or other charges or the maximum or minimum or maximum and minimum to be charged in the future. It has been given similar mandatory powers to prescribe "just, fair and reasonable" individual or joint classifications, regulations or practices. Its powers over joint rates, classifications, etc., are further extended by authorizing it to establish additional through routes, subject to certain limitations, whenever in its judgment they are necessary or desirable in the public interest; to prescribe joint rates, fares or other charges and classifications over such through routes; and to prescribe the divisions of joint rates, fares and charges among the several interested carriers, when it is of opinion that the divisions arranged by the carriers are or will be "unjust, unreasonable, inequitable or unduly preferential or prejudicial."

Section 15 applies when interstate traffic moves over a through rail-water route, but in such case the Commission's rate-making

power is limited to prescribing maximum rates, fares and charges for the through route. Section 6 also authorizes the Commission to establish through rail-water routes in interstate Commerce, and to prescribe "maximum joint rates between and over such rail and water lines and to determine all the conditions under which such lines shall be operated in the handling of the traffic embraced." When establishing proportional rates by rail to and from the ports at which rail-water traffic is interchanged, the Commission may, however, prescribe the actual proportional rates, or the maximum or minimum, or both the maximum and minimum proportional rates that are to be charged.

The rate-making power of the Commission is not confined solely to the prescribing of reasonable rates to take the place of rates found to be unreasonable or unfairly discriminatory. Section 16 of the Interstate Commerce Act empowers the Commission to make reparation awards. If after hearing on a complaint, the Commission finds that an award of damages is warranted because the provisions of the Act have been violated, it is authorized to "make an order directing the carrier to pay to the complainant the sum to which he is entitled on or before a day named."

The Commission's rate-making powers, as granted in section 15 of the law, as amended in March, 1927, also include the authority to suspend newly filed tariffs establishing new individual or joint rates, fares, charges, classifications, traffic rules or practices. Tariffs may be suspended before they become effective, and for a period not exceeding 7 months. If the lawfully required hearing and investigation cannot be concluded within this period of suspension, the proposed increased rate shall then go into effect, but the Commission may require the carriers to keep detailed accounts on the basis of which refunds of excessive payments may be ordered in case the Commission should eventually suspend the tariff permanently or require modifications. The burden of proof is placed upon the carriers in suspension proceedings, and the Commission is directed to give such proceedings preference over all other questions pending before it.

The Rule of Rate-Making

A rate-making section (15a) of major importance was added to the Interstate Commerce Act by the Transportation Act of 1920. It was realized by Congress and the country at large that when the railroads were returned to private management prompt action to rehabilitate their finances would be necessary and in the public interest. There was no general sentiment in favor of extending the revenue guarantees of the war period for more than 6 months, but Congress directed the Commission to exercise its power to prescribe just and reasonable rates[3] in such a manner that the "carriers as a whole (or as a whole in each of such rate groups or territories as the Commission may from time to time designate) will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation." This is the so-called "rule of rate-making," which is primarily concerned with the general level of railroad rates rather than with individual rates or rate structures. In applying it in 1920 and 1922 the Commission ordered first a horizontal advance and then a horizontal reduction in the general level of nearly all rates. The extent to which the general rate level was advanced in 1920 varied in the several rate territories defined by the Commission, for the purpose of the rule is to yield a fair return on the value of the transportation properties as a whole in each territory. An increase of 40 per cent in freight rates was deemed necessary to accomplish this purpose in eastern territory, 35 per cent in western territory and 25 per cent in southern and Mountain-Pacific territories. In 1922 a general reduction of 10 per cent was ordered in the belief that somewhat lower rates when applied to increasing traffic would tend to give to the carriers as a whole a fair rate of return. No guaranty is provided for in Section 15a, and

[3] Including rates, fares, charges, classifications, regulations and practices relating thereto.

the intended fair return has not thus far been realized, but a definite rule for adjusting general rate levels is now in effect. Before the enactment of the rule of rate-making, when the carriers requested permission to advance the general level of their freight rates, the Commission was entirely free to act adversely or favorably without reference to a definite statutory rule.

In administering the rule of rate-making, the Commission is instructed and empowered to determine from time to time what percentage per annum of the aggregate value of all transportation properties shall constitute a fair return, but in doing so it is required to give "due consideration, among other things, to the transportation needs of the country and the necessity (under honest, efficient and economical management of existing transportation facilities) of enlarging such facilities in order to provide the people of the United States with adequate transportation."[4] The Commission is also instructed to determine the aggregate value of transportation properties of the carriers from time to time for use in connection with the rule of rate-making, without waiting for the completion of the detailed valuation work that is provided for in Section 19a and has been under way since 1913.

The Recapture Clause

One of the general purposes expressed in the Interstate Commerce Act as amended in 1920 is the establishment of uniform rates for the movement of competitive traffic. Section 5 of the Act instructs the Commission to prepare a comprehensive plan for the consolidation of railway properties in such manner that, subject to several general requirements as to the preservation of competition, the retention of existing routes and channels of trade and commerce and the attainment of uniform costs of transportation, the several competitive systems "can employ uniform rates in the movement of competitive traffic. . . ."

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[4] Fair return during the first two years was fixed in the statute at 5½ per cent, with a possible addition of ½ of 1 per cent by the Commission for improvements, betterments or equipment. 5¾ per cent was announced by the Commission in 1922.

In formulating the rule of rate-making contained in Section 15a, it was realized that uniform rates on the competitive traffic of existing railroad systems would result in unequal rates of return on the value of their transportation properties. So much opposition to the rule was expressed that a recapture clause was inserted for the purpose of limiting the returns of such carriers as would otherwise obtain net railway operating incomes "substantially and unreasonably in excess of a fair return. . . ." This clause requires carriers whose annual net railway operating incomes exceed 6 per cent of the value of their transportation properties to pay one-half of the excess into a general railroad contingent fund to be administered by the Commission. The Commission is instructed to use this revolving fund "in furtherance of the public interest in railway transportation either by making loans to carriers to meet expenditures for capital account or to refund maturing securities originally issued for capital account, or by purchasing transportation equipment and facilities and leasing the same to carriers. . . ." The remaining one-half of the excess above 6 per cent that any particular carrier may receive is required to be placed in a reserve fund maintained by such carrier. A carrier's reserve fund may be drawn upon for the purpose of paying dividends, interest or rent for leased roads to the extent that its net railway operating income for any year amounts to less than 6 per cent of the value of its transportation property, but not for other purposes, unless a sum equal to 5 per cent of the value of the carrier's transportation property has been accumulated, in which case the carrier's portion of excess net railway operating income may be used for any lawful purpose. Although the constitutionality of the recapture clause has been upheld, the clause is not fully operative. Questions have been raised as to what items may properly be included in computing net railway operating income and the value of transportation property. Only relatively few of the smaller companies have made payments into the Commission's contingent fund and most of them were made under formal protests and reservations.[5]

[5] See I. C. C., Annual Report of 1926, p. 291.

Miscellaneous Powers

The power of the Interstate Commerce Commission to change intrastate rates made by state rate-making authorities, as that power has been defined by the Courts in upholding Section 13 of the Interstate Commerce Act, has been discussed in Chapter XXVI.

In order to administer effectively its several rate-making powers the Interstate Commerce Commission is given authority in Section 12 to inquire into the "management of the business of all common carriers subject to the provisions of the Act"; to obtain "full and complete information"; to require the attendance of witnesses and the production of documentary evidence, subject to the proviso that "evidence or testimony shall not be used against such person on the trial of any criminal proceeding"; and also to take testimony by deposition. Section 20, moreover, authorizes the Commission to require in such manner as it may prescribe, annual reports of all carriers subject to the Act, specific answers to all questions upon which the Commission may need information, and monthly reports of earnings and expenses and periodical or special reports concerning any matters about which the Commission is authorized or required by this or any other law to inquire, or to keep itself informed, or to enforce. The effective exercise of its rate-making powers is also furthered by the uniform system of accounts which it was authorized by the Hepburn Act of 1906 to prescribe. That Act gave the Commission authority to have access to all accounts, records and memoranda, and to employ special agents or examiners to inspect the accounts of the carriers.

Rate proceedings are expedited by Section 13 which facilitates the making of complaints to the Commission. Complaints may be filed not only by an individual person, firm or corporation, but by any mercantile, agricultural, or manufacturing society or other organization, or any body politic or municipal organization, any common carrier, or any state railroad commission. Section 13 also confers upon the Commission full power to institute inquiries on its own motion, and to prescribe the rules

that shall govern proceedings whether begun on complaint or on its own initiative. Detailed "rules of practice" have been prescribed for informal and formal complaints, for reparation, suspension and fourth section proceedings, and for rehearings. In order to expedite certain formal proceedings the Commission has devised a plan of "shortened procedure in formal cases."[6]

Organization of the Commission

The Interstate Commerce Commission consists of eleven members who are appointed for terms of seven years by the President by and with the consent of the Senate. Not more than six commissioners may be appointed from the same political party, and no member of the Commission may hold any official relation to any common carrier subject to the Act, own any securities of such carriers or be in any manner pecuniarily interested in them, or engage in any other business, vocation, or employment. The Act fixes their yearly salaries at $12,000. A majority of the Commission constitutes a quorum for the transaction of business, but the Commission has also been authorized to divide its members into as many divisions as it may consider necessary to expedite the vast amount of work that it is called upon to perform. It may by order direct that any of its functions be referred to any of these divisions for action, and the divisions are by law authorized to hear and determine any business referred to them. Decisions rendered by divisions have the same force and effect as those rendered by the Commission as a whole.

The Commission is authorized to appoint a secretary, whose yearly salary is fixed by law at $7,500, and to employ examiners or special agents with power to administer oaths, examine witnesses and receive evidence. It may employ attorneys to furnish legal aid to the Commission or any of its members, or to appear for the Commission in any case in court, or for the "proper representation of the public interests in investigations" made by the Commission or proceedings pending before it. It has full authority to employ such experts and other assistants as may be necessary "to enable it to ascertain and report the

[6] See published Rules of Practice Before the Interstate Commerce Commission, 1927.

value of all the property of carriers subject to the Act as required in Section 19a." Section 18 confers blanket power upon the Commission to "employ and fix the compensation of such other employees as it may find necessary to the proper performance of its duties." The Commission's organization contains bureaus of valuation, finance, accounts, statistics, informal cases, traffic, law, inquiry, service, safety, locomotive inspection, and signals and train control devices.

Enforcement of Orders

To make the decisions and orders of the Interstate Commerce Commission binding and enforceable, stringent penalties for disobedience are imposed in the Act and enforcement machinery is provided through the medium of the Department of Justice and the Courts. Failure to obey a rate order of the Commission carries with it a general penalty of $5,000 for each offense, and "every distinct violation shall be a separate offense, and in case of a continuing violation each day shall be deemed a separate offense." It is the duty of the "various district attorneys, under direction of the Attorney General of the United States, to prosecute for the recovery of forfeitures. In case of an order other than for the payment of money, the Commission, or any injured party, or the United States through the Attorney General may apply to a Federal District Court[7] for its enforcement. If the Court determines that the order was duly served and regularly made, it is required to enforce compliance by means of a writ of injunction or other proper legal process. In case of failure to comply with orders requiring the payment of money, the complainant or any person for whose benefit the order was made, may bring action in the courts specified for that purpose in Section 16 and "the findings and order of the Commission shall be *prima facie* evidence of the facts therein stated." Subpœnas issued by the Commission are enforced through the Federal Courts by means of a court order, and failure to obey such an order is punishable as contempt of court. When the Commission finds that a carrier

[7] Jurisdiction conferred upon the Commerce Court in Section 16 was transferred to U. S. District Courts in the urgent deficiency appropriations act of Oct. 22, 1913.

violates any provision of the Interstate Commerce Act or of any supplementary act, the Attorney General at the request of the Commission makes application to the proper Federal Court for a writ of mandamus commanding the carrier to comply with the law.

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CHAPTER XXVIII

ADMINISTRATIVE AND FINANCIAL REGULATION OF RAILROADS

When the states and the Federal Government began the regulation of railroads their primary purpose was to prevent rates from being extortionate and unjustly discriminatory. The aim of legislation was to prevent abuses. Three decades of effort on the part of the states and twenty years on the part of the United States checked most evil practices, and it became quite clear that henceforth the objective of both state and Federal regulation ought to be constructive, instead of negative, for the development of adequate and efficient transportation.

The regulation of rates and the prevention of railroad abuses are tasks semijudicial in character, while the creation of transportation conditions advantageous to the public and favorable to the carriers requires the administrative supervision or control of many matters. Without attempting to discuss all phases of the administrative regulation of railroads, this chapter and Chapter XXIX will consider those of most importance, and for convenience the discussion may be subdivided as follows: (1) subjects dealing with services and facilities; (2) with financial administration; (3) with intercorporate and intercarrier relationships; (4) with the safety of railroad employees and the public; and (5) with railroad labor disputes.

Regulation of Services and Facilities

The importance of service and facility regulation has been increased by the emphasis recently placed upon improved freight services by the shipping public. Many shippers and their organizations have since the War in Europe become more interested in better service than in lower charges. Through voluntary action by the carriers, coöperation on the part of the shipping public, and administrative requirements of the Interstate Commerce Commission, railroad services have im-

proved. It is also noteworthy that shippers and carriers by working together have somewhat reduced the necessity of public regulation.

Section 1 of the Interstate Commerce Act, as amended by the Transportation Act of 1920, now defines "car service" so broadly as practically to include the larger part of the freight service. It applies to "the use, control, safety, movement, distribution, exchange, interchange, and return of locomotives, cars and other vehicles used in the transportation of property, including special types of equipment, and the safety of trains, by any carrier subject to this Act." It then makes it the duty of every railroad to which the law applies[1] to furnish safe and adequate car service, and it authorizes the Commission, after hearing, to require a railroad to provide itself with safe and adequate facilities, provided that the "expense involved will not impair the ability of the carrier to perform its duty to the public." The scope of the power of the Commission to order carriers to purchase or construct additional cars has not thus far been determined in the courts, but the Commission is of the opinion that it possesses adequate power to issue such orders.[2] Facilities for the interchange of traffic are specifically regulated in Section 3 of the Act, which requires the carriers to "afford all reasonable, proper and equal facilities for the interchange of traffic between their respective lines, and for receiving, forwarding, and delivering of passengers or property to and from their several lines and those connecting therewith."

Section 1 also makes it the duty of the carriers to establish and observe "just and reasonable rules, regulations, and practices with respect to car service," and expressly prohibits unjust and unreasonable car service rules and practices. It makes unlawful unjust distribution of cars to shippers, and to facilitate the equitable distribution of coal cars, specifically requires carriers in times of car shortage to apply just and reasonable ratings and "to count each and every car furnished to or by any such mine for transportation of coal against the mine." The

[1] See Chapter XXVII for statement concerning carriers subject to the Interstate Commerce Act.

[2] Sec. 93, I. C. C. 701, *in re* distribution among coal mines of privately owned cars and cars for railroad fuel, Dec. 23, 1924.

general provisions of Section 3 prohibiting the carriers from giving undue or unreasonable preference or advantage to any person, firm, company or locality or description of traffic "in any respect whatsoever," moreover, applies to unfair distribution of cars as well as to other unjust discriminations.

The Commission has authority to enforce these provisions. It can require the filing of car service rules and their incorporation in rate tariffs. During normal traffic conditions it may, after hearings, prescribe reasonable car service rules and practices, including the compensation to be paid for the use of equipment not owned by the carrier using it; and when, in its opinion, an emergency exists, it may promptly and without formal hearings or notice, suspend the carrier's car service rules and practices and make such reasonable emergency directions as in its judgment will "best promote the service in the interest of the public and the commerce of the people" without regard to the ownership of railway equipment. The states are permitted, in the exercise of their police power, to regulate car service for intrastate business, but Section 1 stipulates that state requirements may not be inconsistent with orders made by the Commission in the exercise of its emergency powers.

In line with its emergency powers with respect to car service rules and practices, the Commission, in Section 1, is authorized during periods of car shortage, traffic congestion, or other emergency, without hearing, to make "just and reasonable directions with respect to the handling, routing, and movement of traffic"; and it may require the joint use of terminals and may prescribe just compensation to terminal owners in case the carriers fail to agree among themselves. Such orders, however, may be issued only when the Commission finds them to be practicable and in the public interest, and when the joint use of terminals in particular instances will not substantially impair the ability of the owning carriers to handle their own business; and the owners are entitled to bring suit against the carriers using their terminal to recover damages for injuries sustained, or to obtain just compensation.

Section 1 of the Act confers several additional administrative powers upon the Commission. Carriers desiring to extend their

lines, to construct new lines or to acquire or operate a railroad line are required first to obtain a certificate of public convenience and necessity from the Commission, and no existing railroad line may be abandoned until a certificate authorizing abandonment is issued by the Commission. The Commission has, moreover, been authorized to require a carrier to extend its lines, provided the extension is "reasonably required in the interest of public convenience and necessity."

Section 6 empowers the Commission to establish physical connection between carriers by rail and water at interchange points in interstate commerce when the construction required is justified by public convenience and necessity and is not unsafe or unreasonable. Section 1 similarly makes it the duty of railroads, subject to the Act, to construct and operate switching connections with lateral or branch lines or private sidings, and confers mandatory powers upon the Commission.

Section 15 confers extensive routing powers upon the shippers[3] subject to reasonable exceptions and regulations that may be made by the Commission. It authorizes the Commission "whenever the public interest and a fair distribution of the traffic require" to direct the routing of unrouted traffic; and Section 3 prohibits railroads from unduly prejudicing any of its connecting lines in the distribution of unrouted traffic. Should the Commission, however, decide that a railroad is "unable to transport the traffic offered it so as properly to serve the public," it may in the exercise of powers conferred upon it in Section 1, direct the routing and distribution of traffic over other lines. It is also specifically empowered during periods of traffic emergency, to give preferences or priority in transportation, exchange or movement of traffic. It will, moreover, be recalled that the Commission has in Sections 6 and 15 been granted extensive powers to establish through transportation routes.[4]

Although the loading and unloading of carload freight is usually attended to by shippers and consignees and is not customarily included in the services performed for carload rates,

[3] See Chapter XII.
[4] See Chapter XXVII.

an exception is made of ordinary livestock unloaded and reloaded at public stockyards. Section 15 provides that "transportation wholly by railroad of ordinary livestock in carload lots destined to be received at public stockyards shall include all necessary service of unloading and reloading en route, delivery at public stockyards of inbound shipments into suitable pens, and receipt and loading at such yards of outbound shipments, without extra charge therefor to the shipper, consignee, or owner, except in cases where the unloading or reloading en route is at the request of the shipper, consignee, or owner, or to try an intermediate market or to comply with quarantine regulations." This section also contains a provision to the effect that when the owner of railroad freight of any description renders a transportation service or furnishes a transportation instrumentality, the allowance therefor received from the railroad transporting the freight is subject to regulation by the Commission and may not be unjust or unreasonable. Still another clause prohibits the unauthorized disclosure by carriers of information relative to shipments entrusted to them.

The service provisions of the Interstate Commerce Act also include those relative to carrier's liability and to bills of lading. Section 20, which contains the so-called Cummins Amendment as amended, requires the initial carrier receiving freight for movement in interstate commerce or to a point in an adjacent foreign country to issue a receipt or bill of lading, and holds it liable for loss or damage caused by it or by any connecting carrier over whose lines the shipment may move on a through bill of lading. The liability imposed is the "full actual loss, damage or injury," subject to two exceptions: (1) When the loss or damage occurs while the freight is in the custody of a carrier by water, liability is determined in accordance with the liability laws applicable to transportation by water and the liability of the initial railroad is the same as that of the carrier by water; and (2) released values at less than the full value of a freight shipment are now lawful, except in case of ordinary livestock, when the Commission expressly authorizes or orders the carriers to establish rates dependent upon written declarations or agreements in which the shipper states a released value.

The conditions under which railroads are not liable were discussed in Chapter XI, and the requirements of the law relative to the time for filing claims, serving notice and bringing claim suits in Chapter XV, which also contains an account of the provisions of Section 16 relative to overcharge claims.

Railroad bills of lading are regulated by the Interstate Commerce Act and by the Bills-of-Lading Act of 1916. The provision referred to above with reference to the issue of bills of lading by the initial carrier is supplemented in Section 1 of the Interstate Commerce Act which makes it the duty of all common carriers subject to the Act to observe just and reasonable regulations and practices affecting the issuance, form, and substance of bills of lading. Section 25, applicable to export shipments made in vessels registered under the laws of the United States, provides that when the shipper delivers a consignment of goods at any point designated by the Commission as a place where carriers by rail are required to arrange reservations at prevailing ocean rates previously ascertained, he may request the railroad for a through export bill of lading in which rail, ocean, and port charges are named separately. The Commission is authorized to prescribe the form of such through export bills of lading, subject to the proviso that its regulations may not be inconsistent with the limited liability extended by law to ocean carriers. The form and contract terms of the uniform domestic and through export bills of lading prescribed by the Interstate Commerce Commission were discussed in Chapter XI. The Bills-of-Lading Act, Section 22, as amended March 4, 1927, provides

> that if a bill of lading has been issued by a carrier or on his behalf by an agent or employee the scope of whose actual or apparent authority includes the receiving of goods and issuing bills of lading therefor for transportation in commerce among the several states and with foreign nations, the carrier shall be liable to (*a*) the owner of goods covered by a straight bill subject to existing right of stoppage in transit or (*b*) the holder of an order bill, who has given value in good faith, relying upon the description therein of the goods, or upon the shipment being made upon the date therein shown, for damages caused by the nonreceipt by the carrier of all or part of the goods upon or prior to the date therein shown, or their failure to correspond with the description thereof in the bill at the time of its issue.

Provisions Relative to Financial Administration

The Interstate Commerce Act, Section 20, confers upon the Commission the general power to require financial reports, and Section 12 authorizes it to "inquire into the management of the business of all carriers subject to the provisions of this Act"; while a number of additional provisions subject railroad finance and related matters to more specific regulation. When the railroads were returned to private management in 1920 several temporary provisions were included in the Transportation Act. The president was instructed to "adjust, settle, liquidate, and wind up all matters and disputes of whatsoever nature arising out of or incident to Federal control." Current balances of guaranteed compensation due Federal-controlled lines under the Federal Control Act of 1918, and the standard contracts that had been entered into by these lines and the Government needed to be paid; disputes incident to the promise that each line would be returned in "substantially as good repair and in substantially as complete equipment as it was in at the beginning of Federal control" required adjustment; a basis of compensation to lines with which no contracts had been made during the war period was prescribed; and suits in equity and proceedings in admiralty arising out of Federal control could after the termination of Federal control be brought against an agent designated for that purpose by the president.

As the Government had made additions and betterments and purchased new railroad equipment, provision was also made for refunding to the government expenditures properly chargeable to capital account and all indebtedness of the carriers to the United States incurred in any other manner.

As a temporary measure of financial relief the Transportation Act, as amended in June, 1920, created a revolving fund of $300,000,000 for the purpose of making loans to carriers within 2 years after the termination of Federal control. Such loans could be made for the purpose of meeting maturing indebtedness, acquiring equipment or making additions and betterments, subject to the approval of the Interstate Commerce Commission.[5]

[5] The revolving fund was also used for payment of judgments, decrees and awards against the Government in actions arising out of Federal control.

Relief was also afforded by the temporary extension of guaranteed revenues based upon the pre-War test period. Carriers that accepted the government's guarantee were thereby, for a period of 6 months, assured of revenues based upon what their railway operating incomes had been during the three years ending June 30, 1917. The Transportation Act also provided that prior to September 1, 1920, no rate, fare or other charge of carriers subject to the Interstate Commerce Act could be reduced without the approval of the Commission.

Financial aid and regulation of a permanent character were provided in Section 15a of the Interstate Commerce Act. The "rule of rate-making" and the contingent fund provided for in this section were discussed in Chapter XXVII. The former directed the Commission so to adjust rates as to yield a "fair return" on the value of transportation properties. The latter was intended to create a fund from which to make loans to the weaker carriers.

The Act of 1920 provided for the Federal regulation of railroad security issues. For several years some of the states had required Commission approval of proposed railroad stocks and bonds, but this did not make control effective. Federal regulation was debated at length in 1910, when the Mann-Elkins Act was enacted, but the only action taken was the appointment by the president of a securities commission with power to investigate and report. This so-called Hadley Commission advised against definite Federal regulation of railroad securities because of the certainty of conflict between Federal and state authority, and because of its belief that there was but little relation between capitalization and rates. A bill providing for regulation of security issues by the Interstate Commerce Commission was passed by the House of Representatives in 1914 but failed to become a law. Section 20a of the Act of 1920 prohibits railroads subject to the Interstate Commerce Act from issuing any stocks or bonds without first obtaining specific authority from the Commission, and the Commission is permitted to grant approval only when, after investigation, it finds that a security issue proposed by a carrier "(a) is for some lawful object within its corporate purposes, and compatible with the public interest,

which is necessary or appropriate for or consistent with the proper performance by the carrier of service to the public as a common carrier, and which will not impair its ability to perform that service and (b) is reasonably necessary and appropriate for such purpose."

The Commission, in exercising this important administrative power, has concerned itself with these general purposes and also with the terms and conditions under which railroad securities are sold, for Section 20a authorizes it to grant applications in part or in whole "with such modifications and upon such terms and conditions as the Commission may deem necessary or appropriate in the premises." After authorized securities are issued the Commission requires the carriers to file reports showing the disposition made of the securities and the application of the proceeds realized from their sale. Security holders and the public are in this way afforded a measure of protection, but it was not the purpose of Congress to relieve purchasers of railroad securities of the necessity of forming their own judgments as to financial values. The Act specifically provides that approval by the Commission in no way implies a guaranty or obligation on the part of the Government.

In view of the regulatory activities of the states, Congress made the jurisdiction of the Commission "exclusive and plenary" and authorized carriers who obtain the approval of the Commission to issue securities without securing the approval of state authorities. The Commission is, however, required to notify the governors of interested states whenever an application is made by a carrier, and state railroad commissions or other appropriate state authorities are authorized to make representations to the Commission.

The Commission's jurisdiction does not extend to short-term notes maturing within two years and aggregating not more than 5 per cent of the par value of a carrier's outstanding securities.[6] Carriers are, however, required to file a certificate of notification when issuing short-term notes, and should they subsequently be refunded, the provisions of the Act relative to stocks and bonds become operative.

[6] The 5 per cent limit includes the newly issued notes together with all other outstanding short-term notes.

Several additional limitations upon carriers are included in the Interstate Commerce Act. Section 20a prohibits railroad officers and directors from personally receiving any profit from the negotiation, hypothecation or sale of securities issued by a carrier, or from sharing in any of the proceeds derived from a security issue, or from participating in the payment of dividends of an operating carrier from funds properly included in its capital account. Section 5 of the Interstate Commerce Act, which regulates the consolidation of railroads, moreover, provides that "the bonds at par of the corporation which is to become owner of the consolidated properties, together with the outstanding capital stock at par of such corporation, shall not exceed the value of the consolidated properties as determined by the Commission." Indeed, the provisions of the Interstate Commerce Act concerning security issues are closely related to those concerning railroad consolidation and the rule of rate-making. Several additional provisions of the Interstate Commerce Act that were necessarily referred to in discussing rate regulation may also need to be referred to in a discussion of the Commission's administrative and financial powers.

Section 19a, which was originally enacted in 1913 and was amended by the Transportation Act of 1920, instructs the Commission to ascertain and report the value of the property of all common carriers subject to the Act. The Commission is directed to make a detailed inventory of all of their property and to classify their physical assets as nearly as practicable in conformity with the classification of expenditures for road and equipment as prescribed in its uniform system of accounts; to determine and report original cost to date of each piece of property, its cost of reproduction now, its cost of reproduction less depreciation and an analysis of the methods by which these costs are obtained; to "ascertain and report separately other values, and elements of value, if any"; to state separately from improvements the original cost and present value of all lands, rights of way and terminals; to report separately all property held for purposes other than those of a common carrier; "to report upon the history and organization of the present and any previous corporations operating the property of common car-

riers; to report upon security issues, financial arrangements under which securities were issued, the gross and net earnings of the carriers and the expenditures of all moneys; and to report detailed facts relative to public and private land grants and other gifts or donations."

This valuation work has frequently been considered entirely or largely with reference to its bearing upon railroad rates, but the Act does not limit its uses. When completed it may also have a bearing upon railroad capitalization, taxation, and accounting practices.

The Commission's valuation work has not been completed, and has proven a costly and difficult task. In its annual report for 1927, the Commission reported that tentative valuations had been announced for all of the railway mileage, but many companies have filed protests, and the carriers have also alleged that the Commission has failed to carry out all of the instructions of Congress.

When the final values are reported by the Commission, their use for some specific purpose may raise serious questions of law. The United States Supreme Court will necessarily have to determine the several elements that must enter into the value of railroad property for rate-making, capitalization, or other purposes.

Section 20 of the Act, which authorizes the Commission to prescribe a uniform system of accounts and prohibits the carriers from keeping "any other accounts, records, or memoranda than those prescribed or approved by the Commission," also has an important bearing upon railroad administration and finance as well as upon rate-making and rate regulation. The uniform income account, profit and loss account, general balance sheet, and schedule of investments in road and equipment as prescribed by the Commission have become of basic importance to the investor in his interpretation of the financial and physical condition of the carriers in which he is interested; to railroad directors and officials in the administration of railroad properties and in the supervision of the several departments that constitute their business organization, and to public authorities in the intelligent exercise of their administrative, financial, and regulatory powers.

Aside from a few of the Pacific railroads, the railroads in the United States have been incorporated by the states. Formerly most railroad charters were special acts of state legislatures, but special charters gave rise to so much favoritism and corruption that the states enacted general incorporation laws and the constitutions of many states now prohibit the granting of special charters. Attempts were made to regulate the carriers by inserting in the charters provisions relative to charges and earnings, but these safeguards were of little protection to the public. Railroad companies being quasi public corporations engaged in the performance of a public service, their services and charges and finances are subject to public regulation.

The location of railroads is governed by their charters and also by statutes. The location clauses of railroad charters define in detail the route over which a railroad is to be constructed or less definitely fix the location of the road by prescribing merely its termini or the general territory within which it is to be located. The right of eminent domain is usually conferred upon railroad corporations, to enable them to acquire necessary rights of way, the laws of the states prescribing the court procedure through which the landowner's compensation is determined and the evidence to be presented by a railroad when it endeavors to bring about the condemnation of private land in a particular instance. State legislatures have enacted general laws conferring the right of eminent domain upon railroad corporations, but the exercise of this right is administered through the courts, and in each instance assurance must be given that the land to be condemned is to be used for transportation purposes and that the carrier's application is based upon public convenience or necessity.

Except in Federal territory, the United States Government did not concern itself with railroad location until after the amendment of the Interstate Commerce Act in 1920. The provisions of Section 1 of that Act require railroads to obtain certificates of convenience and necessity from the Interstate Commerce Commission before constructing new lines or extensions. While this is primarily concerned with railroad construction rather than with location practice, its bearing upon

location is obvious. The Commission is empowered to prevent the construction of a line or to withhold its approval, if the route over which a proposed line is to be located does not meet the Commission's judgment as to public convenience or necessity.

When a railroad is unable to pay the interest on its debt or to meet other financial obligations, its creditors may request a court to appoint a receiver. If the request of the creditors is granted and a receiver is appointed the railroad is managed by the court, for the receiver acts as an agent of the court and is subject to its direction. The court may suspend interest payment and use both current earnings and funds obtained by selling receiver's certificates for the purpose of operating the road and improving its property. The receiver coöperates with the creditors and owners in the formulation of an acceptable reorganization plan. If, however, it is found that the company's liabilities are such as to make it hopelessly insolvent, the court may direct the receiver to sell its property for the benefit of its creditors. In either case, the receiver makes every effort to operate the road and build up its property, because its services are quasi public in character and because most of the investment in a railroad cannot be withdrawn. Its value depends largely upon the success of the railroad.

Although the original intent of the law was that railroad receiverships should be declared for the protection of creditors, many proceedings for receiverships have been instituted by railroad directors or managements, or by certain creditors who are friendly to them, for the purpose of protecting the existing management against the real creditors of an insolvent railroad or one that is threatened with insolvency. The president of the company or some other representative of the management is suggested to the court as the proper person to serve as receiver, and courts have frequently heeded such suggestions. Such proceedings are known as "friendly receiverships." They protect the existing management against interference from creditors or other interested parties while the road is emerging from the effects of a commercial depression. Should a receivership, however, be due fundamentally to other causes such as excessive interest payments or other fixed charges, overcapitalization, un-

wise extensions of a company's lines, grossly inaccurate estimates of speculative profits or future traffic and revenues, or to financial mismanagement, the court may take steps to protect the interests of its creditors even when it was the managers themselves that instituted the original receivership proceedings. While the road is being operated by the receiver, the creditors may institute a foreclosure suit which may finally be satisfied either by the adoption of a reorganization plan or by the sale of the company's property. A well-managed receivership, "friendly" or otherwise, and an earnest desire on the part of the creditors to agree upon a reorganization plan, have frequently avoided foreclosure sales and have improved the physical and financial condition of distressed railroads.

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CHAPTER XXIX

REGULATION OF INTERCARRIER RELATIONS, SAFETY APPLIANCES AND LABOR DISPUTES

Intercorporate and Intercarrier Relationships

FEW phases of railroad financial administration have received more attention on the part of Congress and the state legislatures than railroad consolidations, and no Federal regulatory policy has changed more radically in recent years than legislation on this subject. The process of welding together short connecting railroads into larger systems began during the decade 1850 to 1860, but, as its purpose was primarily to provide efficient through routes, to equip ambitious lines with needed terminals and traffic outlets and to secure the economies of large-scale transportation, no serious public hostility was encountered. When, however, much larger consolidations of competitive lines began to be formed during the late nineties by means of individual company stock ownership, holding companies and long-term leases, in some instances for the purpose of controlling or eliminating competition, prohibitive legislation was enacted and litigation ensued. Various states adopted antitrust laws applying to parallel and competing railroads.

Congress passed the Sherman Antitrust Act of July 2, 1890, to apply the general policy of enforced competition in interstate and foreign commerce. The act was aimed primarily at large industrial combinations, but its wording was general, and when the Government brought action against the Trans-Missouri and Joint Traffic Associations the Supreme Court in 1897 and 1898 held that the Act applied also to railroads. For a time the application of the Sherman Act to rate agreements induced many railroads to turn to consolidation as a means of curbing cut-throat competition, but later this course was made impossible when the Act was held to apply to railroad consolidations.

The Sherman Act declared illegal "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations." The Northern Securities Company, through which the Harriman and Hill interests endeavored to affiliate a number of competitive lines, was in 1904 held to be an unlawful combination, and later the enforcement of the Sherman law brought about the dissolution of the Union-Southern Pacific system and also the New York, New Haven and Hartford system.

In the Clayton Antitrust Act of October 15, 1914, Congress again attempted to enforce competition by expressly prohibiting corporations engaged in interstate or foreign commerce from acquiring "directly or indirectly, the whole or any part of the stock or other share of capital of another corporation engaged also in commerce, where the effect of such acquisition may be to substantially lessen competition between the corporation whose stock is so acquired and the corporation making the acquisition, or to restrain such commerce in any section or community, or tend to create a monopoly in any line of commerce." It provided further that "no corporation shall acquire, directly or indirectly, the whole or any part of the stock or other share of capital of two or more corporations engaged in commerce where the effect of such acquisition, or the use of such stock by voting or granting of proxies or otherwise, may be to substantially lessen competition between such corporations, or any of them, whose stock or other share of capital is so acquired, or to restrain such commerce in any section or community, or tend to create a monopoly of any line of commerce." The purchasing of stock solely for investment, the forming of subsidiary companies for the actual "carrying on of the immediate business" of the parent corporations or their "natural and legitimate branches or extensions," and the absorbing of noncompeting short lines, when the effect is not to lessen competition substantially, are, however, not prohibited by the Clayton Antitrust Act.

Largely as a result of the experiment with Government operation during the War, public sentiment with respect to railroad consolidation underwent a drastic change. The conviction that

all railroad corporations should so far as practicable be assured reasonable earnings not only resulted in the rule of rate-making (Section 15a) but was in a large measure responsible for the Federal regulation of railroad security issues and the Government's changed policy with respect to consolidation. The recapture clause of Section 15a was designed to prevent the strong roads from obtaining earnings substantially in excess of a fair return and to aid the weak roads by providing an available loan fund, but it was also believed that the revenue and rate problem could be solved in a more permanent way by encouraging the consolidation of the weak lines with the strong.

Section 5 of the Interstate Commerce Act as amended by the Transportation Act of 1920 does not entirely discard the principle of competition, but it encourages consolidation subject to supervision by the Interstate Commerce Commission and subject to stated regulatory principles. Consolidations approved by the Commission are relieved from the operation of Federal and state antitrust laws "insofar as may be necessary to enable them to do anything authorized or required by any order made" by the Commission in accordance with the provisions of Section 5. Control by means of a lease, stock purchase or in any other manner not resulting in the consolidation of carriers "into a single system for ownership and operation" may be approved by the Commission when it believes such control to be "in the public interest" and regards the consideration, terms and conditions of the acquisition to be just and reasonable. "Consolidation" of lines into single systems for ownership and operation, however, is subjected to greater limitations and the intent of Congress was that such permanent consolidations should not be approved unless they fitted into a comprehensive plan under which the entire railway network was ultimately to be consolidated into a limited number of large railroad systems, and in preparing and adopting such a plan of consolidation the Commission was directed to observe the following general principles: (1) Competition is to be "preserved as fully as possible"; (2) "existing routes and channels of trade and commerce" are to be maintained wherever practicable; and (3) subject to these requirements, "the several systems shall be so arranged that

the cost of transportation as between competitive systems or as related to the values of the properties through which the service is rendered shall be the same, so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective properties."

In 1921 the Commission published a tentative plan providing for 19 consolidated systems, certain of which were alternative, but none of the suggested consolidations has thus far been effected. The Commission was not granted compulsory powers, and the carriers have not voluntarily accepted the consolidations proposed by the Commission in its preannounced plan. The carriers are authorized to submit proposals to the Commission, but Section 5 expressly states that proposed consolidations "must be in harmony with and in furtherance of the Commission's complete plan of consolidation."

The decision of the Commission not to promulgate its tentative consolidation plan is due to the belief that: (1) The three general principles embodied in Section 5 of the Act are to some degree inconsistent. It is difficult to preserve competition and existing channels of trade and at the same time accomplish the dominant purpose of the section, which is to attain a limited number of competitive systems having substantially equal transportation costs, charges and rates of return upon their property values. (2) Permanent consolidations not accomplishing this purpose are not provided for in the Act. The relationship between the rule of rate-making and Section 5 is so binding as to hamper consolidations that would probably result in advantages to the carriers and to the shipping public. (3) The publication of a predetermined tentative plan has been found to be impracticable. The absorption of weak by strong roads is at best a difficult financial procedure, and a complete tentative plan tends unnecessarily to tie the hands of both the Commission and the carriers. The decision of the Commission in the Nickel Plate Case indicates that the Commission will not insist upon its tentative plan.

The consolidation provisions of the Act, however, remain un-

changed. The Commission has recommended to Congress that the requirement as to the adoption and publishing of a complete plan of consolidation be repealed, and that instead the Commission be given "broad powers upon application and after hearings" to approve or disapprove consolidations, and to utilize the results of its former general investigation [1] only in so far as deemed advisable by the Commission. It has been suggested, not however by the Commission, that railroad consolidation at some future date be made compulsory, and bills conferring mandatory powers upon the Commission have been introduced during several sessions of Congress. It is doubtful whether complete consolidation for the purpose defined in Section 5 will be fully accomplished without compulsory legislation, but it is probable that voluntary consolidation would progress if the present Act were amended as suggested by the Commission.

Interlocking directorates are regulated by Section 20a of the Interstate Commerce Act, which makes it unlawful for any person to hold the position either of director or officer of more than one railroad, unless the Commission is convinced that "neither public nor private interests will be adversely affected thereby." Many applications have been granted by the Commission and some have been disapproved, but the full effect of the statute cannot be measured by the number of adverse orders. "It may be assumed that in many instances the law has exercised a controlling influence in the selection of individuals for positions with carriers having conflicting interests." [2] Comparatively few applications to serve such carriers are filed with the Commission.

The control by railroads or other common carriers subject to the Interstate Commerce Act of carriers by water is regulated by Section 5 of that law as amended by the Panama Canal Act of 1912. Effective July 1, 1914, it became unlawful for a railroad to "own, lease, operate, control or have any interest whatsoever by stock ownership, or otherwise, either directly, indirectly, through any holding company, or by stockholders or directors in common or in any other manner," in any common

[1] Docket No. 12964, Consolidation of Railroads.
[2] I. C. C. Annual Report, 1926, p. 23.

carrier by water with which the railroad does or may compete unless the Commission after ascertaining certain facts grants specific permission. A distinction is made between carriers by water operating through the Panama Canal and those operating elsewhere. The Act prohibits a railroad from controlling a competing carrier by water operating through the Canal. A carrier by water operating elsewhere than through the Canal, even when controlled by a competitive railroad, may, however, make application to the Commission; and if it is found that it is "being operated in the interest of the public and is of advantage to the convenience and commerce of the people" and that its control by a competitive railroad will "neither exclude, prevent, nor reduce competition on the route by water," the Commission may permit its control by a railroad to continue.[3]

The relations of common carriers with business concerns with which they have dealings in securities, supplies or other commodities or with which they enter into construction or maintenance contracts is regulated in Section 10 of the Clayton Anti-trust Act. Such business dealings may not lawfully be entered into for amounts exceeding $50,000 annually with a concern that is affiliated with the carrier through the medium of its directors or its manager, purchasing or selling officer or other person who serves as a director, officer or agent of the carrier but has a substantial interest in the other concern, unless the purchase or transaction is the result of free and fair competitive bidding under regulations prescribed by the Interstate Commerce Commission.

The control of coal mines by railroads was given special consideration in the Hepburn Amendment of 1906. Many coal carriers were heavily interested in the coal mining industry and it was alleged that this relationship resulted in discrimination. A "commodities clause" was inserted into Section 1 of the Interstate Commerce Act declaring it unlawful for any railroad to transport in interstate or foreign commerce any commodity, other than timber and timber products, "manufactured, mined, or produced by it, or under its authority, or which it may own in whole or in part, or in which it may have any interest, direct

[3] See Chapter XLV.

or indirect, except such articles or commodities as may be necessary and intended for its use in the conduct of its business as a common carrier." The constitutionality of this clause was upheld by the Supreme Court in 1909, but its prompt effectiveness was largely destroyed because the Court also ruled that the ownership by a railroad of stock in a coal mining corporation did not constitute ownership of its property and did not give the railroad a legal interest in the coal shipped by it.[4] After a number of anthracite carriers had readjusted their coal mine relationships in conformity with this principle, the Supreme Court, however, modified or clarified its opinion by ruling that coal mining corporations, in order to escape the application of the commodities clause, must be bona fide, and that the mere drawing of corporate lines between railroads and coal mines or coal sales companies does not destroy the existence of a legal interest on the part of the railroads.[5] Still later the Supreme Court ruled that the affiliation of railroads and coal mines through the medium of a holding company such as the Reading Company, also constitutes a violation of the commodities clause.[6]

The regulation of various relationships between carriers, other than those involving intercorporate relationship, has been referred to in discussing the regulation of railroad rates, services and facilities, but the antipooling clause of the Interstate Commerce Act should be mentioned here. Section 5 of the original Interstate Commerce Act prohibited common carriers subject to the Act from entering into contracts, agreements, or combinations for the pooling of either traffic or earnings. Traffic associations were obliged to discontinue their pooling activities. It was frequently suggested in later years that this policy of prohibition be abandoned and that pooling subject to adequate public supervision be permitted, but, as in the case of consolidation, the antipooling clause was not amended until 1920, when the Transportation Act was enacted. The amended clause now empowers the Commission to authorize carriers to pool their earnings or traffic whenever in particular instances it believes that such action

[4] U. S. *v.* Delaware and Hudson, *et al.*, 213 U. S. 366, May 3, 1909.
[5] U. S. *v.* Lehigh Valley R. R. Co., 220 U. S. 257, April 3, 1911; U. S. *v.* Delaware, Lackawanna and Western, 238 U. S. 516, June 21, 1915.
[6] U. S. *v.* Reading Co., 253 U. S. 26, April 26, 1920.

would result in better service or in operating economies, and that it would not unduly restrain competition. The terms and conditions of any pools that may be entered into by railroads in the future must be just and reasonable and their administration is subject to such regulations as the Commission may prescribe.

Safety Provisions of the Law

The Interstate Commerce Act and numerous supplementary Federal laws contain many provisions intended to promote the safety of railroad employees and of passengers and property transported by rail. Special agencies such as the Bureau of Locomotive Inspection, the Bureau of Safety and the Bureau of Signals and Train-Control Devices have been organized by the Commission. Requirements concerning locomotive-power driving-wheel brakes and train brakes, automatic couplers, grab irons and handholds, and standard height of drawbars for freight cars were set in the Safety Appliance Act of 1893, the Interstate Commerce Commission being designated as the administrative and regulatory agency. This law was later extended and amended by supplementary safety appliance acts enacted in 1896, 1903, and 1910. Inspectors were provided for by an appropriation act of 1902, and an act of 1916 amending the judicial code made provision for judgments and court decrees in proceedings and causes arising under the Safety Appliance Acts.

The Accident Reports Act of 1910 [7] requires the carriers to make monthly reports of accidents, and authorizes the Commission to investigate all accidents resulting in serious injury to persons or property and to publish the results of its investigations. A Medals of Honor Act of 1905 authorized the President to bestow medals upon persons who by extreme daring endanger their own lives in preventing railroad accidents or in saving or endeavoring to save lives when railroad wrecks, disasters, or grave accidents occur, and it created a committee within the Commission's organization to investigate applications and make recommendations. The transportation of explosives and other dangerous articles is regulated in detail by the Commission under

[7] This Act repealed an earlier Act of March 3, 1901.

powers received in an Act of 1909 ordinarily known as the "Transportation of Explosives Act."[8]

The Ash-Pan Act of 1908 makes it unlawful to operate a locomotive in interstate or foreign commerce not equipped with ash pans that can be emptied or cleaned without the necessity of an employee going under the locomotive. The Boiler Inspection Act of 1911 prohibits the operation of steam locomotives the boilers of which are not in safe condition, and provides for the appointment of a chief inspector and two assistant chief inspectors of locomotive boilers and a staff of district inspectors. Boiler inspection rules and instructions approved by the Interstate Commerce Commission are made obligatory upon the carriers and accidents resulting from defective boilers and causing serious injury must be reported to the inspection service for investigation. This act was amended in 1915 so as to include the entire locomotive and the locomotive inspection service has been correspondingly extended.

In 1906, Congress in a joint resolution, directed the Commission to investigate and report on block signal systems and appliances for the automatic control of railway trains. Appropriations were later made for the making of block signal tests, and in 1920 the Interstate Commerce Act, Section 26, authorized the Commission to order the installation of "automatic train-stop or train-control devices or other devices, which comply with specifications and requirements prescribed by the Commission." The Commission has since then adopted specifications and requirements and has required many railroads to install approved automatic train-stop or train-control devices on one or more of their passenger locomotive divisions.

A different type of safety legislation is embodied in the Hours of Service Act of 1907. This Act, as amended, stipulates that no employee actually engaged in or connected with the movement of trains may be permitted or required to remain on duty for a longer period than 16 consecutive hours. After he has been on duty for 16 hours he must be relieved and may not be permitted or required to go on duty again until he has had at

[8] See Chapte XII. An earlier act of May 30, 1908, was repealed by an act approved March 4, 1909, to take effect Jan. 1, 1910.

least 10 consecutive hours off duty; and no train movement employee who "has been on duty 16 hours in the aggregate in any 24-hour period shall be required or permitted to continue or again go on duty without having had at least 8 consecutive hours off duty." Train dispatchers and telegraph or telephone operators whose duties pertain to train movements may not work more than 9 hours in any 24-hour period at towers, offices, places, or stations operated continuously night and day, and 13 hours at towers, etc., operated only during the daytime. Operators and dispatchers may, however, be permitted to remain on duty for a longer period in case of emergency and the Interstate Commerce Commission, after hearing and for good cause, may extend the period within which a railroad, in a particular instance, must comply with standard requirements. The provisions of the act as a whole do not apply in case of casualty or unavoidable accident or the act of God; nor in case of delays that could not have been foreseen when an employee left a terminal; nor to the crews of wrecking or relief trains.

Regulation and Adjustment of Railroad Labor Disputes

The relations between railroad employees and managements have been given special attention by the courts and by Congress because interruptions in service caused by railroad strikes are apt seriously to inconvenience commerce and industry and the public. The public has come to be recognized as a vitally interested party in railroad labor disputes. Railroad employees as well as employees in other industries, however, retain the right to discontinue their employment either singly or in a body provided contracts are not violated and no unlawful acts are committed. Peaceable persuasion of other employees or prospective employees is generally recognized by the courts as lawful, but when strikers resort to violence or intimidation they not only violate prohibitive statutes but are apt to be restrained by the courts in the exercise of their equity powers. The common law as to strikes has in some respects been modified in the case of railroad employees by state and Federal statutes. The abandonment of engines, cars, or trains en route to their regular destinations by engineers, trainmen, or other employees and the

disabling of engines or cars are penal offenses; and the courts have held it to be unlawful for an engineer to aid a strike against a connecting line by refusing to haul its cars. The obstruction of the mails is prohibited.

The issue of court injunctions restraining railroad employees from destroying property, from intimidating other men or from committing other acts that would prevent the companies from performing their public service or from carrying the mails, has frequently been condemned by union executives and others as an unwarranted interference with the right to strike. It has been contended that unlawful acts should be suppressed by applying the penalties imposed in statutes rather than by means of injunctions the violation of which subjects the strikers to contempt of court. Labor unions have been especially opposed to the blanket injunctions that in the past were at times issued by courts, for such orders variously enjoined strikers from "in any manner interfering with the movement of trains," and in some instances were directed not only against named persons but against "all persons combining and conspiring with them and all other persons whomsoever." Federal legislation prohibiting the use of injunctions in labor disputes, however, has not been enacted, for exercise of the powers of the courts for the prevention of irreparable injury to property is inherent in equity jurisdiction, and, subject to reasonable limitations, is regarded as a necessary form of protection not provided by statutory penalties that can be applied only after an unlawful act has been committed. Instead, the purpose of Congress in enacting the Clayton Antitrust Act of 1914, was to regulate the use of injunctions.

The Clayton Act provides that injunctions may be issued in case of labor disputes only when necessary to prevent an irreparable injury for which there is no immediate remedy at law, and it prohibits the use of injunctions against certain acts of striking employees. Courts are prohibited from enjoining a strike, peaceful persuasion of others, peaceful picketing, cessation of patronage, lawful assembly, payment of strike benefits, or any other act that would be lawful in the absence of a labor dispute. The law also requires applicants for an injunction to describe specifi-

cally in writing and under oath, the property or property right threatened with irreparable injury, and it similarly requires the courts to state fully the reasons for issuing an injunction, and to indicate with reasonable definiteness the acts restrained. Preliminary injunctions may not be issued without notice to both parties, and a temporary injunction may not be issued without notice unless it appears that irreparable injury will result before a hearing can be held. Temporary injunctions, moreover, expire in 10 days and may be extended only for good cause. When a court restrains or enjoins an act that is also a criminal offense under the Federal statutes, disobedience may not be punished as contempt of court without a trial by jury, if the defense demand such a trial, unless the contempt is committed in the presence of the court or the injunction or restraining order is the result of a suit brought by the United States Government. The period within which contempt of court proceedings may be brought against a person is limited to one year. The Clayton Act does not prohibit the use of injunctions for the purpose of preventing irreparable injury, but it discourages overhasty action by the courts and to some extent protects striking employees against blanket injunctions and against orders restraining them from committing acts that are not prohibited by law.

The interest of the public in an uninterrupted railroad service is so direct that the Federal Government has since 1888 provided agencies for adjusting railroad labor disputes and settling or avoiding railroad strikes. In 1898 Congress adopted the Erdman Act under which the Chairman of the Interstate Commerce Commission and the Commissioner of Labor served as a board for the conciliation of railroad labor disputes, and provision was made for the voluntary arbitration of disputes that could not be adjusted by means of conciliation. This act was amended by the Newlands Act of 1913 by which a permanent Board of Mediation and Conciliation was created and the provisions encouraging voluntary arbitration were so changed as to make them more acceptable. These statutes resulted in the adjustment of a number of disputes, but they did not entirely eliminate railroad strikes. When a serious interruption of the transportation service was threatened in 1916, large numbers of organized

railway employees refusing to arbitrate their wage grievances, Congress avoided a nation-wide strike by passing the Adamson Act, which made the 8-hour day the standard for railroad employees.

During the period of Federal operation, railway wages were increased, working conditions and rules were standardized and special adjustment machinery was maintained within the organization of the United States Railroad Administration. It was realized that many issues would continue to arise after the termination of Federal operation, and an effort was made in the Transportation Act of 1920 to provide effective means for their adjustment. A threefold plan was authorized:

(1) It was made the duty of railroad managements and employees to consider in conference all disputes threatening an interruption in the operation of any carrier and to make a reasonable effort to decide them by such means. (2) Disputes involving grievances, rules, or working conditions not adjusted by direct conference were to be referred to "railroad boards of labor adjustment," the Act providing that such boards "may be established by agreement between any carrier, group of carriers, or the carriers as a whole, and any employees or subordinate officials of the carriers, or organization or group of organizations thereof." (3) The Act created a Railroad Labor Board composed of 9 members, 3 each from labor, the railroads and the public. Grievances, rules, and working conditions not adjusted by the boards of labor adjustment were to be referred to this Railroad Labor Board, but the Board also had authority to act in such disputes on its own motion when in its opinion an interruption of commerce was threatened. The Board, moreover, acting either on application or its own motion, was given original jurisdiction over wage disputes not adjusted by direct conference between railroad managements and employees. Several of the general principles or factors to be considered by the Board in adjusting wages were stipulated in the law. The Board was given extensive powers of investigation, of subpœnaing witnesses and examining books and correspondence. Its decisions, however, were not binding upon either employees or management. When violations of a decision occurred the Board's only

remedy was to determine whether a violation had actually occurred and "make public its decision in such manner as it may determine."

A number of disputes were adjusted under the labor provisions of the Transportation Act, but it did not eliminate strikes, although it prevented some. The railroad unions and companies did not agree upon adjustment boards and they were not established. The Labor Board was called upon to settle a great many disputes that were intended to be settled by conference of the men and their employers or by adjustment boards. After a few years of activity the Board was avoided both by the employees and by the companies and its usefulness became slight.

In 1926, Congress enacted a new railroad labor law known as the Watson-Parker Act, which abolished the Railroad Labor Board. The new law provides that it shall be the duty of employees and managements to exert every reasonable effort to make and maintain agreements, that when disputes arise they are first to be considered in conference between the parties directly interested, and that adjustment boards are to be established by agreement either between an individual carrier and its employees or jointly by groups of carriers and employees on a regional or a national basis. These boards are to have jurisdiction over disputes relating to employment grievances and to the interpretation or application of existing agreements, but not over changes in rates of pay, rules or working conditions. It is especially provided, however, that the Act shall in no way prohibit an individual carrier and its employees from agreeing upon the settlement of disputes through such machinery of contract and adjustment as they may mutually establish. The Act provides for a Board of Mediation of 5 members appointed by the President and approved by the Senate, whose duty it is to intervene at the request of either party or on its own motion in any unsettled labor dispute, whether it is a grievance or a difference as to the interpretation of agreements not adjusted in conference or by an adjustment board, or a dispute over changes in rates of pay, rules or working conditions not adjusted in conference between the interested parties. The law also stipulates that when this board is unable to bring about an amicable ad-

justment between the parties it is required to make an effort to induce them to consent to arbitration. The methods of selecting members of voluntary arbitration boards and the arbitration procedure are set forth in the Act, and any arbitration award made by such a board is to be filed in the appropriate District Court of the United States and become a judgment of the Court binding upon the parties that agreed to have the dispute adjusted by arbitration. Should a railroad labor dispute fail to be settled under any of the foregoing methods and a substantial interruption of interstate commerce be threatened, the Board of Mediation is authorized to notify the President, who in turn is authorized, in his discretion, to create a board to investigate and report to him within 30 days. If all steps leading up to the appointment of this emergency board fail to bring about a settlement, transportation may not be interrupted for a period of 60 days.

The Watson-Parker Bill was opposed on the ground that it does not provide for adequate representation of the public and may result in wage agreements between railroad employees and managements, the burden of which would be shifted to the public under the rule of rate-making. It is believed, however, that the danger of agreements establishing unwarranted rates of pay is small because the Interstate Commerce Act, Section 15a, stipulates that the fair return to which the carriers are entitled presupposes "honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment." In view of the difficulty of obtaining a fair return, the carriers will hardly lay themselves open to a charge of collusion. The law was enacted largely because it was urged by large groups of employees and many railroad companies as a practicable plan under which they hoped to coöperate in the reasonable adjustment of their disputes.

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CHAPTER XXX

GOVERNMENT OWNERSHIP OF RAILROADS

THE railroad experience of all countries has shown that the exercise of government authority over some matters is necessary. The quasi public character of the railroad service, its close connection with the conduct of business, with the development of national resources, with the ability of people to travel, with the transportation of the mails makes it imperative that railroads should be constructed where and when needed, and that they should be so operated as to provide adequate service at reasonable and just rates. In some countries government regulation or control has been largely for military and political reasons.

If private capital with or without public aid cannot construct the desired mileage and provide the necessary facilities of railroad transportation, or if private corporations subject to public regulation cannot operate the railroads satisfactorily, government ownership and operation become necessary. The policy of government ownership and operation of railroads has, however, rarely been adopted on the ground of general principle; in most instances public ownership has been adopted as a matter of expediency. There has usually been something that deterred private capital from undertaking railroad construction or unduly handicapped the operation of private lines, or there has been some special military or political purpose that was believed to call for government ownership and operation of the railroads.

The choice usually is between government and private ownership and operation, private railways being subject to varying degrees and forms of public regulation. The state may, however, own the railroads and have private companies operate them. In British India, for example, over 19,000 miles of state-owned lines are operated by companies, while at the same time a substantial length of state-owned mileage is operated by the

Government; a number of Indian state lines are operated by Indian states, and several privately owned lines are operated by private companies. Much of the privately owned mileage is operated under state guaranties or subsidies. Before 1905, for a period of 20 years, the state-owned lines of Italy were operated by private companies under contract with the Government, but the Government then resumed the operation of its lines because the service provided by the contracting companies had become notoriously inadequate, and the Government had become skeptical of the possibility of negotiating operating contracts that would prove to be satisfactory financially and as regards service.

Private ownership and state operation has been tried in a few instances, usually to meet a temporary emergency. During the World War several countries, including the United States, took over the operation of private railroads. The experience of the United States with government operation did not incline the public to favor government operation as a permanent policy.

Government Ownership and Operation Abroad

Although the ownership and operation of railroads by an increasing number of foreign governments and the success or failure of that policy in particular instances does not solve the problem of state or private ownership in the United States, foreign experience is instructive as to the specific causes that lead to government ownership and as to the conditions that have been favorable to such success as has been attained by state-owned railroads.

The mileage of government-owned railroads is increasing and so is the number of countries having government lines. In 1913 about 52 per cent of the world's mileage, other than that of the United States, was state owned. By 1920 this proportion, based upon a total including 37 foreign countries, had advanced to over 60 per cent. The statistics of 49 foreign countries indicate that in 1925 approximately 64 per cent of the railroad mileage was state owned. Of the countries included in the accompanying table, state ownership predominates in 36. State-owned systems in excess of 5,000 miles are operated in Australia, Brazil,

STATE AND PRIVATE RAILROADS

Compiled from U. S. Department of Commerce, Yearbook, 1925, and additions of Bureau of Railway Economics and Bureau of Railway News

COUNTRY	MILEAGE			PER CENT OF MILEAGE	
	Private	State	Total	Private	State
Algeria	757	1,861	2,618	29	71
Argentina [1]	19,186	4,112	23,298	82	18
Australia	994	24,845	25,839	4	96
Austria	516	3,609	4,125	13	87
Belgium	216	2,977 [3]	3,193 [4]	7	93
Bolivia	1,491	. . .	1,491	100	. .
Brazil	3,298	15,728	19,026	18	82
Bulgaria	.....	1,700	1,700 [8]	..	100
Canada	19,604	20,748	40,352	49	51
Chile	2,437	3,772	6,209	40	60
China [2]	3,108	4,662	7,770	40	60
Colombia [2]	333	776	1,109	30	70
Cuba [2]	3,573 [5]	149	3,722	96	4
Czecho-Slovakia	.. .. [6]	8,149 [6]	8,149		100
Denmark	1,643	1,505	3,148	52	48
Dutch East Indies	1,853	2,571	4,424	43	57
Ecuador [1]	.....	470	470	.	100
Egypt [1]	852	1,947	2,799	31	69
Esthonia	.....	1,130	1,130	...	100
Finland [1]	150	2,754	2,904	6	94
France	20,431	5,628	26,059 [4]	78	22
Germany [2]	2,917	33,074	35,991	8	92
Greece	1,156	827	1,983	58	42
Holland [2]	900	1,351 [3]	2,251	40	60
Hungary	868	4,548	5,416	16	84

[1] 1926 figures.
[2] 1924 figures.
[3] Privately operated.
[4] Not including narrow gauge railroads.

Canada, Czecho-Slovakia, Germany, India, Italy, Japan, Mexico, Poland, Rumania, Russia, South Africa, and Yugoslavia. French state-owned mileage also exceeds 5,000 miles, but includes only 22 per cent of the entire railway system of France. Other countries whose state-owned railways are instructive, although their mileage is smaller, are Belgium, China, Austria, Hungary, New Zealand, and Switzerland. The principal foreign countries in which private ownership predominates are Argentina and Uruguay, Cuba, France, Portgual, Spain, Sweden, Ireland, and the United Kingdom. It will be noted that in many of the

IN FOREIGN COUNTRIES IN 1925

vance figures for 1926; yearbooks of several foreign countries; publica- and Statistics; World Almanac, 1927; *Railway Age*, etc.

COUNTRY	MILEAGE			PER CENT OF MILEAGE	
	Private	State	Total	Private	State
India	8,514	29,756	38,270	22	78
Ireland [2]	2,999	24	3,023	99	1
Italy [2]	2,861	10,244	13,105	22	78
Japan [1]	2,577	7,837	10,414	25	75
Latvia	. .	1,743	1,743	...	100
Lithuania	. .	1,052	1,052	...	100
Mexico	4,861	8,336	13,197	37	63
Newfoundland	. . .	906	906	...	100
New Zealand	119	3,085	3,204	3	97
Norway	271	1,959	2,230	12	88
Peru	596	1,494	2,090	30	70
Poland	. .	10,420	10,420	...	100
Portugal	1,180	825	2,005	58	42
Rumania		7,424	7,424	...	100
Russia	14,144	31,547	45,691	30	70
Siam	126	1,486	1,612	8	92
South Africa	566	11,528	12,094	5	95
Spain	9,854	.....	9,854	100	.
Sweden	6,196	3,734	9,930	60	40
Switzerland	....	3,708	3,708	...	100
United Kingdom	21,158 [7]	.....	21,158 [7]	100	...
Uruguay	1,633	.....	1,633	100	...
Venezuela	593	68	661	89	11
Yugoslavia	576	5,572	6,148	9	91
TOTAL FOREIGN COUNTRIES	165,107	291,641	456,748	36.2	63.8

[1] Not including private sugar companies' lines.
[2] Government owned or controlled.
[7] Including 765 in Northern Ireland.
[8] Approximate figures.

foreign countries included in the table there is a division between state and private ownership.

That much of the state ownership of railroads now prevailing in foreign countries was due to expediency rather than to an acceptance of government ownership and operation as a general principle is illustrated by the fact that although British India is a possession of the United Kingdom, a country in which the railroads have always been owned by private companies, 78 per

cent of its railroad mileage is state owned. The available private capital in India was needed for the economic development of the country, and the Government devoted public funds to the construction of the railroads to promote political unity and to increase economic well-being.

Military and political considerations also had much to do with the adoption of state ownership in Germany. Bismarck urged government ownership by the central Government because of the effect such a policy would have upon strengthening the political unity of the Empire, because it would enhance the military value of the railroads, because he believed that national trade policies would be achieved more readily, and because he was desirous of making the state dominant in the life of the German people. Opposition by some of the German states to the ambitions of the Central Government caused them to take over most of the railroad mileage within their boundaries, and the dominant position of the Prussian state railway system, which comprised 60 per cent of all the railway mileage of Germany, did much to increase the political and military value of the railroads to the German Empire. During the World War the management of the state railroad systems of Germany was taken over by the Empire for military reasons, and at the close of the War the Constitution of the German Republic, adopted at Weimar in 1919, provided for the permanent nationalization of the more important state and privately owned railroads. Instead of being owned and operated by the several states, over 33,000 miles of line are now owned by the Central Government. They are being operated by the German Reichs Railway Company, the board of management of which is in part appointed by the Government, and in part by the trustee of reparation bonds who in turn is appointed by the Reparations Commission. The company's concession makes special provision for the appointment of a "Railway Commissioner" to protect the rights of the reparation bonds on the basis of which agreed payments are made to the credit of the Agent General for Reparations Payments.

Military and political considerations were also responsible, at least in part, for the adoption of government ownership in

Austria, Japan, and Russia. The policy of government ownership was adopted by the Czarist Government of Russia for reasons of expediency and it has been extended by the Soviet Government. The state lines of Russia now afford the only important instance of government ownership that is retained at least partly on the ground of general principle. In Belgium, Switzerland, and China the policy of state ownership was in some instances adopted to prevent the ownership of important railroad lines by foreign capitalists. The ownership of the Intercolonial Railway by the Canadian Government had as one motive the desire to unite more firmly the Dominion's English and French provinces.

The construction of many railroads was undertaken by foreign governments because private capital was not available for the building of lines that were urgently needed in the development of economic resources. In Australia the vastness of the area to be traversed, the sparseness of population, unfavorable traffic prospects, and for a time also the flow of private capital into the gold-mining industry practically compelled the several states and also the Commonwealth Government to construct railroads. Construction subsidies to private companies such as were granted to many railroads in the United States would not have accomplished the purpose, for the revenue prospects of some of the most necessary Australian lines foretold long-continued operating deficits. Similar lack of private capital for the construction of railroads, necessary for the economic development of the country but unattractive to private capital because of their uncertain revenue prospects, led to state ownership in many other countries, such as New Zealand, South Africa, and Egypt, and it was also a factor in India.

The financial difficulties of private railroad companies whose lines are deemed essential to the national welfare have led to state ownership. This was the reason for the purchase of the Canadian Northern, Grand Trunk, and Grand Trunk Pacific lines by the Dominion Government of Canada which had aided the construction of these railroads and given them aid to keep them in operation. The Government felt, moreover, that the insolvency of the roads would, because of the heavy financial

interest of the Government, injure the credit of Canada, and it was also thought that the purchase of the Grand Trunk and Grand Trunk Pacific and their operation as part of the Canadian National Railways would so round out the government system of lines as to enable it to compete with the Canadian Pacific Railway.[1]

In some instances the inadequate transportation service provided by private carriers led to state ownership, although there were usually other considerations. Minor reasons for state ownership in Germany were the poor service rendered by some of the early private railroads and their remissness in constructing additional mileage. Although the great industries of Germany eventually supplied a large traffic, the industrial condition of Germany at the time of the beginning of railway history was very backward as compared with England. The early railroads of Italy were built by private companies, the Government assisting them with advances of capital, interest guarantees and operating subsidies; but although the political unity of the country was followed by the consolidation of the many small private lines into four systems, the companies were not prosperous and the Government was burdened by the financial aid it had undertaken to give the railroads. Private management was probably not efficient, but the industrial basis of railroad traffic was lacking in Italy, and the service to the public was admittedly inadequate. This combination of circumstances led to state ownership during the later seventies. A special reason for nationalizing the railroads of Northern Italy, was the desire to take them out of the hands of an Austrian company. The unsatisfactory service and the poor financial results of the operation of the Italian state-owned lines from 1885 to 1905 by private companies under contract with the Government caused Italy to adopt direct state operation at the end of a twenty-year period.

The relative financial success or failure of government, as compared with private, ownership in foreign countries cannot be definitely measured. Results depend so much upon the traffic and operating conditions of each railroad system and upon the uses, other than those that are purely commercial in character,

[1] W. T. Jackman, *Economics of Transportation*, p. 693.

that are made of the railroads, that a financial deficit or profit does not necessarily signify failure or success. Not all state-owned and not all privately owned foreign railways are managed with an equal degree of efficiency, and the earnings of some state-owned lines have been so intermingled with the general fiscal accounts of the government that the true financial results of railroad operation have not been disclosed. Even where the receipts and expenditures of state-owned railroads are reported separately, comparisons between different countries cannot be made unless there is a uniform system of accounts.

Governments and private companies have each had financial successes and failures in railroad management. The insolvency of the three Canadian trunk lines was due mainly to costly extensions through vast undeveloped territories and to inadequate traffic. The Government thought best to take over the roads but one cannot therefore conclude that government ownership would be financially desirable in the United States. The Canadian Pacific and most of the private railroads of the United States, England, and other countries are being operated at a profit, and there is no assurance that their operation by the government would be more successful.

State-owned railways show wide variations in financial results. The state lines of Italy, Austria, Denmark, Czecho-Slovakia, Poland, the Australian Commonwealth, Canada, and Mexico are not profitable, although some of them are showing improvement, and there is no assurance that private ownership and operation of any of these lines would show better financial results. The state lines of Prussia were financially successful before the War, and the nationalized system of the new German Republic is now being operated with an operating ratio but slightly above the average pre-War ratio of the entire German railway system, and the payments on its reparation bonds are being met. The Japanese Government railways have also been more than self-supporting, and recent reports indicate that the South Africa and Switzerland Government lines are being operated at a profit.

In considering the profits of some of these foreign lines it is necessary to bear in mind their relatively low wage levels. The

surprisingly low operating ratio of the Japanese state lines—48.1 per cent in 1913-14 and 54.0 per cent in 1925-6—is due in part to the fact their wage bill amounted to but 22.3 per cent of total operating revenues during the former, and 25.1 per cent during the latter year. The Swiss operating ratio of 71.6 per cent in 1925 is explained in part by a wage bill equal to but 36.1 per cent of gross revenues; and the German operating ratio of about 75 per cent in 1924 was favorably influenced by wage payments amounting to slightly over 40 per cent of gross earnings. The South African operating ratio of 77.6 per cent during the fiscal year 1925-26 is explained in part by railroad wage payments amounting to 48.5 per cent of gross earnings, and the average operating ratio of 74.1 per cent in the United States for the calendar year 1925 and 73.1 per cent for 1926 were largely determined by the fact that wage payments comprised over 47 per cent of all railway operating revenues.

Nor can foreign experience be cited as conclusive evidence of the success or failure of state-owned lines as regards service performance. The charge that government ownership invariably results in inadequate service cannot be sustained. German experience has shown quite conclusively that state lines can be operated successfully both financially and as concerns efficiency of freight and passenger services. At the same time there are foreign state lines less efficiently and economically managed than are the privately owned lines of the United States.

It is difficult to compare railway services in different countries in such a manner as to disclose the relative success of private and state ownership. Differences in traffic and operating conditions, in business requirements, in the needs and preferences of the several classes of passengers, and in the possibility of financing extensions, improvements, and equipment of railroads in different countries influence the services that either state or privately owned lines may be expected to perform. It is even more difficult to make a significant comparison of freight rates and passenger fares, because charges are influenced by diverse economic conditions, and by the fact that the rate policies of different governments have unlike aims in view. Prussia, for example, maintained a level of railroad charges that would

return a profit to the state, while in Australia rates have usually been influenced by a popular demand that railroad charges should be kept down even though a deficit had to be met by taxation. Railroads having long average hauls can spread terminal costs over a longer mileage than can the railroads in countries where the hauls are short. The extensive transportation of raw materials and other bulk cargo by water causes the railways in some countries to have a larger percentage of high-class traffic than do railroads in countries where waterways are not much used.

These and other causes make difficult close comparisons of railroad management in different countries. Indeed, one is forced to conclude that the railway policy of each country must be determined mainly by the conditions peculiar to the country.

Government Ownership of Railroads in the United States

The most apparent lesson to be derived from foreign experience is that state ownership of railways is usually the result either of special difficulties or problems in the solution of which private capital is handicapped, or of military, political, or other purposes that are peculiar to particular countries and that make it expedient for the governments to perform the railroad service. The United States Government has found it expedient to become the owner of a railroad in Panama and to build another in Alaska. The Panama Railroad is operated as an integral part of the Panama Canal enterprise, while the Alaska Railroad was constructed by the United States Government to conserve and develop the resources of Alaska—a purpose for which private capital was not available.

In 1917 the Philippine Government purchased the Manila Railroad, the principal railway in the Philippine Islands. The Insular Government had since 1911 been obliged to make loans to the company and to guarantee interest on its 4 per cent bonds; and during the World War the credit of the British construction company was seriously impaired. When the road was taken over, hope was expressed that "the Government may find the policy of government ownership and operation as successful as has proved to be the case in the Dutch Indies; in the Federated

Malay States; in Indo-China; in Japan; and other neighboring countries." The finances, services, and physical condition of the Manila Railroad have improved somewhat, but the advisability of selling or leasing the road to a private company is now being considered.

Railway conditions in the United States are quite unlike those that have led to government ownership in foreign countries and in Panama, Alaska, and the Philippines. On the ground of expediency there was more reason for government ownership during the early decades of American railway history than there is at the present time. Many of the early railroads required public aid at the time of construction and later many of them encountered financial difficulties that forced them into receivership. Some large railroad systems have passed through one or more receiverships, and in later years have, because of the increase in their traffic, become prosperous, strong organizations. The day of railroad receiverships in the United States has not quite ended, but nearly all of the roads are solvent, and most railroad companies are able to finance extensions and service improvements.

Excessive government regulation may conceivably so reduce railway revenues as to make it indeed necessary for the Government to acquire some of the weaker railroads but this is not probable. Indeed, it would hardly be expedient for the Government to take over the weak roads without also purchasing the solvent lines with which they compete. Canada's experiment with a dual system of private and state ownership will be observed with interest, but it seems reasonably certain that the United States would not find it advantageous to have both private and government operation within the same competitive territory.

The service rendered by American railroads is adequate and progressively efficient. The freight service particularly has improved rapidly within recent years.[2] Nor are rates and fares high in comparison with prices charged for other things, and the public is fully protected by government regulation against unreasonable charges. Unfair discriminations—personal, place, or

[2] See Part I.

commodity—in the United States have been largely done away with by government regulation.

There are no political considerations calling for government ownership of railroads in the United States. The country has political unity. The Government does not need to own the railroads to increase its power and prestige. There is no fear of foreign capitalists controlling American railways. Government regulation can, if desirable, adjust railroad rates with a view to promoting foreign trade.

Military expediency does not require government ownership of railroads in the United States. Whether it does in other countries is doubtful, but it is certain that the military position of the United States is quite unlike that of Germany, Austria, Italy, Russia, and the newly formed nations of central Europe.

Whether or not it will ever become expedient to change from private to government ownership in the United States can of course not be predicted, but at present no special problems or difficulties of the kind that have led to government ownership of so many railways in foreign countries are manifest.

The argument ordinarily advanced for government ownership in the United States rests upon the assumption that, even in the absence of special expediency, railways can nevertheless be owned and operated more advantageously by the Government than by private corporations. Those who believe in government ownership of railways as a matter of principle, point to the quasi public character of railway transportation. Some advocates also contend that public regulation will never fully protect the people from the arbitrary monopoly power of large railroad corporations.[3] Other advocates base their contention upon the financial, operating, and traffic advantages claimed for public ownership. The substitution of government bonds for railway company bonds and stocks might result in a substantial reduction in fixed charges and dividend payments. The Government, it is also asserted, would not need to make the railways a source of profits, and the saving in interest would make possible lower freight and passenger charges. Much is

[3] Carl S. Vrooman, *American Railway Problems;* F. Parsons, *The Railways, the Trusts and the People.*

also made of the economies possible from unified management—the joint use of terminals, facilities, equipment, and repair shops wherever practicable, the abandonment of duplicate services, the standardization of equipment, the short routing of freight, the consolidation of city ticket agencies, the reduction of expenses for advertising, for traffic solicitation and interline accounting, and in general the reduction or elimination of all other expenses resulting from present-day intercarrier relations and the maintenance of separate and competitive companies. It is also claimed that under government ownership the expenses of public regulation and investigation and those incurred in railroad litigation would be largely reduced.

The government-ownership advocate believes that these economies would enable the Government to reduce the general level of freight rates and passenger fares. He is also convinced that the last vestige of personal discrimination in rates would disappear, that the difficult problems resulting from discriminations between different localities and different descriptions of traffic could be solved more readily than is possible under any conceivable plan of private ownership and public regulation, and that railroad rates would become more stable. The Government could and would not only eliminate unjust discriminations, but it could also, if it deemed such a policy desirable, so adjust particular rates and fares as to accomplish beneficial social or economic purposes.

Government ownership, it is also declared, would bring about higher wages, shorter hours and improved working conditions for railroad employees, and greatly reduce the danger of railroad strikes. Railroad accidents would be reduced because the Government would be less inclined to count the money cost of safety appliances, protected grade crossings, and other devices designed to protect the lives of passengers, railroad employees, and users of highways.

Railroad corporations, it is asserted, would no longer influence state and national politics. Moreover, the problem of regulating railroad securities and of protecting the investing public against losses due to the financial mismanagement of railroads, to speculation, and to railroad insolvency, would be solved

by substituting government bonds for the stocks and bonds of the railroad companies.

The general arguments for government ownership and operation of railroads seem strong, but when applied to the nationalization of the railroads in the United States, they lose most of their weight. In the first place, it is by no means certain that the economies resulting from a saving in fixed charges and dividend payments and from unified management would materialize. There would, in fact, probably be no net economies unless the railways were operated as efficiently as they are now being operated under private management. Could government operation be as efficient? The constant incentive to greater efficiency that influences private enterprises subject to competition, is absent in the administration of government business. Moreover, it is altogether probable that the officials secured by the Government to manage its twenty-five-billion-dollar railroad system would on the whole be less capable than those now obtained by the railroads and other large private corporations. Government salaries are low and political considerations often influence appointments and tenure of office. If politics should in any way creep into the management of the Government's railway system all hope of net economy would vanish. Should civil service regulations govern the selection of employees there would still be the danger that political influences would keep the total number of classified employees needlessly large. A possible saving in interest charges and dividend payments of about three hundred millions annually would be less than 5 per cent [4] of the railway operating revenues of recent years and a saving of that amount would easily be offset if government management were not efficient and economical.

The operating economies that might result from unified management are difficult to estimate, because many of them are contingent upon local conditions and requirements, but it is quite certain that unity in management would not make up loss of administrative efficiency. Greater degree of unity in management than now obtains, moreover, does not depend upon gov-

[4] Jones, E., *Principles of Railway Transportation*, p. 504.

ernment ownership. Much can be accomplished by railroad consolidation.

Quite aside from the danger of the influence of sectional and party politics, unified government management of all the railways in the United States would involve serious organization and management difficulties. Indeed, it is realized that the advantages of consolidating American railroads into 15 or 20 systems might be in part offset by the difficulty of managing a large railway system serving a wide territory. The management difficulties encountered by a score of consolidated systems would be small compared with those confronting a government railway system of 270,000 miles of line. The German national system of 33,074 miles and the Canadian National Railways of 20,748 miles afford an inadequate index of the management problems of government operation in the United States.

The possible economies resulting from reduced fixed charges and dividend payments and from unified management are endangered in several additional ways. The increased wages, reduced hours and improved working conditions for railway employees so commonly emphasized by the advocates of government ownership cannot be brought about except by an increase in operating expenses. It is in fact not difficult to conceive that the Government would at times placate an army of government employees who are voters, by granting requests that run counter to the interests of the remainder of the public and are quite inconsistent with economical management.

Perhaps the Government would more rapidly than private companies introduce safety appliances, automatic train-control devices, grade-crossing protections, etc., but this again would increase the ratio of expenses to income. Disproportionate expenditures in favored localities, moreover, are always a possibility. Appropriations for river and harbor improvements, and for post offices and other Federal buildings have not always been based solely upon considerations of merit, and there would be a danger that sectional politics might influence the allotment of funds for passenger stations, freight terminals, and line extensions. Fear has also at times been expressed that the incentive to make technical improvements and to adopt mechanical

inventions would be weakened because of the lack of competition.

The Federal and state Governments would not receive the taxes now derived from railroad corporations, which in 1926 amounted to more than four hundred million dollars. Unless the Federal Government turned over to the states from the railroad revenues a sum equal to the taxes now obtained from railroad corporations by the states, new forms of state and local taxes might become necessary.

Lower rates and fares under government ownership would depend upon economical operation, and the avoidance of rate discriminations would require the exclusion of politics from the administration of the railways. The Prussian state railways so adjusted freight rates as to bring traffic to favored ports and thus to promote foreign commerce and to favor selected industries. In the United States such a policy would be considered to be unfair discrimination. The pressure of manufacturing, raw material, and agricultural industries for favored rates, would however doubtless be strong, and probably greater under government ownership and operation than under private ownership and operation subject to regulatory laws and public supervision, and the problem of keeping discriminations within reasonable limits would not be disposed of by adopting government operation.

Much may be said in support of the general principle that the function of the Government is to regulate rather than to own and operate railroads. As a regulatory agency the natural urge of the Government is to prohibit unreasonable rate and service discriminations. As an owner and operator of a widespread railway system there is less certainty that this tendency would prevail. Would industry and commerce fare better in the United States if the railway service were taken over by the Government?

On the whole, government regulation in the United States has been successful. Unless a special emergency should arise in the future, there would seem to be no reason for adopting government ownership and operation of the railroads. The errors of private management can be corrected by public regulation, and the weaknesses of public regulation are being outgrown by ex-

perience. There is no reason for adopting the doubtful policy of government ownership and operation of railroads in the United States.

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PART V

MOTOR AND HIGHWAY TRANSPORTATION

CHAPTER XXXI

THE DEVELOPMENT OF MOTOR TRANSPORTATION

A NEW facility in transportation, the automotive vehicle, made its appearance in the United States, in 1895, when 4 "horseless buggies" or motor cars were manufactured and registered for use as passenger vehicles by private owners. The production of motor vehicles during the succeeding 5 years was small, never exceeding 2,500 cars per annum. The motor car is really the product of the twentieth century.

It was not until 1909 that the motor car became an important part of the transportation system. The United States Census of 1910 reported that 130,986 motor vehicles were manufactured in 1909 and that 312,000 were then registered in the United States. Since that time, there has been rapid increase year by year in the production of vehicles and an unchecked advance in registration. In 1916, 1,617,708 cars were made, and 3,512,996 were registered in the United States. In 1925 the production of cars had reached 4,428,286 and the registry in 1927 totaled 22,001,393 vehicles of all types, passenger cars, motor busses, and freight trucks.

Before 1914 and the outbreak of the World War in Europe, the motor vehicle in private or commercial service was a valuable asset, but since that time, it has become essential to business. The War gave great impetus to automotive transportation as a whole, and practical experience has shown that it is now an indispensable part of the transportation system, especially in the United States where time is an especially important factor in commerce and transportation. The motor freight truck has had a much shorter period of development than the passenger car. Prior to 1914, the annual production of trucks was small and the registry relatively unimportant. It was the use of motor trucks during the period of the War, as carriers of freight in the

United States and abroad, that demonstrated the value of motor transportation. The number of trucks manufactured from 1909 to 1926 inclusive is stated in the accompanying tables.

MOTOR VEHICLES, ALL TYPES

Statistics compiled from data of the National Automobile Chamber of Commerce

Year Ending Jan. 1st	Production Number of Vehicles	Wholesale Value	Registration Number of Vehicles
1895	300	.....	300
1900	5,000	.....	13,824
1905	25,000	.....	77,988
1910	187,000	$ 213,000,000	468,497
1915	892,618	$ 565,978,950	2,445,666
1920	2,205,197 [1]	$1,809,170,963	9,231,941
1923	4,086,997 [1]	$2,276,399,270	15,092,177
1924	3,617,602 [1]	$2,011,038,288	17,591,981
1925	4,312,456 [1]	$2,959,386,639	20,000,000
1926	4,428,286 [1]	$3,163,756,676	22,001,393
1927	3,573,671 [1]	$2,700,705,743	23,127,315

[1] These production figures include, in addition to the motor vehicles manufactured in the United States, the cars of American designs that were made in Canada.

PRODUCTION AND REGISTRATION OF MOTOR TRUCKS

Statistics from the National Automobile Chamber of Commerce

Year Ending Jan. 1st	Production Number of Vehicles	Wholesale Value Dollars	Registration Number of Vehicles
1904	411	$ 946,947	410
1905	450	Not available	600
1910	6,000	Not available	10,900
1915	74,000	$125,800,000	136,000
1920	321,789	$423,249,410	1,006,082
1923	385,755 [1]	$305,999,606 [1]	1,612,569
1924	363,530 [1]	$307,211,344 [1]	2,134,724
1925	473,154 [1]	$433,744,079 [1]	2,441,709
1926	491,353 [1]	$433,371,169 [1]	2,764,222
1927	487,653 [1]	$436,089,521 [1]	2,896,886

[1] Includes production of motors of American designs in plants located in Canada.

Sir Henry Mayberry, Director General of Roads in Great Britain, makes the following statement with reference to motor transport in England. It is also applicable to the United States:

The events of the past few years have focused attention as it has never been focused before on the commercial possibility, or rather necessity of road haulage by mechanical transport.

The War, and the railway strike of 1919 (in England) demonstrated fully to the public the permanent character of motor traction in our national life. Let me quote but two examples, one of a military and the other of a civilian nature. When our forces made their advance after the Armistice toward the German frontier, the leading troops at one time had to be provisioned by mechanical transport at a distance of over 100 miles by road beyond the furthest point at which the railway could be repaired. At home during the strike, the fact that fleets of road vehicles carried out successfully the work of railways, as far as concerned the essential food supply of the community, must have convinced even the sceptics.[1]

The rapid progress of the automobile, especially during the last five years has made it an active competitor of the railroad. The registration of trucks has increased from a little over a million in 1920 to more than two and a half millions in 1926, while the registration of passenger motor vehicles has increased from about eight and a quarter millions in 1920 to more than twenty millions in 1926. The motor has however become a part of the transportation system without displacing other instrumentalities. Just as the telephone did not displace the telegraph, and the wireless telegraph and radio have not superseded the older forms of communication, so motor vehicles have not displaced the other agencies of transportation. Even the horse has held his place. The census of 1920 indicated that there were more horses in service in the United States than in 1900. The progress of the motor industry has been attended by a steady growth in the development of traffic carried by the railroads, which in 1927 had three times the ton mileage and passenger mileage they had in 1900. Freight traffic has since continued to increase, although passenger travel by rail has declined. As has been well stated by a prominent railroad traffic official:

The human race, in its march of progress constantly acquires new methods and new facilities. It adopts the new readily and swiftly, but rarely discards, and then only very slowly. So it is likely to be with the motor vehicle and the railroad. The rôle of the motor vehicle is not to do what the railroad is already fitted and equipped to do successfully and satisfactorily, but to do what the railroad is not able to do at all, or else does only with difficulty and imperfect success.

[1] John Phillimore, *Up-to-Date Motor Road Transport for Commercial Purposes*, preface by Sir Henry Mayberry, p. v.

We have what superficially seems to be an anomaly in the rise of an immense new transportation agency coming simultaneously with unprecedented demands upon the services of the older agencies. The explanation is quite obviously that the vast bulk of the transportation rendered by motor vehicles is in entirely new fields. Motor service is an addition to rather than a substitution for the services previously rendered by the railroads. The very production of automotive vehicles has added materially to the increased demand for railroad service. The expansion of a new agency of transportation has actually added to the demands upon the older instrumentalities.[2]

The automotive industry contributes largely to the freight traffic of railroads in the United States. The National Automobile Chamber of Commerce estimates that motor transportation products provide more than three and a quarter million carloads of freight traffic for the railroads, including shipments of gasoline, lubricating oil, crude petroleum, grease, tires, accessories, coal, steel, lumber, asphalt, cement, sand, gravel, and other road-building materials in addition to a large volume of less-than-carload freight and express traffic.

The motor truck, bus, and private passenger car have made a rich contribution to the economic and social welfare of the United States. Farm production has been increased. Isolation has been taken out of country life. The producers of raw materials have been assisted in bringing the products of remote sections to market or to railroad and steamship depots. The motor has aided mining and manufacturing, expedited the delivery of raw materials, the moving of goods within the industries and the distribution of products. Local deliveries from retailer to consumer have been quickened. The whole process of production and distribution has been facilitated.

The private motor passenger vehicle has extended the social and business activities of millions of people, while the passenger bus has become a part of the transportation system of virtually every city and town, and has added a new agency of intracity and suburban commutation and interurban travel. Millions of people now travel "on rubber," using motors either solely or as supplements to the other agencies of transportation.

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[2] Elisha Lee, Vice President, Pennsylvania, Address before Society of Automotive Engineers, 1923.

As a short-haul carrier within, and in the immediate vicinity of large cities, the motor renders its greatest service. The railroads and the steamship lines are the logical "wholesalers" of transportation service, and are equipped to move large volumes of goods for great distances at comparatively low rates and fares. The railroads could haul over their lines a much heavier traffic than they are at present called upon to move, but the saturation point has been nearly reached in many terminals. The capacity of the entire railroad transportation system is thus limited. A later chapter will point out how the motor vehicle, if properly used, can increase the efficiency and capacity of the railroads and other carriers.

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CHAPTER XXXII

INDEPENDENT MOTOR FREIGHT CARRIERS' SERVICES AND RATES

INDEPENDENT motor freight operators operate lines not directly connected with or controlled by other transportation agencies. Organizations of this type are, in many instances, the outgrowth of the firms of hauling contractors or teamsters that were to be found 20 years ago in every town and city.

There are two distinct branches of the independent motor service—the short-haul or city and suburban, and the intercity or long distance. As the length of motor haulage has been extended in consequence of the successive improvements in highways and automotive equipment, and as the demand for rapid motor freight service has been increased by the growing needs of commerce for faster freight service, the radius of activity of the independent motor line has lengthened to meet changing conditions. The independent motor line now transports some kinds of freight more than 100 miles. The length of the economical haul of the motor truck has been much discussed during the past few years, and numerous studies have been made, but it is not possible to state the exact number of miles within which motor carriers can operate more efficiently than other carriers. The range of profitable haulage is determined by the condition of highway surfaces, grades, types of motor vehicles, wages of drivers and other labor, motor vehicle license fees and taxes, the price of gasoline and oil, gasoline taxes, and speed regulations; also by the kind and value of freight, the weather conditions, snow removal policy of states, the condition of other carriers' lines with reference to congestion, embargoes and service, the rates of freight via competitive carriers—rail, water, express, and parcel post—and the restrictions imposed by competitive carriers to exclude certain classes of traffic from their lines.

The Bureau of Public Roads, United States Department of Agriculture, in a study of the traffic carried by motor trucks in

Connecticut in 1925, indicates the classes of traffic carried, the distances each type is carried and the percentage of each class carried in 10-mile zones up to 100 miles. The findings of the study are presented in the accompanying table and the figures show that the motor truck is used most largely for the carrying of manufactured goods, articles of high value in proportion to weight and bulk, and that more than three-fourths of the tonnage was moved less than 30 miles. The percentage of goods carried diminishes rapidly beyond that distance. Exceptionally long hauls of 100 miles and over are found, but they may be regarded as emergency movements of certain classes of freight, rather than as typical hauls.

NEW TONNAGE OF FREIGHT CARRIED IN MOTOR TRUCKS, BY 10-MILE ZONES

Mileage Zones, Miles	PERCENTAGES					
	Agricultural Products	Animals and Products of Animals	Mineral Products	Forest Products	Manufactured Products	Totals
0-9	2.8	2.9	7.5	2.3	20.8	36.3
10-19	1.7	2.1	1.4	0.8	13.2	19.2
20-29	0.9	1.3	0.2	0.6	8.6	11.6
30-39	0.5	1.0	0.2	0.3	7.1	9.1
40-49	0.2	0.6	0.1	0.1	3.0	5.0
50-59	0.4	0.4	0.1	0.1	3.6	4.6
60-69	0.1	0.2	0.1	0.1	1.7	2.2
70-79	0.2	0.4	0.1	0.0	2.0	2.6
80-89	0.0	0.1	0.0	0.0	0.6	0.8
90-99	0.1	0.1	0.0	0.0	0.8	1.0
100 and over	0.3	0.3	0.0	0.4	7.6	8.6
TOTALS	7.2	9.4	9.6	4.8	69.00	100.0

The table shows that nearly seven-tenths of the traffic was merchandise freight, some of which was hauled 100 miles; while but small quantities of agricultural, animal, mineral, and forest products were moved more than 20 miles. The unit of movement of heavy freight is too small, truck operating costs are too high, and the value of the articles in proportion to their weight is too low to make longer distance movements of these commodities by motor freight service economical. Long hauls of these

goods are limited to shipments for which expeditious movement is necessary and costs are of secondary importance.

The number of independent operators in the local and long-distance hauling services can be only roughly approximated. Official counts have not been made of the number of operators even within single states, but estimates indicate that there are at least 43,000 motor trucks being run in local and long-distance motor freight service in the United States by independent carriers in competition with other agencies of transportation, and that there are 20,000 trucks being operated in connection with other instrumentalities of transportation. A recent estimate puts the amount of freight carried by motors at about 4 per cent of the total movement of freight traffic by all agencies.

City and Suburban Motor Carriers

Motor lines serving a typical urban area may vary from those having one man and one truck to organizations with large fleets of trucks and scores of drivers, helpers, and mechanics. The largest organizations approximate railroad, steamship, and other carriers in numbers of personnel and in the importance of their services. In Philadelphia there were in 1926 more than 200 motor carriers, most of them having small organizations listed as operating from depots or agency exchanges and serving more than 400 towns within a radius of 25 miles of the center of the city.

The large and small motor trucking companies and the individual operators serving the shippers of local freight in their respective cities may supplement the trucking services that shippers perform for themselves or they may do all of a shipper's trucking. Local motor haulage companies perform a number of well-defined services: (1) A local delivery service for department stores and other retail establishments; the independent motor contractors may supplement the delivery services performed by the store's own trucks in seasons of heavy traffic. Some merchants do not perform any delivery services, but contract for their performance by motor carriers. (2) Local distribution service for jobbers, wholesalers, and other traders. (3) City and suburban delivery service from manufacturers to

retailers or large consumers. (4) Cartage service to and from railroad freight depots and steamship piers for all shippers and consignees requiring such service to supplement that of their own trucks or to take the place of their own motor service. (5) Local baggage service. (6) Special contract haulage service in connection with building operations and similar projects. (7) Package express service for the general public.

Local motor carriers both supplement and compete with other transportation agencies. They add to the facilities of other carriers by performing the cartage between the depots of the railroads and the warehouses and stores in the terminal districts. They also compete with the railroad and steamship lines, express companies and the parcel-post service in short-haul package freight services in and near the metropolitan areas. Some railroads carry small packages by passenger train for delivery to stations on their suburban branches. The motor carriers offer a package delivery system that is directly competitive with this service of the railways. Packages sent by the railways must be delivered and called for at the stations of origin and destination, while the motor carriers perform direct door-to-door service. The motor carriers also compete directly with the express companies and their competition has been effective in the short-haul package service, especially in the carriage of perishables, dairy products, and small package freight.

Contract Services

Many independent motor operators serve their patrons as private carriers under contract. Arrangements are made to haul goods to and from railroad or steamship stations, to make local deliveries or to call for goods to be brought to the warehouses of the concerns using the service at a fixed price per package or per pound or at a flat fee per week, month, or year. These contracts vary so greatly in terms and details that generalization is virtually impossible. In general, these contracts provide for: (1) The unit of compensation, which may be by weight, by package, by time, or by a combination of weight and time; (2) The limits of liability of the carrier, which is usually placed at a fixed sum per package or per hundred-

weight; (3) The regularity of delivery or pick-up services, number of trips between railroad and steamship freight stations daily, number of delivery routes served each day, and similar details; (4) Sections of cities and environs to be served; (5) Provision for interchange of goods with other carriers if necessary; (6) Restrictions as to kinds of freight excluded and as to packing requirements; and (7) Minimum charge per package, per trip, or per period of time.

Rates

Many local motor cartage concerns do not enter into contract with their clients but carry goods for all as common carriers at more or less fixed rates. These common carrier lines are required by the laws of many states to publish and file schedules of rates with the public utility or other regulatory commissions of the states in which they operate. In order to facilitate rate-making many carriers classify their traffic using either their own classifications or those of railroad or steamship lines. Many follow the Consolidated Freight Classification rules and regulations and the ratings provided by the Official, Western, and Southern Classifications.

A typical motor tariff quotes class and commodity rates and also special rates based on size of articles and space occupied. There are also rates per truck per hour. The larger cities are often divided into a number of zones, there being rates for hauls within any one zone, and higher charges for traffic from one zone to another.

A tariff of charges for local motor delivery services quotes the following rates for the different classes of traffic handled:

Weights	Zone I, Cents	Zone II, Cents	Zone III, Cents	Zone IV, Cents
Packages 1 to 50 pounds....	25	35	50	50
Packages 50 to 100 pounds..	35	50	50	75
Packages over 100 pounds...	35 per cwt.	50 per cwt.	50 per cwt.	75 per cwt.

Small packages weighing not over one pound:—15c to, from and in all zones. For trucks or wagons needed for special service there is a minimum charge of $3.00 per vehicle. For ordinary trucks the rates per hour are $2.50 for a one-ton truck and $3.25 for a two-ton truck.

Zone I includes the central business district of the city; Zone II, the far northern and southern sections; Zone III, the in-city suburbs; and Zone IV, the suburbs beyond the city limits for a distance of approximately 20 miles in all directions from the center of the city. Special rates are quoted for the movement of particular kinds of merchandise such as trunks and baggage, phonographs, paints and varnish, bathtubs, furniture, wheeled vehicles, stoves, sewing machines and articles of bulk that are light in weight.

The tariff from which these extracts have been made also includes the rules and regulations that govern the service offered the public. These rules are comparable to the provisions of the bills of lading or to motor express receipts which are discussed elsewhere. A "collect on delivery" service for the convenience of patrons is also provided for by the rules.

The competition of local motor express lines is keen in the larger and in many of the smaller cities. The bitter rivalry of all the agencies and the consequent rate-cutting cause a deplorably large number of business failures. In several large cities combinations of local motor carters have been formed and have stabilized conditions to some extent, but in no case has competition been entirely eliminated. Fair competition improves the quality of local motor transportation service, but destructive warfare among carriers, unfair discrimination among shippers, price-cutting below reasonable rates, and deviation from published schedules of rates, are in the interest neither of carriers nor of the public. The consolidation of motor carriers into larger and stronger companies and the more thorough public regulation of their services and rates will reduce abuses and benefit both the suppliers and users of services. Consolidation and Government regulation will come in motor transportation as it has in the field of railroad transportation.

Long Distance and Intercity Motor Freight Lines

Another independent motor freight operation is that over routes a hundred miles or more in length serving cities, towns, and rural districts remote from one another. These long-distance motor carriers, like those operating city and suburban

lines, may be individuals or organizations with one truck or several or they may be concerns operating large fleets.

Long hauls over highways were not common before the World War when railroad congestion became acute, and when trucks were then called upon to haul freight that had previously moved by rail. In some parts of the United States embargoes were placed against the movement by rail of freight other than that essential to the War industries, and large quantities of freight thus embargoed as well as shipments that were permitted to move by the railroads were handled by motor carriers, who, having started to haul freight long distances, have continued in the field, shippers having become accustomed to using the motor services.

Before the World War goods were customarily purchased and shipped in comparatively large quantities, frequently in carload lots, by retailers and wholesalers whose usual practice was to keep large stocks of goods on hand. Orders were placed well in advance, and stocks were then not turned over so quickly as they now are. The shortage of many kinds of goods during the War, and the inability of manufacturers to maintain production equal to demand brought about a change in trade methods. Motor trucks came to be used extensively by manufacturers and traders in distributing goods which they had previously shipped in larger lots by rail. Relatively small stocks of goods, fast delivery, and rapid turnover are becoming salient features of distribution in the United States, and this has been brought about partly by motor transportation, and partly by faster freight services of the rail carriers. Motor carriers in the long-haul service may be conveniently divided into three classes according to services performed. Those of the first class operate on definite schedules over fixed routes and accept all sorts of merchandise as common carriers for hire at more or less fixed rates per hundred pounds. Virtually all of the large cities of the United States are connected with one another by motor lines of this type, which for convenience may be called common carrier motor lines.

A second type of carrier makes private contracts with shippers to perform short-haul and long-haul cartage services. Trucking

companies of this type operate from a central point or headquarters city or town over irregular routes. They are to the motor transportation field what tramp vessels are to water-borne commerce. These companies might be called tramp motor carriers.

Motor lines of the third type specialize in a certain kind of traffic. Some operate motor vans for the transportation of household goods or new furniture. Others handle textiles, leather, cotton, perishables, or other individual types of traffic. There are carriers between fixed terminals and over fixed routes, and others that perform whatever haulage services their customers require. Numerous motor lines devote themselves to haulage between principal sources of supply and large markets. The textile manufacturers in the Middle Atlantic cities, for example, use such truckers to compete with the New England textile mills for the New York market. The New England manufacturers being able, as a rule, to guarantee overnight delivery to New York City, a like service is necessary to competitors, in the states just south of New York. The railroads that enter Manhattan Island from the south and west deliver freight to their pier stations on the island by lighters or carfloats which are loaded at the water-front terminals of these carriers on the New Jersey side of New York Harbor. This break in the through movement often precludes overnight railroad service from near-by cities to New York customers, despite the fact the distance between the two cities is sometimes less than one hundred miles. The railroads entering New York from the north are, however, able to make overnight deliveries from certain New England points, there being no harbor lightcrage. Shipments for New York by motor trucks are regularly picked up late in the afternoon at the store-doors of shippers in the Middle Atlantic cities and hauled to New York City during the night, deliveries being made to the store-doors of the consignees early the following morning.

Although independent motor truck companies, in most instances, will haul any traffic that pays remunerative rates, the classes of goods especially adapted to long-distance haulage include textiles of all sorts; perishable goods, including fruits,

vegetables, milk, dairy products, and other foodstuffs; goods requiring speedy transportation because of special market conditions; goods not accepted by railroads on account of high value or other characteristics; goods requiring additional packing when shipped by railroad so that expense of packing, freight charges on the weight of the containers, and other expenses exceed the costs of transportation in lighter packing by motor; emergency shipments of virtually every sort of traffic; household goods, furniture, office equipment, safes and similar paraphernalia; groceries and canned goods carried between wholesalers and retailers; long-haul traffic, inbound and outbound, of department stores having mixtures of several classes of goods that may often be shipped more economically by motor than by railroad freight because of the rules of railroad freight classification which require mixed freight of various classes to pay the rates applying to the highest article[1] (motor lines often accept such lots at special rates), and material for building construction, where railroad location makes all-rail transportation inadvisable.

Whenever comparisons of freight rates by motor are made with rates via other agencies, it must be borne in mind that the motor carriers perform services in addition to those of other carriers and that these additional services are not included in the rates charged by other carriers. The motor truck takes goods from the store-door of the shipper directly to the consignee. The service is more direct and expeditious; there are no transfers en route; and there is less packing of freight and consequently less gross weight in comparison with the net weight of the goods.

Only when the costs of extra packing, of cartage to and from railway stations at originating points and destinations, and of the extra weight of packages prepared for railroad shipping, are taken into consideration, may the differences between motor truck and less-than-carload railroad rates be accurately compared. Indeed for certain classes of traffic, the total cost of transportation may be less by motor than by railroad. For distances of

[1] See Consolidated Freight Classification, No. 5, effective Dec. 15, 1927. Rules 10 and 12.

approximately 100 miles or less, the total motor transportation costs of freight rated as first-class by the railroads are often lower than the total cost for transportation by railroad. In computing the costs by railroad it is necessary to add to the first-class railroad freight rates applying between the points compared the following expenses: (1) A cartage charge to cover haulage from the warehouse of the shipper to the railroad freight depot; (2) a cartage charge for the haul from the railroad station at destination to the consignee's store door; (3) packing costs to cover increased costs of boxing or otherwise packing freight for movement by railroad, an expense which would not have been necessary had the goods been shipped by motor; (4) an addition to the freight charges on account of the weight of the packing. Shipments are charged for at gross weights of goods and containers. The rates of representative motor freight lines when averaged show that packing increases weight by 17 per cent.

Motor carriers in both long-haul and short-haul services vary greatly as regards assumption of liability for loss, damage or delay to goods in their possession. The subjects of the liability of carriers and of motor cargo insurance are discussed elsewhere. Carriers by railroad are liable for loss, damage, and delay of freight excepting as they are relieved of their common-law liability by statutes, or by the terms of the uniform bill-of-lading contract, or by the provisions of legally applicable classification and tariffs. Motor common carriers frequently limit their liability by provisions in their bills of lading or freight receipts, to specified amounts per package or per unit of weight; or they may restrict their liability to damage known to have been done by the employees of the companies. Cargo insurance is carried by many motor freight lines to indemnify them for payments of valid claims by the owners of goods for loss, damage, or delay. Shippers also find it desirable to carry insurance for their own benefit, if the motor carriers do not assume full liability for the safety of the goods or if the carriers are not financially able to meet claims for loss and damage.

Some motor freight operators are now assuming full responsibility for the goods they carry and others will doubtless be

forced to adopt the same policy to meet the competition of the lines offering the better service. It is also probable that the states will require motor companies to assume full liability of common carriers.

Motor Freight Agencies

Instead of maintaining their own stations many short- and numerous long-haul motor carriers depend upon joint agents of a number of lines to provide facilities for storage and for the receipt and delivery of goods from and to connecting lines. Several motor lines, each serving its own route, establish a system of motor services radiating from centrally located agencies, both long- and short-haul carriers being served by a typical freight agency.

The joint agent usually provides a building with loading and unloading platforms, storage spaces for each member line, and equipment for handling freight. The agent receives freight brought by one operator to be turned over to other carriers. The short-haul lines bring into the agencies freight that is to be turned over to other lines for long-distance haulage, and accept from the long-haul lines freight for delivery in the city or suburbs. The agencies often supply clerical and other services needed by the motor lines they serve. The agents also advertise the motor lines, solicit business, assist in making rates, and function generally as business agents. Many shippers look to preferred agencies to attend to all of their motor freight shipments. All freight regardless of destination is turned over to the trucks operated by the agencies or by member lines and hauled to the agency warehouses. Here the goods are segregated according to destination and turned over to the respective lines for delivery. The agents are paid regular fees or commissions for their services and for the use of the facilities, and sometimes they have financial interests in the carriers operating from their headquarters.

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CHAPTER XXXIII

INDEPENDENT MOTOR PASSENGER CARRIERS' SERVICES AND FARES

A SURVEY conducted by the National Automobile Chamber of Commerce placed the number of motor passenger busses in operation in the United States at 80,000, January 1, 1927. Possibly 42,000 of these vehicles were operated by independent carriers over regular routes in interstate commerce, the other busses being run by carriers of different kinds; but statistical data are necessarily incomplete, particularly as regards the number of independent motor carrier lines, of passengers carried, and of miles of routes over which passenger busses are operated. It is the motor vehicle's greatest economic advantage, its flexibility or mobility whereby routes can be quickly altered, expanded, or contracted, that makes accurate statistical data difficult of collection.

A census compiled by Bus Transportation in 1927, shows that busses were used in the following classes of service by independent common carriers:

Intrastate Operation	
Total number of operating companies	6,453
Total number of busses operated	22,151
Miles of routes operated	198,374
Interstate Operation	
Total number of operating companies	458
Total number of busses operated	2,468
Miles of route operated	52,017
Total Intrastate and Interstate Operations	
Total number of operating companies	6,971
Total number of busses operated	24,619
Total number of miles of route	250,381

These figures exclude busses operated as common carriers by electric and steam railroads and their subsidiaries, as well as the busses operated in noncommon carrier services as hotel,

sight-seeing, touring, and school busses, and those used by industrial concerns.

Busses used in noncommon carrier services are as follows: By hotels, 1,050; by sight-seeing and tour companies, 2,650; by industrial concerns, 1,100; by public and private schools, 32,800; by railroad terminal transfer companies and in miscellaneous services, 400. The total number of busses in noncommon carriers' services was 38,000.

Types of Independent Motor Bus Service

Motor bus transportation operations that are conducted independently of other transportation agencies may be divided conveniently into 7 well-defined classes of services, including: urban services in competition with steam and electric railroads; urban services as auxiliary or feeder lines to street railway, steam railroad, subway or elevated lines; urban services of miscellaneous character, including boulevard sight-seeing or semi-sight-seeing services, school, hotel, factory and charter bus services; suburban development services; intercity services, supplementary to other transportation systems or partially or wholly in competition with other facilities; motor tour services; and rural motor passenger services.

The present discussion treats only of the passenger bus lines that are operated by independent proprietors who have no connection with other agencies of transportation or with industries, hotels, school boards or other organizations. This eliminates from consideration many of the types of services enumerated above.

Common carrier passenger services of an independent nature may be divided for convenience into three principal classes—urban motor passenger services, interurban services, and rural services.

Urban Bus Services

Motor passenger transportation in the large cities of the United States is often conducted as a part of the service operated by the electric railways that serve the cities. Directly competitive urban services have, however, been operated in the

past by independent motor bus companies, competing directly with the electric street railways.

Jitneys and passenger busses were frequently operated over routes which paralleled and sometimes coincided with the street car lines. The motor vehicles' schedules, ofttimes, were so arranged that the motor cars preceded the street cars by a few minutes at each stopping point, and waiting passengers were taken away from the street railways by this practice. In other instances, motor passenger lines operated over routes which more or less paralleled important street-car lines, but which were on other streets. These forms of direct competition between electric railway and motor bus lines, common enough in the past, have been eliminated in many cases by the acquisition of the motor lines by the street car systems, by forcing jitneys and bus lines from the streets of many cities, and by the action of state and municipal authorities in arranging the competing services so that the public may be adequately served without permitting the rival utilities to compete ruinously with each other.

There are, however, several important examples of independently operated motor bus lines in the United States. The Fifth Avenue Coach Company of New York City and the Chicago Motor Coach Company are notable. Routes are maintained by the busses over streets paralleling the existing surface and high-speed electric lines and in some cases over identically the same streets. In St. Louis the demand for motor bus service is met by busses operated by independent bus companies and also by the street railway company.

Motor busses are extensively used to provide urban service into sections that are inadequately served by existing transportation facilities. Service of this character is sometimes afforded by the use of motors by street railway companies, and in other cases by independent operators. The busses act as feeders to the electric lines and the operations, whether maintained by independents or by the proprietors of the traction utilities, are much the same in character. In Philadelphia, the Philadelphia Rapid Transit Company operates a number of bus routes to supplement the services of its surface car lines and of the subway and elevated railways which are owned by the

municipality but operated by the Transit Company. In Detroit, Cleveland, Los Angeles, Washington, and Newark, the traction companies are active in developing motor bus routes as auxiliaries to the electric railways. A number of steam railroads have undertaken the use of motor busses to supplement or replace their local passenger trains.

In many urban districts as well as in rural sections, motor busses are extensively used to convey pupils to and from schools where the electric and steam railway services are not available or are inconvenient. Bus services of this type are operated by public school districts, private schools and by private busmen. Many hotels, especially the tourist resort hotels operate their own busses to and from railroad stations and steamship terminals for the accommodation of their patrons. Factories located in off-railway places operate busses, or retain busses which are run by independents, to carry their employees between their homes and places of employment. Sight-seeing busses, which are to be found in virtually every large city and resort, differ from the semi-sight-seeing busses operated over the boulevards of larger cities. The former are used primarily to take tourists about, while the latter are used partly for tourists and visitors and partly to augment the services of street railways. Sight-seeing bus services are operated, for the most part, by independent companies while the semi-sight-seeing lines are operated, in some cases, by independent companies, and in others, by the local traction utilities.

Passenger busses are available in nearly every town and city for charter service to transport groups of persons to and from picnics, conventions, exhibitions, athletic events, and other gatherings. These vehicles are usually owned by individual or independent companies, although some street railways own fleets of busses and have departments to develop party traffic.

The suburban and semisuburban districts surrounding the larger cities of the United States have developed more rapidly, in many instances, than the urban traction facilities have expanded. New homes have been built on the outskirts of cities and towns often at a considerable distance from electric and steam railways. The high cost of construction and maintenance

of electric lines has prevented the expansion of street railways into many of these suburban areas where the traffic density is comparatively light, and motor busses have been extensively used to serve the new districts.

In other suburban sections, motor busses have been extensively used to supplement other facilities. Bus lines have been organized to radiate from important railway junctions, and are also operated over routes parallel, and in competition with rail lines.

Suburban development services by motor are operated by steam railroads, electric railways, and independent motor bus operators. Bus lines started by independent companies have frequently been acquired by utility companies; but there are still many independent operators doing an important work in relieving urban congestion by providing rapid transit into suburban districts. The lines of the steam and electric railways in metropolitan areas surrounding the larger American cities resemble spokes radiating from the hub of a wheel. The motor bus has made possible the settlement of suburban tracts between these radial lines. The highways as well as the railway lines have now become arteries of suburban commutation travel.

Intercity Bus Service

The field in which the independent motor bus has been the most prominent is the intercity or interurban service. The scope of interurban bus services is very broad, including both those that border on the suburban services discussed above, where the route mileages are relatively short, and those important services between large centers of population separated from one another by several hundred miles. The intercity lines have been developed to provide rapid, comfortable and economical long-distance highway transportation. Intercity bus operations are often directly competitive with the services of established steam and electric railways, and have made considerable inroads upon their revenues.

The successful operations of motor busses over intercity routes have been facilitated by the impoverished financial condition of many electric interurban lines. These roads have in many cases been facing bankruptcy and have allowed their roadbed,

rolling stock, and general standards of service to deteriorate. This situation made it possible for independent bus lines with new busses run on attractive schedules to attract a large share of the electric interurban passenger traffic away from the rail carriers.

Few new electric interurban railways have been built within the past ten years and the extension of the steam railroads into new territory has been infrequent. Motor bus lines have been used to develop new interurban routes. A large number of electric lines and certain steam railroads have been active in acquiring competing motor bus lines or in developing their own passenger bus services. Their activities are discussed elsewhere.

Intercity independent motor bus lines as well as those operated within the larger urban districts have developed touring services in addition to their regular scheduled runs. The tours are conducted by the motor lines or by interests which employ the motor lines to conduct the tours. The service includes transportation by bus, hotel accommodations, and meals. In Florida and many other sections of the country, especially in the National Parks, extensive motor trips have been developed successfully.

Rural Services

The motor bus is in many respects an ideal rural passenger carrier. The small initial investment has made bus service possible where steam or electric lines could not have been profitably operated. Light traffic, the freedom from peak loads, and the ability to meet relatively infrequent service demands profitably, make possible the operation of rural district routes. Fixed charges are relatively low and operating costs may be reduced by conducting the rural business as a part-time service where the traffic is light, the proprietors devoting the rest of their time to other pursuits.

The bus can often meet the requirements of rural service better than the electric railway can, because the fixed charges are less for the bus operators. Busses in such areas are often operated in connection with a public garage and repair shop.

The men who operate the bus are employed in the garage between trips, and labor costs are proportionately reduced.[1]

Rates of Fare

Little can be said, in the present state of development of the motor passenger business, with regard to the rates of fare charged by the independent motor passenger lines in the various fields of service. In general it may be said that the fares of electric railways and busses are at levels determined by the intensity of the competition. Since railroad and electric railway fares are regulated by state utility commissions and the Interstate Commerce Commission, bus charges tend to seek the level of those fares. A higher rate of fare is sometimes collected by the lines operating luxurious busses used on boulevard routes in certain cities, but in general, bus fares are the same as the street car fares or slightly higher. If the bus lines are owned or controlled by the steam or electric railways, the fare policy is, of course, determined by those utilities. Transfers or exchanges are used for joint bus-railway traffic and the busses are not considered as separate fare-making units.

Motor busses in the special urban services have widely differing fare policies. Boulevard sight-seeing busses operating over regular routes charge fares somewhat higher than those of the street-car lines. Sight-seeing touring busses often charge special flat rates for the trip, based usually upon the time consumed, miles of route, the services of guides, and other factors peculiar to individual operations.

School and factory busses are operated, in some cases, without a fare being charged. The busses in such cases are owned and the operators employed by the school districts and industrial concerns. In other cases, independent operators contract with the school districts or industries for the bus and chauffeurs at a flat rate per week or month. In still other cases the pupils or workmen are charged a flat single trip or weekly fare by the independent operators. These fares approximate trolley rates. Hotel busses are usually operated without fare; they are used

[1] Murray W. Latimer, "The Motor Bus Situation in 1925," *Harvard Business Review*, Vol. IV, No. 2 (Jan., 1926).

to solicit patronage for the hotels, and the expenses of operation are absorbed out of the general hotel revenues.

Fares of bus lines in the suburban field, like the charges for auxiliary services, tend toward street railway fares for comparable services. Interurban motor bus fares tend to equal the rates of fare of steam railroads and electric lines with which there is competition, if the time consumed in performing the services is approximately the same. In longer distance traffic the bus is often at a disadvantage in time required to make the trip. In such cases somewhat lower fares are not unusual.

Tours are usually charged for at rates intended to cover expenses plus a daily rental return for the use of the bus. Busses used in urban charter services for picnics or trips usually have charges fixed in the same way.

The rural motor bus usually does not compete with other public utilities and the fares are presumably so fixed as to cover the cost of operation and yield a fair return upon the investment.

The factors generally considered in making fares are the rates of competing utilities; a more or less rough attempt at distributing costs of operation; fixed charges; special cost factors, the effects of municipal, state, and Federal regulation.

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CHAPTER XXXIV

COÖRDINATED MOTOR-RAIL FREIGHT TERMINAL SERVICES

THE rapid growth of the large cities of the United States and the increasing volume of freight traffic to, from, and within their terminal districts have brought about one of the most pressing transportation problems, how to eliminate traffic congestion.

Four functions are performed by the transportation agencies serving the large centers of population: Commodities for consumption must be delivered to the consuming population by a local delivery service; goods must be received and forwarded to points outside the terminal areas; raw materials must be delivered to and finished products forwarded from local industries; and freight must be interchanged between the various railroad, steamship, motor, and express lines serving the terminal districts.

To perform these services the rail, water, and express carriers have been obliged to invest heavily in terminal facilities of varying kinds including freight stations for delivering and forwarding less-than-carload freight, track delivery yards for handling carload freight, yards for making up outbound trains or breaking up inbound trains for local delivery of cars, auxiliary yards for performing local switching, interchange tracks for exchanging cars and freight with other carriers for joint movement, and a great variety of special terminal equipment including grain elevators, storage yards, lighters, car floats and piers for handling freight in connection with water carriers. These terminal arrangements are, in the main, owned and operated by individual railroads, each road being compelled, because of public demand and the competition of other carriers, to establish freight depots within the congested sections of the big cities. Many railroads maintain a number of less-than-

carload freight stations in the downtown commercial districts, and thus tend to intensify the congestion in these areas.

Usually each railroad has several freight depots in the larger terminals. As new sections of the cities are developed industrially, it is necessary for the carriers serving the districts to extend their tracks and build additional freight houses. All the larger cities are served by networks of terminal tracks, with freight houses and team tracks at convenient intervals. Cincinnati, a city of 400,000 inhabitants, is served by 7 railroads with 22 principal freight stations and substations. In Philadelphia with a population of 2,000,000 more than one hundred stations and a thousand miles of trackage are maintained by 3 roads within the corporate limits of the city. Both cities are typical.

Though less-than-carload freight may be received at nearly all the substations of a railroad in any city, but few of them will receive, in one day, sufficient freight to load a car to a single destination, and even though one or two cars may be so loaded from each station, freight for scattered points must also be received at each depot. In order to assure prompt line haul less-than-carloads of miscellaneous outbound freight must be sent to a transfer house or platform to be consolidated with shipments from other substations. Inbound less-than-carload freight likewise goes first to the principal transfer in or near the city to be reloaded for movement to the in-city substation at which it is to be delivered to the consignee. The result is inevitable congestion and delay in handling less-than-carload freight in the large terminals. The large number of cars required to handle a comparatively small tonnage of merchandise freight, and the cross movements of these cars within the terminals slow down the movement of all freight, both carload and less than carload.

Causes of Terminal Delays

Delays in the terminal districts arise from a number of causes: (1) the loss of time due to trucks waiting in line to reach the loading or unloading platforms at the freight depots, caused generally by the long time required to get bills of lading, or by inadequate loading platforms, or insufficient doorways in the

freight warehouses; (2) loss of time because of congestion in the street leading to the depot and from it; (3) detentions due to lack of adequate traffic control by police, to narrow streets, and heavy motor traffic in the downtown districts; (4) loss of time in unloading and loading vehicles, there often being only one man to load or unload a truck; (5) delay because of insufficient handling equipment in the freight depots; (6) lack of system and order in many freight stations, due to inadequate clerical force to handle the numerous shipping documents; and (7) the wasting or "killing" of time by unscrupulous drivers of teams or motor trucks.

The unavoidable light loading of merchandise freight makes it necessary that many cars be used to carry comparatively small quantities of freight in the terminal districts, and that tends to increase the congestion. Less-than-carload freight stations are often located on high-priced property in the congested areas, the number of such stations increasing the cross-hauling in the center of larger cities. The increasing passenger automobile and local delivery traffic in the narrow streets of older American cities adds to the congestion and slows down the movement of all terminal highway traffic.

The demand by the shipping public for more and better rail transportation is insistent, and the railroads must either add to their present terminal facilities or find a way to pass more freight through the existing terminals. Enlargement or multiplication of terminal stations and team tracks in important terminal areas is practically impossible because of the prohibitive cost, and for the reason that the expansion of railroad holdings in congested areas would cause greater centralization of cartage operations and add to the congestion of the city streets.

Reducing City Congestion

The motor truck can relieve city congestion by the substitution of motors for a part of the service within the terminal area now performed by railroad equipment, by the use of motor trucks instead of railroad "trap cars" and "ferry cars," and by substituting trucks for freight cars for the interchange of

less-than-carload freight between different rail carriers and local stations of the same carrier in the terminal zone.

The motor truck can also be used for handling both carload and less-than-carload freight between industries and plants within the terminal area, and for shipments of all kinds within the terminal area and between it and the surrounding districts. This would do away with most switching services now performed by the rail carriers. This is most desirable. In one large terminal area 3 days is the average time consumed in performing such interchange service, while at another, where motor trucks are used to handle the interchange freight, 95 per cent of the tonnage is delivered to the forwarding line the same day it is unloaded from cars by the receiving line. By actual count made by the railroads serving one large terminal for a period of 10 consecutive days, it was discovered that a daily average of 893 freight cars were engaged in short-haul intraterminal service within the lighterage limits of the city. This is probably typical of the use of cars in such service in the larger terminal districts throughout the United States.

Likewise, while store-door collection and delivery of railroad freight by means of horses is possible, the use of trucks makes such service easier to inaugurate and to maintain.

Railroads ordinarily have stations outside the terminal district where less-than-carload freight is rehandled for distribution in railroad cars to the company's in-city stations or to the stations of other carriers, but in several large terminals freight is handled by motor trucks to and from the stations in the downtown districts. This plan has proven successful, and if such a plan were made nation wide, it would unquestionably increase car supply and add to the traffic capacity of terminals.

If the motor truck operators carried all the terminal tonnage, quicker and cheaper transportation service could be offered at rates advantageous to shippers and profitable to the truck owners. Short movements of freight that can be handled more cheaply by motor than by rail should be carried exclusively by motor trucks. Ultimately rail carriers should be allowed to cancel their tariffs providing for such short-haul movements within and about terminals, and such traffic should be handled

by trucks operated either by the railroad companies or their responsible agents.

Motor-Rail Terminal Coördination at St. Louis

Significant experiments have been made in coördinating rail and motor transportation services in St. Louis and Cincinnati.

St. Louis is on the western bank of the Mississippi River, being separated by the river from East St. Louis, Illinois. The western rail lines end on the west bank and the eastern railroads on the east bank. The gap was not closed until the construction of the Eads bridge in 1876. The eastern roads made rates applicable to their western terminus, East St. Louis, and the western roads to St. Louis proper. The western roads, as possessors of the field, bought up at an early date the choice terminal sites along the river in St. Louis, and also located stations adjacent to the business district.

After the Eads bridge was opened, the Pennsylvania Lines and the Clover-Leaf Route established freight stations in St. Louis for handling inbound and outbound less-than-carload freight, but both roads later found that it was too expensive to switch freight cars between East St. Louis and St. Louis proper. The other eastern lines operating into East St. Louis, including the Baltimore and Ohio and the Big Four, the Chicago and Alton, the Illinois Central, the Mobile and Ohio, and the Southern Railway, never attempted to make their own deliveries in St. Louis proper, but arranged with either the St. Louis Transfer Company or the Columbia Transfer Company to perform this service.

In 1910 the eastern roads agreed to make applicable to St. Louis proper the rates that had previously applied to East St. Louis. The two terminal companies, the St. Louis Transfer Company and the Columbia Transfer Company, maintained depots in St. Louis and accepted freight from shippers for movement to points east of the river at through rates out of which the railroads paid the terminal company an agreed contract price for hauling the goods to the rail head at East St. Louis and for performing the clerical services incident to the receipt of the freight. In the same manner the transfer com-

panies transported freight from the rail station in East St. Louis to their own depots in the St. Louis Terminal district.

This service grew up gradually over a long period of years. The older of the two terminal companies, before the construction of the Eads bridge, had ferried some goods across the river for its customers, and it became apparent that freight depots in downtown St. Louis were advantageous both to shippers and to the terminal companies, because they enabled full loads to be carried to and from the rail lines. The two terminal companies have been merged into the Columbia Terminals Company which now handles practically all transfers between the eastern railroads at East St. Louis and the western railroads in St. Louis proper. The Company also handles to or from points east of the river about half of the less-than-carload shipments originating at or destined to St. Louis. The Company operates a number of "off-track" freight stations in St. Louis, several for receiving outbound freight and the rest for the delivery of inbound freight.

Shippers may deliver goods routed over any rail line to any of the outbound stations of the Terminal Company. Railroad bills of lading are issued at the receiving stations by employees of the Company as agents of the road over which the goods are routed. The Company assumes full common carrier liability for the goods from the time they are received from the shippers in St. Louis until delivery is made to the railroad station in East St. Louis. Less-than-carload shippers have the advantage under this plan of delivering all of their outbound less-than-carload freight to the nearest terminal receiving depot, regardless of the route over which it is to move.

Inbound shipments, when routed for delivery via the Columbia Terminals Company are taken directly from the cars of the rail lines in East St. Louis and delivered to the Terminals Company's delivery depot in St. Louis, nearest the consignee's warehouses. The customary arrival notice is mailed to the consignee from the inbound receiving station, and the usual 48-hours free-time storage privilege is extended. If the consignee so desires the goods will be delivered direct to his store-door by the Terminals Company. For this latter service an additional charge

is made by the Terminals Company which acts as a motor haulage company and not as an agent of the rail lines.

The railroad companies entering East St. Louis pay for the transfer service between their terminals and the stations of the Columbia Terminals Company in St. Louis. Nearly all less-than-carload freight is handled in this fashion. Carload freight to and from points east of the Mississippi River is handled in St. Louis proper by the western roads entering that city, the cars being switched across the river by or at the expense of the eastern railroads.

The Columbia Terminals Company has tractors and semi-trailers especially designed for the service. The operation of the trucks is coördinated by a centralized dispatching system and a representative of the Terminals Company is stationed at each railroad station to superintend the loading, unloading, and movement of the trucks.

Terminal Service at Cincinnati

The terminal situation at Cincinnati, Ohio, although differing physically from that at St. Louis has many points of similarity. The problem is the movement of less-than-carload freight within the terminal area between stations and substations of the same rail line and between stations of different rail carriers. There is no great physical barrier to be overcome, such as the Mississippi River at St. Louis, although the problem is somewhat complicated by the Ohio River. Cincinnati has not developed across the river but away from it.

The rail carriers that entered Cincinnati located their first stations in the older industrial and commercial section near the river so as to establish themselves as closely as possible to the center of the areas they sought to serve. As new industrial districts back from the river grew to be important, the railroads established branch freight depots to accommodate the shippers and receivers of freight by reducing the trucking distances between their plants and the stations.

Less-than-carload freight was delivered to the branch stations by the railroads maintaining them by the use of "ferry" cars from the main freight stations of the road in the downtown

district. Outbound shipments from the branch depots are brought to the main stations in ferry cars to be consolidated with outbound freight from the main stations or from other branch depots for movement to destinations outside the terminal area. If sufficient volumes of less-than-carload freight were available to or from a branch station on a particular day, solid "classification" or "destination" cars were loaded directly to or from these stations. Such shipments, however, were the exception rather than the rule.

In addition to the movement of less-than-carload freight between the downtown station and the outlying freight stations of an individual road, a considerable volume of less-than-carload traffic had to be handled between different railroads. These two terminal services grew in size until the movements of traffic by "trap," "ferry," or "transfer" cars by railroad overtaxed the facilities of the rail lines. A daily average of 225 railroad cars used in the ferry car and transfer car service and more than 100 heavy horse-drawn drays were used to supplement the service of the railroad cars and still there were recurring periods of terminal congestion that offset the efficiency of the line-haul service. The clogging of the terminal neck of the railroad bottle prevented the free flow of traffic into, out of, or through the Cincinnati terminal area. Tracks and loading and unloading platform facilities had to be increased and enlarged to accommodate the volume of business. A board of engineers appointed by the United States Railroad Administration to investigate the situation estimated that the improvements that had been proposed would involve an expenditure of millions of dollars.

In May, 1917, the Cincinnati Motor Terminals Company had undertaken the handling of the less-than-carload freight between the five stations of the Big Four Railroads. Motor trucks were used for the service. On May 10, 1919, the system was extended to embrace the main and substations of all railroads entering Cincinnati, and the service has been in continuous operation since that time.

The Terminals Company is an operating corporation independent of the railroads, and performs the haulage service under contracts made with the individual lines. Freight from the

main-line station to the substations of the same road is loaded into demountable containers or truck bodies each with a capacity of 5 tons. These are transferred by a mechanical hoist to and from the motor chassis by which they are moved from one station to another. All less-than-carload interchange traffic between the roads in the terminal, as well as the traffic moving between the main and the substations of each road, is moved in that way. The plan does not include the movement of freight to or from the store-doors of traders. Ferry cars are still switched between the industrial plants and the freight stations of the carriers.

The freight is put into and taken from the containers by railroad employees who deliver the containers sealed and ready to be placed on the trucks. Facilities for the mechanical handling of the container bodies to and from the motor chassis had to be installed at each railroad station by the railroad companies, but the hoists, the containers, and the trucks are provided by the trucking company.

Five-ton trucks, with specially equipped container bodies and chassis, and also demountable bodies of 10,000 pounds capacity, are used. The containers are of weatherproof steel and wood construction, and measure 17 feet 5 inches in length, 8 feet in width, and 7 feet in height. The average time consumed in transferring the bodies to and from the chassis is 5 minutes; the mean load of the container is 4.37 tons, and in a normal day a chassis makes 27 trips.

The average daily movement of freight by trucks, is, at the present time, about 260 tons. The estimated capacity of the facilities, however, is 1,200 tons per day. According to the figures of one of the railroads interested, about 28 per cent of the less-than-carload freight is handled by the trucking company. Of this tonnage a large percentage is interchange freight and the remainder movement between stations of the same railroad.

The railroad companies notify the truck dispatcher of the Terminals Company when a container is loaded and ready for movement. A triplicate abstract of the waybills covering the freight to be transferred is prepared by railroad station em-

ployees. One copy of the abstract is retained by the forwarding road, a second, with the waybills for the shipment, is given to the truck driver for the receiving road, and the original is handed to the driver for delivery to his employers for their accounting purposes.

The use of motor trucks as a supplement to existing railroad facilities at Cincinnati has accomplished its main purposes, the quicker interchange of package freight between the several lines and more prompt movement of less-than-carload freight between the different stations of the same road, and this has been achieved at a comparatively small expenditure of capital. The service is now done more efficiently than formerly, but the greatest advantage has been the maintenance of interchange and substation services without greatly increasing railroad equipment and without the former congestion. The system is considered highly successful by the railroads and shippers of the Cincinnati district.

The use of motor trucks has decreased the time required to perform the services. Prior to the use of motor trucks the average interchange operation required 62 hours by railroad car and 72 hours by horse dray. This had been reduced to a maximum of 10 hours, so that virtually all inbound less-than-carload shipments are received at the delivering station on the day they arrive at the terminal. Outbound shipments are usually delivered to the main freight stations of the roads which are to forward them from Cincinnati on the day they are received at the initial freight station. The saving in time is of great advantage to railroads and the traders alike.

Considerable reduction in the amount of platform space required to handle inbound and outbound shipments has resulted from quicker handling. Through the use of motor trucks there is a continuous movement of package freight from the cars in which the shipments arrive at the principal station of the road to the containers for the substations. This is equivalent to a substantial increase in platform space and to an expansion of the capacity of each station in the terminal area. It is stated by officials of the Motor Terminals Company that the full capacity of the terminal for handling less-than-carload freight

was not employed during the extraordinary heavy traffic years of 1920 and 1926. The elimination of railroad freight cars in ferry services and of the horse-drawn drays has increased the capacity of the station tracks and increased the amount of space available for the vehicles of shippers and consignees. The motorized handling of less-than-carload freight has eliminated the trucking of freight into and out of the station warehouses and has reduced materially the unreasonably long periods of storage in the freight houses.

There has been a considerable decrease in the loss and damage to goods transported between stations in the terminal district. The contracts of the Cincinnati Motor Terminals Company with the railroads provide for the assumption by the hauling company of responsibility for loss and damage to freight while in its cars. There has been a decided decrease in the amount of claims in the whole Cincinnati terminal district, partially attributable to the improved transfer service by motor.

Under the horse dray and ferry car transfer service in Cincinnati, shipments that were "over" or "short" at the delivery stations could not be associated with the billing that covered the shipments until 55 to 72 hours had elapsed, or until the cars were actually delivered to destination stations. The motor handling of the goods has reduced this time to one hour. As soon as each container from one station to another is unloaded, the receiving station communicates with the station from which the goods are transferred, notifying the agent at the forwarding station of shipments that are "over" or "short." Searches for missing goods are made and if they are found, they are forwarded in the next container, and the goods are associated with the billing and are forwarded or delivered together with the rest of the consignment.

Installations of terminal railroad motor freight services have been made in New York, Baltimore, Toledo, Buffalo, Chicago, and several New England cities and towns and many more are being considered. In no other city, however, are the operations so completely worked out as they are at St. Louis and Cincinnati.

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CHAPTER XXXV

RAIL-MOTOR LINE-HAUL COÖRDINATION

THE railroads of the United States for many years have been trying to handle local freight with profit, in spite of mounting operating costs. The short-haul movement of less-than-carload freight, especially that carried by local, way- or peddler freight trains, sometimes causes actual loss, but it is a service that must be performed in the interests of consumers and industries at local stations.

The problem has been made more acute by the motor truck which has been taking so much short-haul package freight away from the railroads that the local trains are becoming so unprofitable as to cause many carriers to discontinue the way-freight service when possible. Shippers of less-than-carload freight in towns along the lines of railroads adjacent to the large cities may and often do dispatch all their short-distance freight by one of the numerous motor trucking lines operating along the highway systems serving the towns while they continue to deliver their long-haul package freight for distant points to the local railroad freight station for movement by railroad.

Provisions of the charters and franchises of certain railroads prevented the abandonment of service. Carriers in interstate commerce, and this includes most railroads, are subject to control by the Interstate Commerce Commission. To escape from this unfortunate plight, some railroads are using the motor truck instead of local trains for handling short-haul package freight.

The railroads that have substituted motor trucks for way-freight train service have done so gradually and only after considering the advantages to be gained. The change, when made, has been for three reasons, to improve the local freight services, to reduce operating expense, and to meet the competition of independent trucking concerns.

The service has been remarkably quickened. The pick-up and delivery of less-than-carload freight on the Main Line of the Pennsylvania Railroad has been greatly facilitated by the use of trucks. On the Maryland Division of the same railroad both carload and less-than-carload freight to and from stations between Baltimore and Perryville is handled by one freight train operated daily from Baltimore and Perryville and return. A less-than-carload shipment from Aberdeen to Charlestown, Maryland, for example, is now carried to Perryville by this freight train. From there it is taken to Charlestown by motor truck the same afternoon, whereas before the installation of the motor service, the shipment would have been taken to destination by a way-freight train on the following morning.

Better service is more than quicker service. At the small stations on the branch lines of roads, shippers have found the regular services of the motor trucks, with definite arriving and leaving times and daily schedules, of great advantage. Freight is now accumulated in order to have as many shipments as possible taken on a particular trip of the motor truck unit, local trucking trips and expenses of shippers and consignees being thus reduced.

Local, way-freight trains interfere with the movement of fast passenger and through freight trains. This is true not only because the local freight train moves slowly but also because there are but few local freight stations having sufficient siding capacity to allow way trains to clear the main line. The withdrawal of way-freight trains has increased the capacity of the tracks and facilities without additional capital expenditures.

It is less expensive to operate motor trucks than local freight trains. Beside the savings in direct operating expenses, there are fewer freight cars used, and there is a reduction in the costs of supervision and dispatching and in other outlays. The number of handlings is less when goods are hauled by motor and there is consequent reduction in loss and damage claims. It has been found that claims for loss or damage to freight while in the custody of the trucking units have been considerably lower than the amounts claimed when goods are handled by local freight service. The substitution of motor for local,

way- or peddler freight train service, has brought back to the railroads a great deal of tonnage that had been taken away from them by independent hauling companies or by the trucks of shippers.

The advantages that have already resulted from the installation of motor service by railroads and those that are expected to result in the near future may be summarized as follows: (1) reduction in the number of local way-freight or peddler trains; (2) the operating cost of handling less-than-carload freight has been lowered; (3) handling of each piece of freight has been reduced, sometimes as many as four handlings have been eliminated; (4) quicker service is made possible between stations on the same division; (5) cars may be loaded at zone stations to greater weights, thus utilizing equipment to better advantage; (6) the number of stops for way freight has been reduced thereby speeding up schedules on the heavily traveled divisions; (7) contact with shippers and consignees is maintained and a more satisfactory transportation service is offered; and (8) the way is prepared for door-to-door transportation service, the ultimate goal of modern transportation.

The Motor-Rail Service of the Pennsylvania Railroad

The first use of motor trucks by the Pennsylvania outside the terminal area was at Cambridge, Maryland. In January, 1923, the Baltimore, Chesapeake and Atlantic Railway, a subsidiary of the Pennsylvania, which operated boat lines from Baltimore to several points on the Eastern Shore of Maryland, and which had a connecting railroad from Claiborne to Ocean City, Maryland, took over the operation of a competing motor trucking company that had previously carried merchandise freight from Baltimore to several of the smaller towns of the Eastern Shore of Maryland. This service was designated Unit No. 1 of the Pennsylvania Railroad's plan for the substitution of trucks for local, way- or peddler freight trains. July 9, 1923, two motor trucks were substituted for the local freight train that had carried package freight between Pittsburgh and Enon, Pennsylvania. This service was Unit No. 2. Unit No. 3, one of the most important installations, between Overbrook and Downing-

town, Pennsylvania, was added on November 13, 1923. November 19, 1923, Unit No. 4 replaced the two local freight trains operated on the Maryland Division between Philadelphia, Pennsylvania, and Wilmington, Delaware, and since then additional substitutions have been made from time to time as investigations of division officers of the railroad indicated that the use of motor trucks would be advantageous on their divisions. Modifications have been made in several of the units as experience has indicated that changes were desirable. At the present time there is local freight motor service at more than 500 stations and on over 1,000 miles of line of the Pennsylvania Railroad System.

The Long Island Railroad, and other subsidiaries of the Pennsylvania System, also use motor trucks for the road handling of merchandise freight. Through freight trains haul the goods to selected zone stations, located at the junctions with the main line. Motor trucks carry the package freight between the junction and the branch terminals. All local way-freight trains have been eliminated on a number of branch lines.

Short-haul less-than-carload traffic is handled jointly by railroad and by motor truck on the main line of the Pennsylvania Railroad outside of Philadelphia. Shipments for points between Thirtieth and Market Street Station, Philadelphia, and Downingtown, Pennsylvania, 32 miles distant, are forwarded by rail to one of three zone stations. From the zone station, the goods are delivered by truck to the destination station. Outbound less-than-carload shipments are picked up at the originating stations and delivered to the zone stations by motors. From there the freight is forwarded by rail to stations of ultimate destination.

There are 27 intermediate stations on the main line of the Pennsylvania between Philadelphia and Downingtown, at which local way-freight trains formerly had to make daily delivery and pick-up of less-than-carload freight. The division has 4 tracks which had to be crossed and recrossed by the way-freight trains, some of the stations being located on the north and some on the south side of the right of way. The slow way-freight trains handling comparatively small quantities of freight made

their way through heavy through freight and passenger traffic. Under the new plan, westbound traffic is delivered to three zone stations, Ardmore, Wayne, and Paoli. Eastbound traffic is put off at three zone stations, Malvern, Devon, and Bryn Mawr. Between zone stations, and other stations, inbound and outbound less-than-carload freight is handled by a trucking company that operates as the agent of the railroad, and assumes full common carrier liability for loss or damage to goods while in its custody. Thus a manufacturer located at a local nonzone station delivers to his station shipments for points off his division of the Pennsylvania Railroad and receives a uniform railroad bill of lading. The goods are trucked from the local station to the nearest eastbound or westbound zone station, depending upon the direction of the shipment. Here the goods are loaded into a freight car for rail-line movement. Shipments from local nonzone stations for other local stations on the same division are hauled all the way by truck, but under full carriers' liability and on a Pennsylvania Railroad bill of lading precisely as if the shipment had moved by rail.

The usual railroad waybills are used for the freight handled by motor truck. Three other forms, however, are also employed in the handling of merchandise freight by motor truck. One form is prepared in triplicate by each agent from whose station the truck moves freight, showing all waybills to be delivered to each destination station separately. The third copy of this form is signed by the truckmaster, acknowledging the receipt of all the freight listed. The first and second copies of the form are attached to the waybills which they cover and are delivered to the truckmasters. On arrival of the truck at a station the truckmaster delivers the waybills with both copies of the form to the agent at the destination station. The agent checks the freight against the waybills, signs the second copy of the form and returns it to the truckmaster as a receipt, retaining the original. A "Report of Truck Operation" is prepared daily by each freight agent.

Agents are instructed to notify the trucks in advance when there is no freight at their stations for movement, so that unnecessary calls at stations may be avoided. Less-than-carload

shipments in lots of 10,000 pounds or more are loaded by the station employees. Exceptionally heavy or bulky shipments for one destination are likewise loaded for all-rail movement to destination. Explosives and certain other dangerous articles are not moved by motor truck, but are handled exclusively by rail.

The Pennsylvania Railroad's contracts with the trucking companies provide a flat rate per day for each truck furnished and an additional compensation based upon the truck mileage covered. The amount of the trucking company's remuneration on each unit is set after a careful study of the cost of the service has been determined. The trucks that carry the freight are fully insured and the railroad assumes the same liability for the goods transported by highway that it does for goods carried over the rails. The contracting agents are responsible to the railroad company for loss of or damage to goods while in the possession of the truckers.

The New York Central Railroad Motor Service

The New York Central Railroad's motor service now includes: (1) station-to-station motor service in lieu of way-freight trains; (2) hauls between stations on one division to avoid handling at intermediate transfer stations; (3) hauls from the smaller to the larger stations to make straight carloading from the larger stations so as to improve time in transit and reduce expenses; (4) hauls from central delivery stations to small outlying stations where final delivery is made to consignee; (5) interchange between railroad and steamship lines in place of lighterage service; and (6) the trucking of unit containers of less-than-carload merchandise and of carload bulk commodities shipped by specially adapted unit container freight cars.

The transportation of less-than-carload freight by motor truck on the New York Central was inaugurated as an emergency measure in January, 1923, in the Buffalo territory, when the railroad was facing a serious box car shortage. Trucks were used to meet this emergency as well as to relieve congestion at freight stations and transfers by carrying goods between stations of the New York Central in the vicinity of Buffalo and

between stations of the New York Central and other roads. Later, trucks were also used for interchange between the docks of the lake steamship lines on the Niagara frontier and the railroad freight stations.

The advantages of trucking in the Niagara frontier territory were so clearly demonstrated that an exhaustive study was made of operating conditions at other points on the New York Central with a view to extending the service. Conditions at Rochester similar to those in the Buffalo terminal district led, on November 28, 1923, to the installation of trucking service between Rochester and stations within a radius of 23 miles. Later, trucking service was established on a number of other divisions including those in the New York district. Trucking units were organized for the territory between Syracuse and New York.

Local less-than-carload freight was formerly handled in way trains which started out of terminals with cars of merchandise freight loaded in station order for the stations along the division. The goods were unloaded from the cars at the different stations by the train crews. The present trucking of freight has enabled the New York Central to take several way trains off each division, and to reduce overtime payments to crews on other trains. Savings in payroll expenses, coal, and other supplies are stated by New York Central Offices to have more than offset the additional expenses of trucking.

The portions of the line of the New York Central where motor trucking is in effect are divided into a number of zones, each of which has its "zone station." Freight for stations in the zone is taken to the zone station, and from there the freight is trucked to the destination stations. In the same way outbound freight from stations in the zone is trucked to the zone station to be forwarded in solid cars to points beyond the zone. Freight from one station to another in the zone is hauled directly to the destination station by motor trucks. The zone stations are the center points of the zones. The trucking distance in each direction from the zone station is usually from 10 to 30 miles, which permits of at least one round trip, and in some cases two round trips, per day.

Container Cars

The New York Central's motor-rail coördinated service includes the use of specially constructed steel container cars for the handling both of less-than-carload quantities of merchandise freight and of solid container loads of bulk commodities. The containers are steel boxes 7 feet by 8 feet, 10 inches inside measurement. They have steel weathertight doors, 5 feet 9 inches in height by 3 feet 6 inches in width. The containers have each a cubic capacity of 438 cubic feet and a weight carrying capacity of approximately 7,000 pounds, and are carried on specially equipped, open-top freight cars. The containers may be locked either with the shipper's own locks or with railroad locks, and, once loaded on the cars, it is impossible to open them without the proper keys. Electric cranes are provided at each station where container service is available to load and unload the containers from railroad cars to the motor vehicles or from the motor vehicles to cars. Motor trucks, tractors and trailers or semitrailers may be used to haul the containers between the shipping and receiving platforms of shippers and consignees and the railroad freight stations.

The service was first installed in 1922 on the bi-weekly schedule between New York City and Buffalo. Since that time the New York Central has purchased additional containers and equipped other freight stations with electric cranes. Daily container car service is now offered between a number of cities on the main line of the railroad, including Buffalo, New York, Rochester, Syracuse, and Utica.

The containers are hauled between the store-doors of shippers and consignees by private industrial trucks or by hauling contractors, at the expense of the shippers or consignees. The goods are placed in the containers by the shippers, and a bill of lading is issued by the carrier for the net weight of the goods in the containers. All classes of merchandise freight, except certain articles which are excluded because of their nature, may be shipped in a single container without packing of any sort. Containers are also used for the transportation of brick between a few leading producing and consuming centers.

The rates charged for freight in container car service differ radically from any other railroad rates in the United States. They are fixed upon a base charge per mile for a minimum net container load of 3,000 pounds. The charges for greater weight and greater distance are advanced at the rate of ¼ cent per mile for each added increment of 500 pounds until the maximum of 7,000 pounds is reached. Class ratings are ignored in assessing rates on freight in containers.

Container service is available to shippers of quantities of freight of less than the minimum container load of 3,000 pounds. Freight forwarders call for small packages from individual shippers, consolidate them into container loads, ship the goods by container car service to destination and deliver the goods by truck to the consignees. The forwarders pay the railroad company the standard container car service rates and collect from the shippers or consignees higher charges out of which are defrayed the consolidation, pick-ups, delivery, clerical, and supervisory expenses.

The solid steel construction of the containers and the fact that packages are not handled at the originating, transfer, and delivering stations decrease loss and damage, while the locked thief-proof doors eliminate pilferage, and the handling of one container instead of a large number of small pieces reduces expenses at railroad stations.

Other railroads and many electric railways are experimenting or making studies of the container service, and it is probable that a number of installations will be made in the near future. To be successful there must be a large and regular flow of less-than-carload traffic between the stations where the service is offered. The principal deterring factor is the investment in containers, special freight cars and electric cranes.

The Boston and Maine Motor Service

The Boston and Maine Railroad's plan for collection and delivery of freight by motor truck was inaugurated July, 1925, simultaneously at Boston, Lowell, and Lawrence, Massachusetts. It is a coördination of rail and motor facilities to improve the service to shippers, to develop economies of operation,

and to relieve street congestion. This service is performed by the Boston and Maine Transportation Company under contract with the Boston and Maine Railroad. For the three cities the line haul of the railroad is united with the pick-up and delivery service of motors, and provision is also made for the all-highway movement by motor truck between Boston and Lowell and between Boston and Lawrence. There is a motor truck service for less-than-carload shipments between the freight houses of the Boston and Maine at points between Boston and Lowell, and Boston and Lawrence, to displace the local service performed by way-freight trains.

Trucks of the Boston and Maine Transportation Company pick up less-than-carload freights at Boston, Lowell, and Lawrence, for any destination; and deliver directly to consignees in those cities such shipments and also goods that have been dispatched from other points of origin. Instead of waiting for an arrival notice, announcing that a shipment has arrived at the freight house and then arranging with a local trucking company to take care of it, consignees receive the merchandise sometimes more quickly than the postcard can be delivered. The motor carrier assumes common carrier liability.

Local cartage service is performed by established local trucking firms. The Boston and Maine uses existing cartage facilities so as to coördinate motor and rail services instead of engaging in competition that could only increase costs of transportation and add to highway congestion. The local trucking concerns operate under the supervision and control of the Boston and Maine Transportation Company.

There are rates for four classes of service: station-to-station without cartage service; station-to-station with cartage service at one end; station-to-station with cartage service at each end; and all highway cartage service within the cities of Boston, Lowell, and Lawrence. The charges are graded according to the volume of shipment, decreasing per 100 pounds as the freight increases in quantity. Charges are graded also by zones, and for pick-up from or delivery to points within the zones nearest to the railroad stations in each city the rates are somewhat less than for more distant points in the cities.

The Limits of the Field of Coördinated Rail-Motor Service

The sphere in which the motor truck can be advantageously substituted for the local freight train has been carefully studied by traffic and operating officers of the larger railroads. Trucks have been found to serve well both in districts of relatively dense population that are well developed industrially and in districts of lighter traffic density where the development is spread along the railroad lines rather than concentrated in one city or a few large towns. Districts in which there are a number of small stations rather than a few large ones are fertile fields for motor-rail service. The carload and less-than-carload services in the past have been performed on many roads by two kinds of local freight trains, one carrying less-than-carload and the other carload freight. Practically all of the local trains that handle nothing but less-than-carload shipments can be eliminated through the use of motor trucks, a considerable saving in operating expenses to the railroad companies is possible and an improved service can be given the public.

The Maryland Division of the Pennsylvania, the district from Perryville to Philadelphia, is sufficiently developed industrially to require the continuance of local freight trains that handle nothing but carload freight. All less-than-carload shipments can be handled by motor trucks. On the section of the Maryland Division south of Perryville, and on the Columbia and Port Deposit and Octararo Branches, the way-freight trains continue to do both carload and less-than-carload work, for these sections of the road are not as well developed economically as the northerly section of the division. The main line and the branches in the southern section serve an agricultural district with a few scattered canning factories. Along the northern portion of the division's main line there is a denser population and greater industrial activity. Here motor trucks are economical carriers of less-than-carload traffic, and the freight trains are more efficient carriers of carload freight.

There are further possibilities for the profitable introduction of motor-truck service on American railroads. There are many local freight trains handling both carload and less-than-carload

traffic that are now operated in one direction daily that could perform all the carload work and return the same day if the less-than-carload freight were handled by motor trucks. Carload service several times a week might be instituted to advantage on many branches where the traffic is light, but where the necessity of daily less-than-carload service has not compelled the railroad companies to run a local freight train each day, the less-than-carload traffic could be well handled daily by motor trucks.

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CHAPTER XXXVI

STORE-DOOR FREIGHT SERVICE

THE delivery of freight by motors or drays directly to consignees upon its arrival at the receiving railroad stations and the use of the same motors or drays to bring outbound shipments to the depots of the railroads would eliminate the worst defects in the existing terminal transportation system, which are the congestion of platforms at the freight houses caused by the holding of goods at the station until the consignees receive their arrival notices and make arrangements for the haulage of the goods to their places of business, and the delay to the shippers' and consignees' vehicles at the station platforms and on streets about freight depots.

The prevailing practice is to notify the consignee of the arrival of less-than-carload freight after it has been unloaded into the freight houses. Forty-eight hours' free time is allowed the consignee, after the sending or giving of the notices, to unload carload freight and to remove less-than-carload freight from the freight stations. Partly because of unorganized cartage methods and inadequate storage facilities, and partly because many goods are sold after arrival at the terminals, a large proportion of the consignees take advantage of the full free-time period, and some allow their goods to remain at the station beyond that period. Less-than-carload shipments are allowed to remain in the railroad freight houses an average of 3 days. A well-organized store-door delivery plan should make the freight house space available for use not less than twice a day, instead of once every 3 days.

Under the present unorganized system of cartage, shippers and consignees send their own or hired vehicles to the freight stations to deliver or receive their freight, and the driveways at the terminals and the streets leading to the stations are con-

gested with trucks and wagons. Studies have been made of the time consumed by vehicles at the freight stations, and some of them show delays of as much as 3 hours per vehicle. Many rail terminal facilities including freight houses and tracks were constructed years ago and have not been enlarged in recent years; meanwhile the method of handling freight has not improved to any great extent while the volume of inbound and outbound traffic has been increasing. The resulting congestion has increased to carrier and shipper alike the cost of handling freight and has reduced the efficiency of transportation.

Store-door service would result in a greater volume of merchandise being handled through the terminal each working day and the expediting of the movement of less-than-carload freight. This would increase the supply of cars available for freight. Most American railroads could haul over their lines a much greater tonnage of freight than is now offered to them. Their service is limited by the complicated movements and delay of cars and freight within the terminal areas, and it is necessary either to enlarge their present terminal facilities or to find a way to pass more freight through them. The expansion of terminal areas is often impossible because of prohibitive cost and because of the objection of municipalities to allowing railroads to take real estate that is deemed necessary for industrial and commercial development. Store-door delivery by motor truck, which would relieve congestion in terminal areas and increase the capacity of freight stations, is the solution of the terminal problem.[1] New railroad freight houses could be built in the outskirts of cities and the collection and distribution of less-than-carload freight could be done by motor trucks.

The cost of collection and delivery should be borne by the shippers and receivers of freight; that is, a flat charge for drayage should be added to the station-to-station railroad rate and this amount should be paid as a part of the freight charge. Drayage could be performed either by the railroad or by trucking concerns under contract with the railroad company, and

[1] "Relation of Highways and Motor Transport to Other Transportation Agencies," Reports of Special Committee IV, Chamber of Commerce of the United States, 1923.

responsible to carrier for any loss or damage to freight incurred in its collection or delivery. The trucking companies would be paid the amount received by the railroad companies for the drayage service. Shippers and consignees would deal only with the railroads who would be responsible to them for any damage or loss, as is now the practice in England and Canada. The use of the service should, at the start at least, be optional with shippers and consignees, and there are certain commodities which require specialized handling that can be more economically handled by the shipper and receiver. This arrangement is in effect in England and Canada.

Store-door delivery, as the collection and delivery service is called, would reduce to some extent the use of railroad equipment as trap and ferry cars for handling less-than-carload freight between freight depots and the sidings of industrial plants. Ferry-car services are expensive to the railroads, because the less-than-carload weights that the railroads carry free in such cars is usually only a small fraction of the average car capacity. To reduce this service would add to the transportation costs of some individual shippers who are now profiting at the expense of the general shipping public.

Store-Door Service in England

Collection and delivery services were inaugurated by the British railways more than 50 years ago usually by controlled companies. Gradually these companies were absorbed into the rail carriers' organizations which are now maintained as distinct units owned and controlled by the rail carriers. The British railways do not seek profit from the store-door service, but charge only enough to defray costs and to make the service attractive to traders. Eighty per cent of the less-than-carload traffic entering London, Liverpool, Glasgow, Manchester, Birmingham, and Leeds is delivered by the carriers. Quicker service results; terminals are freed from congestion and the neck of the transportation bottle is kept open. Promptness of service unknown to American roads is possible. Shipments of woolen goods, for example, may be collected from the factory at Leeds, 240 miles north of London up to 4 o'clock in the after-

noon and be delivered to the merchant's shop in London by 9 o'clock the next morning. This speedy service is possible despite the fact that horse-drawn vehicles are largely used in London because of the narrow streets and short hauls. In the newer English cities motors are used especially where the terminals are located in outlying districts.

Store-Door Service in Canada

In all the important cities of eastern Canada, cartage service is maintained to and from the warehouses of shippers and consignees and the freight stations as an integral part of the transportation system. The service is provided for by the carriers' tariffs, and includes virtually all merchandise and package freight both carload and less-than-carload. The service is performed for all consignees except those who notify the carriers' agents of their intention to do their own trucking. The freight is delivered directly to the consignees, no arrival notice being sent or given. The trucking companies obtain receipts for delivered goods and collect the railroad charges due from consignees.

At each freight station there is a hauling superintendent, who controls the movements of trucks and teams to and from designated areas or zones, minimizes delays, and brings about the loading of trucks as nearly to capacity as is practicable. A shipper wishing outbound freight picked up, telephones the central office of the hauling company stating the amount of freight to be moved and the time at which it will be available. The pick-up orders are consolidated by districts at the dispatching office and as many trucks as necessary are sent to each district or zone. Orders for trucks are accepted up to 3 P.M. for each day and all outbound loads are delivered to the rail stations before 5 P.M. Orders received after 3 o'clock are filled the next day. A railroad bill of lading, executed by the trucking company as agent of the carrier, is given the shipper as his receipt.

A large percentage of the shippers and consignees in the Canadian cities where store-door service is in operation avail themselves of the privilege. This general use makes it possible

for the trucking companies to haul freight at lower rates than would be charged if the hauling were done without coördination. The system as it is worked out in Canada results in low cartage charges, speedy deliveries, the reduction of street congestion, and the economical use of motor vehicles.

Previous Experience with Store-Door Delivery in the United States

With the exception of the optional privilege of store-door delivery offered by the Columbia Terminals Company at St. Louis which does not include collection of freight for outbound shipment and which is not utilized by a large number of consignees, the store-door delivery service offered by several carriers in New York City, and the service installed by the Boston and Maine Railroad, referred to in Chapters XXXIV and XXXV, the only instance of store-door delivery in the United States is the arrangement that was made nearly 60 years ago by the Pennsylvania Railroad and the Baltimore and Ohio Railroad in Baltimore and Washington. The scope of that service was limited even in Baltimore and Washington, and its withdrawal did not result in any great change in the operation of the two terminals.

Store-door delivery service was inaugurated by the Philadelphia, Baltimore and Washington Railroad in Baltimore in 1867, and was continued by the Pennsylvania Railroad in 1881 when it took over that road. Two years later the Pennsylvania Railroad introduced the service in Washington. In 1886 the Baltimore and Ohio Railroad established the service simultaneously at Baltimore and Washington to compete with the Pennsylvania Railroad. Both railroads provided free delivery for less-than-carload freight from New England points, New York City, and Philadelphia, to the store-doors in Baltimore and to substantially all of the city of Washington. There was a collection at the store-doors in Baltimore and Washington of package freight destined to points in New England, New York, and Philadelphia.

The service was performed for 44 years, but on September 19, 1911, complaint was made to the Interstate Commerce

Commission by certain consignees in Washington that the failure of the carriers to deliver shipments to them while making delivery to their competitors constituted unjust discrimination. The Commission decided in favor of the complainants[2] and ordered the Pennsylvania Railroad to extend the boundaries of its free pick-up and delivery zone. This was done but another complaint alleging discrimination was filed with, and sustained by the Commission,[3] and in 1913, the carriers withdrew the service first from Washington, and later, upon complaint of discrimination, from Baltimore.[4] Protests were made to the Commission, but without effect. In the cases of the Merchants' and Manufacturers' Associations of Baltimore versus the Baltimore and Ohio Railroad,[5] and in Judd and Detweiler, Inc., versus the Baltimore and Ohio Railroad,[6] decided May 19, 1914, in which Baltimore and Washington respectively, were concerned, the Commission held that the railroads were warranted in discontinuing store-door delivery without changes in transportation rates.

Store-Door Service in the New York Terminal

Several railroads serving New York have adopted a new method of handling less-than-carload freight for consignees in New York City. The practice for many years has been to float the less-than-carload as well as carload shipments in the original cars on car floats from the Jersey City piers to those of the railroads in New York City. The cars were unloaded at the New York piers by the carriers and the consignees notified in the usual way of the arrival of the goods. Consignees sent their own or hired teams or trucks for their freight. By the new system freight is unloaded from the cars into trucks or trailers at the Jersey terminals, and taken across to New York City by ferries or by way of the vehicular tunnel under the river. Inland freight stations off the tracks of the carriers have been established in the heart of the downtown business district

[2] 24 I. C. C. 629.
[3] 25 I. C. C. 411.
[4] 27 I. C. C. 347, decided June 17, 1913.
[5] 30 I. C. C. 388, decided May 11, 1914.
[6] 30 I. C. C. 455, decided May 19, 1914.

where goods may be held awaiting delivery or be accepted for outward movement. The railroad rates apply to and from these stations and no charge is made for the motor service between them and the railroad terminals.

The trucking is done by companies under contract with the railroads, the companies being required by the terms of their contracts to observe every detail of the tariffs governing the service and the rulings of the Interstate Commerce Commission. The employees of the trucking companies handle the shipping and delivery documents when making pick-ups or deliveries, and accept railroad freight charges from shippers or consignees.

Constructive stations, points at which freight is constructively received from or delivered to shippers and consignees, are located by the railroads at or near the New York end of ferry routes and near the New York end of the vehicular tunnel for the shippers and consignees who wish the goods forwarded by truck from their places of business to the railroad terminals or who wish store-door service. The railroads assume responsibility for the goods while in the possession of the cartage companies between the railroad terminals and these constructive or imaginary stations and compensate the trucking companies for their services. The trucking companies are paid by the shippers and consignees for carting freight to their places of business and the constructive stations.

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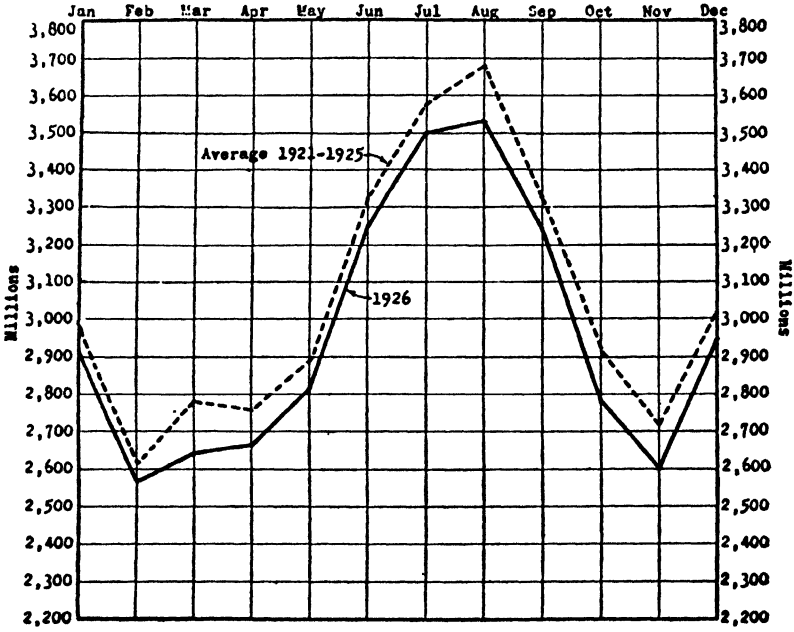
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CHAPTER XXXVII

COÖRDINATED MOTOR-RAIL PASSENGER SERVICES

THE railroads of the United States enjoyed a large and steadily increasing volume of passenger traffic each year up to the period of the World War, but since then the number of passengers carried and the revenues earned have grown less. This loss of traffic is due to the private automobile and the motor bus, and the improvement of highways. The decrease in railroad passenger traffic is shown by the accompanying diagram.



FORM 5. RAILROAD PASSENGER TRAFFIC, MONTHS, 1926, AND FIVE-YEAR AVERAGE, 1921-1925.

From Bureau of Railway Economics, *A Review of Railway Operations in* 1926.

The railroads have partially met the situation by operating motor busses directly or through subsidiary companies or by making contracts with independent motor bus lines. An investigation by the Interstate Commerce Commission in 1926 and 1927 established the fact that more than 1,200 passenger busses were operated by Class I steam railroads or subsidiary companies and more than 20,000 in direct competition with railroad lines. The number and distribution of railroad bus operations are shown in the accompanying table. The figures do not include the busses contracted for nor the statistics for the small railroad roads. Sixty steam railroads operated busses directly or through subsidiary companies in 1927.

MOTOR BUS SERVICE—CLASS I CARRIERS

INTERSTATE COMMERCE COMMISSION, MOTOR TRUCK AND BUS INVESTIGATION, 1927

Region	Busses Operated in Connection with Railroad Service	Route Mileage	Busses Operated in Direct Competition with Railroad Service	Route Mileage
New England	21	84	453	8,599
Great Lakes	296	1,974	3,074	38,713
Central Eastern	68	243	4,656	38,396
Pocahontas	190	3,923	608	7,706
Southern	4	28	2,170	45,037
Northwestern	14	223	3,044	57,957
Central Western	659	4,950	3,827	106,708
Southwestern	1	15	1,267	31,406
TOTALS, ALL REGIONS	1,253	11,400	19,099	334,522

The Position of the Railroads

The steam railroads and electric railways have been disposed to contend that public utilities should be permitted to continue to serve the public in the territory they have occupied and the public should not allow free motor competition. Instead of buying out their motor competitors the railways have protested against the granting by state public service commissions of certificates of public convenience and necessity to bus com-

panies to compete with the railroad services. Public authorities, however, have usually allowed the free development of bus lines, although there has been some disposition on the part of the states to protect the vested interests of the railways as is shown by the action of the Public Service Commission of Pennsylvania which in 1924 stated its position as follows:

> It has been the policy of this Commission to refuse to permit competition with existing utilities which have large investment and are necessary for the public convenience, if their service is or can be made reasonably adequate. No transportation agency can render perfect service at all times to all persons. The Commission must consider the benefit to the general public. The use of motor trucks for transporting property has reduced considerably the receipts of railroad and electric railway companies. Although such motor service may be more convenient to some shippers than service by electric railway or railroad, consideration of public convenience will not permit the Commission to take action which will endanger the continued financial stability of such established roads.[1]

The New England Transportation Company

The New England Transportation Company is a subsidiary that the New York, New Haven and Hartford Railroad organized in 1925 for the purpose of operating a motor service. The railroad company owns all of the $1,450,000 par value of the stock of the subsidiary company. The Company's first line of motor busses was established in western Connecticut in August, 1925, as a substitute for local railroad passenger service, and successive installations of service have been made after a survey has shown the economies which would result. About half of the motor bus routes have replaced local passenger train service, while the other half of the routes are feeders or supplements of existing railroad lines.

If a railroad service is replaced by bus transportation, all of the passenger train services formerly performed by local passenger or mixed trains, including the carriage of baggage, mail, express, and milk are taken over by the subsidiary company and handled by motor busses or trucks. The charges for the motor transportation are the same as those formerly made by

[1] *In re* Bingaman Motor Express Company, Public Service Commission of Pa., Docket, A. 9092, Feb. 19, 1924.

the railroad for the same services, including commutation, round-trip and single-trip fares. The installation of routes and equipment has been carried out slowly, and traffic, operating and mechanical departments have been organized and expanded with the growth of business. In 1926 the company operated a maximum schedule of 43 routes aggregating approximately 1,000 miles. In 1926 there were 184 motor coaches; the bus mileage for the year was 4,608,245 and 2,837,495 passengers were carried.

Railroads have adopted coördinated bus and rail service not so much for the purpose of making profits therefrom as to improve their service and to reduce expenses. It costs about 30 cents per mile to operate a bus, while for a local passenger train the cost is approximately $1.25 per mile. The report of the New England Transportation Company for 1926 shows the operating expenses of bus service were 100.45 per cent of the total operating revenues.

The Boston and Maine Service

The Boston and Maine Transportation Company is a subsidiary of the Boston and Maine Railroad; its first bus service was started in 1926. The Railroad Company owns the busses and leases them to the subsidiary company.

The Boston and Maine Railroad Company had special need to reduce operating expenses. It had 1,372 miles of main line and 854 miles of branch lines. Many of the branches were being operated at a loss, and the cost of service on some of the main-line divisions in off-peak hours was so high that reductions in expense were imperative.

Motor service was installed in some instances as a complete substitute for all-rail passenger services on unprofitable branch lines having light traffic. The busses made connections with passenger trains at the junctions of the main and branch lines. Baggage was handled by motor and rail upon through tickets. The change of service was economical. On one division passenger train service which had cost $2.02 per train mile was discontinued and bus service at $0.64 per bus mile was substituted.

In some cases a partial substitute was made for branch-line railroad passenger train service. Busses were run instead of branch-line trains during off-peak hours of the day or during seasons of light traffic, and railroad trains were run during periods of heavy traffic. The branch-line trains, when they were run, handled mail, express matter and baggage, leaving the busses free to accommodate passengers only.

Another practice has been to use busses as a partial substitute for main-line services. The Boston and Maine altered its main passenger train schedules by reducing the running time between important stations, by increasing the speed of trains and reducing the number of station stops. Busses were provided to carry passengers from the stations at which the main-line express trains stopped to the smaller stations between the zone stations. Busses were also used to replace some trains on the main lines at periods of the day or during seasons when traffic was light, trains being run as usual at the peak hours and in the seasons of heavier traffic.

A further plan was to operate busses on feeder routes through sections not served directly by the rails of the Boston and Maine Railroad.

The Boston and Maine Transportation Company in 1926 operated 61 busses; the bus mileage exceeded 1,000,000; the average cost per bus mile was about 29 cents.

Busses in Terminal Service

The Baltimore and Ohio Railroad operates motor busses to connect its passenger trains which use the terminal of the Central Railroad of New Jersey, in Jersey City, with Manhattan, Brooklyn, and Newark. This was started in August, 1926. The Central Railroad of New Jersey also offers bus service in the New York terminal.

During the period of Federal control of railroads and for several years thereafter the Baltimore and Ohio trains used the Pennsylvania Station at New York in the heart of the uptown business district, instead of the station of the Central Railroad of New Jersey across the river in Jersey City. The Baltimore and Ohio had thus built up a considerable volume of

passenger traffic which it strove to retain after the expiration of the lease of the Pennsylvania terminal.

Busses meet all incoming trains at the trainshed in Jersey City and take passengers directly to the centers of New York, Newark, and Brooklyn without extra charge. Likewise busses bring passengers to Baltimore and Ohio trains from designated points in Manhattan, Brooklyn, and Newark. Train connections are guaranteed. Runways and turntables have been constructed to enable the busses to receive and discharge passengers along the trains in the trainshed. Accommodations are provided for the travelers' baggage.

Motor-Rail Cars

Railroad men for thirty years have sought a light single-car or car-and-trailer train for use on branch lines where traffic is light and revenues low per train mile. The motor-rail car has now reached a high stage of development and large cars with four-wheeled trucks, propelled by gasoline, Diesel- or gas-electric engines are in successful operation on nearly 200 railroad branch lines.

The maximum usefulness of the rail-motor car is on branch lines where it is necessary to provide a frequent and speedy service for a comparatively small number of passengers, and to provide accommodations for mail, baggage, express, and light freight. The car meets the requirements of short-line railroads, branches of larger systems, and of local service on main lines where the volume of traffic is below the minimum required for profitable steam train operation.

Three leading types of motor-rail cars are in service. The first is a light or small car seating 32 passengers. It is equipped with an engine developing approximately 35 horse power and has a speed of 45 miles per hour. A second medium-sized car has a seating capacity of 35 persons, a compartment for mail, express, baggage, and light freight, an engine generating 50 horse power and a speed equal to the lighter type. A heavy or large type of car seats from 50 to 70 passengers, has a baggage or freight compartment, an engine developing 120 to 250 horse power and a possible speed of 60 miles per hour. Large coaches

of this type with tractive power sufficient to haul trailers are now being manufactured. Gasoline, Diesel- and gas-electric engines are used for this type of car.

The experiments with motor-rail cars have indicated that substantial reductions in operating and maintenance costs can be made by using this lighter type of equipment to replace trains on railroad sections of light traffic. Savings are made in the number of men required in the train crews, fuel costs are lower, smaller investments in equipment are required, roundhouse facilities are reduced and a substantial reduction in maintenance-of-way expenses is possible. The extent of these savings varies with local conditions. Motor-rail car costs range from 25 to 50 per cent less than local passenger train expenses.

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CHAPTER XXXVIII

THE COÖRDINATION OF MOTOR AND ELECTRIC RAILWAY TRANSPORTATION SERVICES

At the time when most of the trackage of the electric railways in the United States was built, highways were local affairs and relatively unimportant factors in the life of the various communities served by the electric lines. Horse-and-wagon transportation was slow and its radius was short. With the coming of the automobile, the horse-drawn wagon and carriage and the inadequate local or county roads were displaced by the motor car and improved state highways, and the electric railway was confronted with competition with private automobiles and busses and motor trucks.

Thousands of small car owners riding to work in their cars picked up persons on the way, charging them a nickel for the ride. This was the origin of the so-called "jitney," and many men decided to follow "jitneying" as a regular business. Their busses were to be found in every town and city of the United States. The jitney operators, as a rule, followed no regular routes, ran on no schedules, and were not financially able to assume liability for the safety of the passengers or property. They made serious inroads upon the revenues of the electric railways in cities, and were one of the causes of many traction company receiverships. The jitneys in time came to be considered a nuisance, and were suppressed by municipal ordinances or state laws. Then, in place of the jitney came the regularly constituted common carrier motor bus line, the second competitor of the electric railway.

In the beginning, motor bus and truck lines were without public regulation. They competed with the electric and steam railroads and with each other, charging whatever fares and rates would attract traffic. Most of the bus and truck operators,

like the jitney men, kept incomplete accounts and were not able to tell whether they were making money or not. Many of them stayed in business a relatively short time. Manufacturers, however, often sold busses and trucks on relatively small first payments and granted easy terms of payment to present and prospective operators; while financial companies also assisted in bringing motor vehicles within the reach of small operators. The consequence was that, although failures were common and the turnover rapid, bus and truck competition continued to grow.

The urban and interurban railway lines suffered severely, especially those in the smaller cities which depended almost wholly on the passenger business for their revenues. The competition of private motor cars and trucks, and of busses and trucks let for hire compelled the electric lines to adopt measures to meet the situation. Some electric lines began carrying both express and passengers, but the motor truck also carried express. Moreover, motor truck operators gave a store-door package delivery service that the electric railways could not give without coördinating their services with those of the motor truck.

Electric railways in many instances acquired motor trucks and busses and established a system of coördinated transportation. One large electric railway system in announcing its plan defined coördinated service as the avoidance of duplication of service, "the operation of busses and cars jointly so that each will be run in sufficient number to meet demand, and in a way that will give a maximum of service at a minimum of cost."[1] In a few cases the electric railways have replaced their old services with motor services, becoming motor truck and bus operators on a large scale, with their railways as minor parts of their business. Still fewer have entirely abandoned their railway lines for busses and trucks. Usually the motor service is operated as a supplementary service subordinate to the major operation of the electric railway line.

Electric railways have made much more extensive use of highway transportation in the passenger than in the freight service,

[1] Harlow C. Clark, "Coördinated Transportation Service," Address before the New Jersey Utilities Association, 1923.

for the reason that relatively few electric lines carry freight. In many localities separate motor bus and electric rail services along paralleling routes are desired, the busses being substituted for electric railways.

More than 7,000 motor busses were operated by 266 electric railway lines over 13,000 miles of route in intrastate commerce on January 1, 1927. They were distributed as follows:

District	Number of Electric Railways Operating Busses	Number of Busses Operated	Miles of Route Operated
New England District....	20	653	925.2
Northeastern District	131	4,665	9,505.6
Southeastern District ...	35	638	704.2
Northwestern District .	26	410	1,234.1
Southwestern District ...	30	340	782.3
Pacific District	24	578	467.7
TOTAL, ALL DISTRICTS..	266	7,284	13,619.1

Urban Service

One of the first and most important uses of the motor bus was as an extension and feeder of urban electric railways, which are often required to extend service into new suburbs, to outlying manufacturing plants, or to other new districts not served by steam railroads. Electric lines for such services seldom pay expenses until after several years of operation. Overexpansion through compliance with demands for extensions has contributed to the financial failures of many city railways.

Motor busses involving a small outlay of capital can be used to gather in enough traffic to make outlying routes profitable. If the expense of operating the bus service on such routes is found to be larger than the revenues, the service can easily be withdrawn at a small capital loss. The operation of the busses on a feeder route hastens the growth of traffic and reduces the time required to make a rail track extension profitable.

The bus can be used to advantage in short connecting and cross-town services that must be maintained in many cities where there is insufficient traffic to justify the construction of trolley

tracks. Auxiliary bus service of this sort adds to the convenience of the whole service, and promotes good will.

Several different systems of fares are charged for auxiliary or feeder bus services. Traction companies in some cities provide free transfers between the trolley lines and the busses they operate. They charge the same fare on the busses and on the street cars. This system is generally used for short bus routes, and for the connecting and cross-town bus lines. Other street-car companies charge a higher fare on the busses, with a free exchange from bus to car, and an exchange charge from car to bus to bring the fare up to the bus level. Some electric lines have, in effect, introduced zone fares; they charge an extra fare on the bus without transfer or exchange privilege.

Electric railways have often had to solve the problem of competing services operated by independent bus lines over the same routes as the trolley lines. Many railway companies, notably the Public Service Railway of New Jersey, have purchased the independent motor bus lines, and correlated the motor busses with the electric cars. Before the electric companies took over these motor lines, the busses were operated just ahead of the street cars, and on practically the same "headways" or interval of time between the vehicles, with the result that the busses often took prospective street railway passengers. After the coördination of the trolley and bus service, trolleys were operated alternately with busses.

One type of city bus operation that has been used to solve the trolley extension problem is the trackless trolley bus, or rail-less street car. This is an electric bus taking its power from an overhead double trolley system. There are five installations in operation in the United States and two in Canada. Limitations in speed, due to danger of "dewirement," and the high cost of the overhead system have caused this type of equipment to be used only in special cases.

Interurban and Long-Distance Services

The widest adoption of the bus by the electric railways has been in the interurban service. Many of the interurban electric lines have found busses of great aid as extensions and feeders into

territory not reached by their lines. The extension and feeder lines have developed traffic for the electric railway, promoted good will, and advertised the electric lines. Most of the interurban motor services are operated directly by the electric railways, and, although it is the consensus of opinion of electric railway men that these bus operations rarely pay full operating expenses, the indirect benefits are thought to make the services desirable.

Electric lines operate some interurban bus services with marked success, even bus routes that may be of much greater mileage than the railway lines. Other railways operate busses through subsidiary companies, whose management is controlled by the electric railway. Through traffic agreements have often been made with independent motor truck operators which act as feeders.

There are prominent electric railway companies that operate long-distance de luxe–intercity bus services. One is the Chicago, North Shore and Milwaukee, another is the Philadelphia Rapid Transit Company which runs bus lines from Philadelphia to New York, Washington, Baltimore, and Atlantic City, as well as over a number of shorter interurban routes.

An unusual use of busses has been made by the Detroit United Traction Company, which has a system of interurban lines radiating from the city of Detroit. The cars, which formerly ran into the city over the tracks of the Detroit Municipal Railway, were subject to a great deal of delay in the city due to the congestion of the streets. The interurban company built large transfer stations at the points where the lines joined the city line's tracks, and motor busses were operated from these stations to the Company's downtown waiting rooms. It was thus possible to do without expensive trackage rights, and to have more cars for interurban service. The motor vehicles can also run at a higher speed than the street cars can in the city.

The most extensive use of the bus in interurban runs has been in the operation of a service parallel to or alternative with the electric railway service. This is done to eliminate or forestall competition, to maintain control of the territory, to improve the quality of service and to reduce operating expenses. The running schedules may alternate busses and electric cars and headways may be reduced.

Motor Truck–Electric Railway Freight Service

Many electric lines have coördinated motor truck and electric railway freight services, especially in the terminal districts in large cities. Here motor trucks are used by the electric as they are by the steam railroads for the transfer of freight to off-line depots, or for store-door delivery service. The use of trucks allows a railway which may have been deprived by franchise restrictions or by operating difficulties of an entrance to a centrally located freight terminal, to have a freight terminal favorably situated for developing traffic.

One of the first railroads, steam or electric, to adopt the use of trucks, was the Chicago, North Shore and Milwaukee. This Company reaches a downtown passenger station by using the Elevated Railway tracks into the Loop District in Chicago. It was impossible to operate freight cars over this route, and for this reason the Company in 1920 established an off-track downtown freight station and ran trucks between this station and the railway terminal in an outlying section of the city. Tractors with semitrailers, which release the motive power while trailers are being loaded and unloaded, are used. Since 1920, 5 additional off-track stations have been established in the various industrial districts of the city.

In 1921, the Cincinnati, Lawrenceburg and Aurora Railway, operating from the outskirts of Cincinnati to Lawrenceburg and Aurora, Indiana, and to other surrounding towns, installed a package freight service. The company can have no track entrance into Cincinnati, because the street railway uses broad gauge track while the interurban line has the standard gauge. The Cincinnati Motor Terminals Company performs the same service for this interurban electric railway that it does for the steam railroads, and transfers freight in container truck bodies between the electric railway terminal and a downtown freight station of the railway company.

The Lehigh Valley Transit Company operates between important industrial centers in the Lehigh Valley, including Allentown, Bethlehem, and Easton, and between those cities and Philadelphia. Freight is brought over the company's tracks to

Erdenheim, about 12 miles from the center of Philadelphia. Formerly, shippers using this route were obliged to truck their freight all the way to Erdenheim; now the Terminal Warehouse Company ot Philadelphia accepts freight for the Lehigh Valley Transit Company at one of its warehouses in the downtown district in Philadelphia, and trucks it to Erdenheim, the Terminal Warehouse Company receiving a division of the through rate as its compensation.

Where independent motor truck competition is especially severe, the electric railways have gone further to attract traffic. A well-located downtown terminal is often not sufficient to attract traffic to the electric railways, because independent motor lines usually give a pick-up and delivery service, at least within a "free zone." It is thus necessary that the electric railway give a similar service. Electric railway freight rates are usually low enough to permit a small extra charge to be made for this collection and delivery service without causing the rates via the electric lines to equal or exceed either motor freight rates or railroad charges. Inner and outer pick-up and delivery zones are usually established in the terminal area, and lower charges are made for service in the inner than in the outer zones.

The Pittsburgh Railways Company has an interurban line along a highway through several towns. Many consignees and shippers are located on the streets of the various towns on which the rail line is located and store-door delivery was formerly made directly from the cars. The increase in the volume of motor traffic on the narrow highways made the continuance of this practice impossible, and as there were no suitable sites for centrally located freight stations available at reasonable prices in any of the towns, outlying freight stations were built by the electric railway. Contracts were made with local trucking companies to collect and deliver freight, the trucking companies being paid a percentage of the freight rate in order to stimulate them to solicit business. The freight is billed at the rates published in a local railway tariff, as was done before the use of motor trucks to collect and deliver freight.

Electric railways have found trucks useful for interurban haulage to extend their service into territories not reached di-

rectly by the rails. The railway companies do not as a rule operate the trucks themselves, but usually contract with independent motor truck operators to give through service to towns beyond the lines of the electric railways. The freight is billed through to destination.

The electric railways have outstripped the steam railroads in turning the bus and the truck to their advantage and profit and to the improvement of their services. The motor has improved the service and financial position of many electric railways which in turn have done much to standardize the motor transportation industry. The motor vehicle has a large place in the electric railway service of the present day and will probably acquire an even more important position in the next decade.

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CHAPTER XXXIX

THE COÖRDINATION OF STEAMSHIP AND MOTOR FREIGHT TRANSPORTATION

THE coördination of motor and steamship services through reciprocal arrangements is one of the most recent developments in motor transportation. Where no arrangements for coördinated motor-steamship service have been established, shippers deliver freight at the piers of the steamship lines, consignees of freight await the receipt of arrival notices from the steamship companies, and then haul their goods from the piers in their own vehicles or in the equipment of hired draymen or truckmen. Steamship companies allow 48 to 96 hours free time during which inbound shipments may be accepted at the piers without storage charges, and outbound freight is often delivered at the piers several days before the sailing dates. This often results in the accumulation of large quantities of freight, causing congestion at the piers, and delays in the sailing of vessels.

By moving traffic through the terminals rapidly and by making deliveries directly from steamship to motor vehicle or from other vehicles to shipside, the efficiency of steamship freight service can be increased, and the time goods are in transit can be reduced; terminal congestion can be relieved and terminal operating expense can be lowered. By expediting the movement of traffic the steamship companies may also compete with the railroads more successfully.

Illustration of Services by River and Coastwise Lines

A successful plan of steamship-motor freight coördination is that of the Bush Line, which has a daily steamship service on the Delaware River between Philadelphia and Wilmington. Motor trucks owned and operated by the company are used to make store-door deliveries and to pick up freight at towns in Delaware,

New Jersey, and Maryland, beyond the Wilmington terminals. Between Philadelphia and points in New Jersey and Pennsylvania a haulage company operates under a contract with the steamship line. The Bush Line has through rates via steamship and motor between the river ports and interior points in Pennsylvania, New Jersey, Delaware, and Maryland. The official Freight Classification that has been adopted by the railroads is adhered to by the Bush Line whose port-to-port rates are enough lower than the rail rates between the same points to enable the through motor-steamship rates, which also cover store-door delivery and pick-up services, to be nearly the same as the rail rates from station to station. Services similar to those of the Bush Line are rendered by other inland waterway steamship lines.

The Merchants' and Miners' Transportation Company, established in 1852, operates vessels between eight North Atlantic and South Atlantic ports, and it has established a through service from shipper to consignee via railroad, steamship and motor.

The motor trucks of steamship lines meet the steamers upon their arrival at the ports and deliver freight to the consignees' places of business at joint steamship-motor rates provided for in published tariffs. Freight for Philadelphia, for example, is consigned to the Coastwise Express Company whose trucks cover routes in Philadelphia and a number of points in New Jersey. Deliveries are made every second morning for freight between Boston and Philadelphia, or between Boston and Norfolk; and every third morning for freight between Boston and Baltimore, one additional day being required for interior points reached through these ports. The Coastwise Express Company collects for pick-up or delivery services charges that are quoted in the through freight rates. There are through rates by water, including store-door delivery or pick-up at the ports at which motor delivery service is maintained, and also through rates by water and rail, including the same local services, between points about the ports served directly by the steamship line. Cartage charges are made by zones, being higher for delivery or pick-up beyond the zone nearest the piers of the company.

For example, a rate of 73½ cents, first-class, is made between

the dock of the Merchants' and Miners' Transportation Company, Philadelphia, and store-doors of consignees in Boston; 80½ cents or the same traffic between shippers' places of business in Zone I, Philadelphia, and consignees' store-doors in Boston; and 85½ cents between shippers' places of business in Zone 2, Philadelphia, and consignees' warehouses in Boston. The accompanying table contains illustrative through motor-water and motor-water-rail rates between selected points served by the Merchants' and Miners' Transportation Company and its connecting lines.

Car Consolidating

A number of forwarding companies that consolidate less-than-carload lots of freight into carload quantities make use of steamship and motor, or railroad, steamship, and motor facilities. Less-than-carload lots of freight from individual shippers are sent by railroad, inland water, or motor to forwarding companies at steamship piers, and combined shipments are dis-

FIRST-CLASS RATES BY STEAMSHIP-RAIL AND MOTOR FREIGHT SERVICE

Applying between Philadelphia and Baltimore and Typical New England Destination Points via Merchants' and Miners' Transportation Company and Connections

AND STORE-DOOR	PHILADELPHIA [1]			BALTIMORE [2]		
	Wharf Class	Zone 1 Class	Zone 2 Class	Wharf Class	Zone 1 Class	Zone 2 Class
	I	*I*	*I*	*I*	*I*	*I*
Boston, Mass., (store-door)	73½	80½	85½	85	90	93
Concord, N. H.	120	127	132	131½	136½	139½
Fall River, Mass.	114½	121½	126½	126	131	134
Lowell, Mass.	99½	106½	111½	111	116	119
Providence, R. I.	114½	121½	126½	83	88	91
Worcester, Mass.	134½	141½	146½	146	151	154

[1] Philadelphia: *Zone* 1 covers principal business district bounded by Delaware River, Schuylkill River, Girard Avenue, and Snyder Avenue. *Zone* 2 covers district beyond Zone 1.

[2] Baltimore: *Zone* 1 covers the principal business district bounded by Patterson Park Avenue, Fulton Avenue, North Avenue, and Port Avenue. *Zone* 2 covers district beyond Zone 1.

patched in carload lots by coastwise or intercoastal steamship lines to the ports nearest the destinations of the consignees, or by water and rail to selected distribution centers in the interior. Upon arrival at the port or distributing center the goods are delivered by motor or by less-than-carload rail service. In many instances store-door delivery is given for individual shipments to consignees located in the ports or distribution centers or in near-by towns.

The forwarding companies charge the standard steamship, or standard rail-and-water less-than-carload rates, or make slightly lower charges, and give free store-door delivery service. They pay the steamship companies the normal port-to-port or the standard rail and water carload rates and defray the expenses of motor service, handling costs, and administrative expenses out of the difference between the less-than-carload rates received from shippers or consignees and the carload steamship or rail-and-water rates paid to the carriers. Shippers or consignees receive the advantages of carload service and store-door delivery. Sometimes they pay slightly less than the full less-than-carload rates.

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CHAPTER XL

THE REGULATION OF MOTOR TRANSPORTATION

MOST automobiles and trucks are used as private vehicles, many others are employed in performing contract service, and an increasing number are operated by common carriers. Contract and common carriers may operate locally and only in intrastate commerce or they may be agencies of interstate transportation. Public regulation must accordingly be appropriate to services of different kinds and to carriers over routes within a state and carriers on highways that cross state boundaries. Local, state, and Federal governments have jurisdiction each within its sphere.

Local and Municipal Regulation

Streets are constructed and maintained by cities, while roads outside the limits of incorporated municipalities are built and cared for by the local or the state government. The extent to which the states have taken over road-building varies with different parts of the country, but the general tendency is for the state to be responsible for the main highways, leaving to the county and township the duty of providing thoroughfares of less importance. The county is in some instances aided by the state; and, for a number of years, the Federal Government, to further the development of a system of national highways, has apportioned among the states funds appropriated by the Congress.

Each political authority, municipality, incorporated borough or town, and township, has local police powers which it may exercise in the regulation of vehicles and traffic to protect the highways against improper use, to facilitate traffic, and to minimize accidents to pedestrians, travelers, and property. The rules governing the use of streets and roads cover numerous details and vary more or less with the temper of the communities con-

cerned. They apply to automobiles as well as to other vehicles, and have necessarily been made more comprehensive and stringent because of the high speed of motor cars and the ever growing density of traffic. Their scope and general character are matters of such common knowledge that they need not be set forth here.

Common carriers by motor vehicles upon the streets and roads are very properly regulated to a greater extent than are other users of the highway. The common carrier makes use for private profit of a roadway provided by the public, and his bus or truck is so large and heavy that he makes a large demand upon the capacity of the highway and puts a heavy strain upon the strength of the road structure. Taxicab companies, motor bus and motor truck common carriers must ordinarily obtain a license from the municipality in which they operate. In many states motor common carriers must receive an authorizing certificate from the state by which they are also regulated. The practice as to the division of authority between the state and the local government is not uniform, but ordinarily such a common carrier as a taxicab, motor bus or motor truck company must not only receive a charter and a certificate of public convenience from the state, but also obtain a license from the municipality in which it is to operate. The certificate from the state and the license from the municipal government define the territory within which the carrier may operate and impose upon him such restrictions and requirements as may be required by law or ordinances or be deemed to be in the public interest. In some states these regulatory stipulations are fixed mainly by the local governments, while, in other commonwealths, state laws more narrowly limit the authority of the municipalities over all public utilities within their jurisdiction.

State Regulation

State regulation of motor transportation, like that of the local governments, applies in different measure to noncommon carriers and to common carriers. Vehicles operated by or for their owner and only for his own purposes, and also those whose owners perform services for others by special contract, *i. e.*, noncommon carriers, are subject in practically all states to require-

ments with which the public has by experience become familiar. The states tax automobiles in various ways and often place a levy upon gasoline; the vehicle and the driver must be licensed; limits are put upon the size and weight of vehicles and of the vehicles and their loads, and also upon the speed at which they may be driven. In general the regulations are to protect the highway and to promote the safety of riders and pedestrians. While there is much diversity in the regulations in force in different states, and while the rules of some states are more detailed and stringent than those prescribed by others, the general tendency, as the result of increasing interstate motor travel and traffic, is towards greater uniformity in the policies of the several commonwealths.

The state regulation of motor common carriers usually begins with the requirement that such carriers shall obtain a certificate of public convenience and necessity. The certificate, if granted, authorizes the applicant to engage in business over designated routes and by the use of vehicles of specified kind and number. The state may require the company to file a bond sufficient in amount to indemnify the public for damages caused by the company's vehicles, or liability insurance may be accepted as a substitute for an indemnity bond. Some states that do not require the carrier to obtain a certificate of public convenience insist upon an indemnity bond. It is probable that all states will eventually make it necessary for motor common carriers to receive state authorization and to file an indemnity bond or take out adequate liability insurance before starting to operate. Indeed, it is not unlikely that all owners of cars, busses, or trucks may be required to carry indemnity insurance.

After getting a certificate of public convenience and necessity from the state, a company that desires to operate trucks, or busses, or taxicabs in a city, may be obliged to obtain a license from the municipal government. The requirements that the city may impose as a condition of granting the license will depend upon the scope of state regulation and the extent to which the state has given its officials exclusive power to regulate public utilities. Some states avoid limiting "home rule" by the city, while other states give their public utility commission very com-

prehensive jurisdiction. There are advocates of each policy, but it is better for the public utilities, and in the long run, for the public served, to have centralized and uniform regulation by a state commission.

What should be the scope of state regulations of motor common carriers? In some states all public utilities, common carriers by motor as well as other utilities, are subject to the same regulation, which is usually concerned with the incorporation and financing of the utility companies and with their facilities, services, and charges. This is a logical policy that may in time come to be followed generally; but at the present time there are many states that regulate motor carriers less comprehensively than they do railroads and other common carriers and public utilities, because it is thought that the business of motor transportation, being of recent origin, should be allowed to develop for a period without the interference or restraint of government regulation.

The fact that the motor is a competitor of the railroad and the electric railway predisposes many persons to postpone the regulation of motor carriers; although the public as a whole is coming to realize more clearly than it formerly did that competition may be harmful as well as helpful, under the conditions under which competition may be carried on, unless the "rules of the game" are determined by wise regulation that makes possible the healthy growth of all carriers whose services are needed by the public. In numerous instances, unregulated bus lines have deprived the public of valuable transportation facilities by driving electric lines out of business or by compelling railroads to reduce local service to the lowest possible limit. The congestion of highway traffic in many localities is now emphasizing the necessity of regulating all common carriers and of so coördinating them as to enable them all to render efficient service.

Principles of State Regulation

The present diversity of the policies of the states as regards the regulation of motor transportation is presumably due to a lack of unanimity of opinion as to the principles that should be followed in legislation. The "motor interests," *i. e.*, the large

manufacturers and the large operators of busses and trucks, generally favor state regulation; while the small operators and especially the multitude of truck owners who perform contract services but are not common carriers, are opposed to state interference. The public is divided in opinion, for the reason stated above, and also because there are doubtless some individuals and some communities that may temporarily obtain more services and lower rates than they might secure if the several classes of motor carriers were subject to the same regulation as is applied to other utilities.

The states have regulated railroads for 50 years, electric railways for more than 30 years, and other public utilities nearly two decades; and although transportation by motor common and contract carriers is only a few years old, it is evident that the principles that experience has shown to be sound in the regulation of rail carriers and other public utilities may, with safety to motor carriers and benefit to the public, be applied to motor transportation. In applying to motor carriers the established principles of state regulation of public utilities it is believed that the following rules should be adhered to, although no one of them might receive unanimous support if submitted to popular referendum:

1. The regulations of both common and contract motor carriers by local authorities should be limited to such traffic rules as are necessary for the convenience and safety of the public. Diverse and conflicting regulations by different local communities hamper the development of the carriers and are burdensome to the state as a whole. Moreover, while the possibility that partisan politics may interfere with the best regulation of public utilities by the state is real and calls for constant watchfulness on the part of disinterested guardians of good government, the danger of the dominance of machine politics in municipal government is greater, so much greater, indeed, as to be a strong argument in favor of minimizing local control of public utilities and of placing their regulation under a commission having statewide authority.

2. In general, motor common carriers should be subject to the same regulations as are other common carriers. The application

to motor carriers of the provisions of a law applying to public utilities generally, will naturally make necessary special rules and requirements not exacted of other agencies; indeed, each utility calls for special treatment in carrying out a comprehensive regulatory statute; but there are no special characteristics of motor transportation that make it necessary or desirable for the state to set it off in a class by itself and to apply to it principles of regulation different from those followed in legislating for other public utility services. The special treatment that should be accorded different utilities can readily be made possible by giving due administrative discretion to the state commission entrusted with the enforcement of the general statute. This principle is wisely followed by a number of the states.

3. Whether the services performed by individuals or companies that operate motors not as common carriers but only by contract with those for whom passengers or goods are carried should be subject to any state regulation other than that applying to automobiles generally is a controversial question, no definite public policy having yet been agreed upon. As will be pointed out presently the state of Michigan attempted by law to give to carriers by contract the status and obligations of common carriers, but the United States Supreme Court held in Duke *v.* Public Utility Commission (266 U. S. 570) that the law could not be applied to a carrier transporting goods by contract between places in different states. The Court also held that a private carrier may not be converted against his will into a common carrier by mere legislative fiat. It is not to be understood, however, that the states are estopped from imposing upon those who are regularly engaged in carrying passengers or goods for hire, but as private carriers paid by contract, requirements that are not exacted of other private owners and users of automobiles. They may quite certainly require those who use the public highways, constructed and maintained at public expense, as private carriers for hire to pay a special tax; and presumably the state may stipulate that those contract carriers that are to operate over regular routes and between fixed termini shall apply for, and receive, state authorization to operate as pro-

posed.[1] It may soon be necessary in the more congested parts of some states to set aside or provide certain highways for the use of the busses and trucks of both common and contract carriers and to reserve other roads for private automobiles not operated for hire.

4. Both the theory and the practice of state regulation emphasize the wisdom of favoring the coördination of the services of common carriers by bus and truck with those of the railroad. It is by the unification of the facilities of transport that the public is best served. Before government regulation had become effective in preventing the abuses of monopoly and unfair discrimination, it was thought, and with reason, that carriers should be kept independent of each other in order that their competition in service and rates might safeguard the public interests, but it was found to be necessary to supplement competition by regulation prescribing service standards and setting forth the rules governing the interrelations of rival carriers. Some time was required to make government regulation effective but the task has been accomplished, and there is now no valid reason for preventing railroads from supplementing or extending their services by operating bus or truck lines.

Many railroads are operating motor lines, either directly or through controlled subsidiaries. Mention may be made of the Boston and Maine Railroad which, as was described on page 414, is making large use of motor service for its local package freight traffic in and between Boston, Lawrence, and Lowell, Massachusetts. It also operates numerous passenger busses in its territory. Among the many other railroads that have developed extensive bus services is the Great Northern which operates motor busses over more miles of highway than it has miles of railroads in Minnesota. These and other railroad companies, instead of passively allowing their traffic to pass to independent and rival carriers by motor, are making use of bus and truck lines to supplement their own services and traffic. It is quite clear that if motor transportation can be so developed as to strengthen rather than

[1] As to this there may be some doubt in view of the position taken by the Supreme Court in Frost *v.* Railroad Commission of California, that is quoted in the discussion that follows.

to weaken the railroads the public will be doubly benefited, it will have gained a new facility without having suffered a loss due to the reduced efficiency of its former servitor.

5. The operation of bus lines by city and suburban electric railway companies, either directly or through a controlled organization, may also, in the public interest, be encouraged by municipal and state authorities. The reason for this in large cities, is so manifest that the street railway companies in many instances, have been encouraged to extend their services by installing bus lines. Indeed, comparatively few miles of city street railways have been constructed during recent years, bus lines having been established where street car tracks would formerly have been laid. For a time, it was the policy of the cities to favor the inauguration of bus lines to compete with the existing street railways, but it has usually been found that such independent bus lines impair the financial strength and reduce the efficiency of the street railway companies while rendering a less comprehensive and less progressive service than could be secured from bus lines owned or controlled by the street railway company and so developed and operated by it as to supplement the car lines and to provide the city as a whole with a unified and comprehensive system of transportation.

Likewise there may be conditions justifying the establishment of bus lines by interurban electric roads. The tendency in many states has been to permit independent and unregulated bus line operators to draw traffic away from suburban roads. The competing motor carrier, instead of supplementing existing services and creating new traffic, has sought to take from the interurban road the business it has already developed. The effect of this warfare has often been to cripple the electric road without building up a strong motor carrier. Had the services of the two kinds of carriers been coördinated and made supplementary to each other, both services might have been made progressively better, and the public might have had a more comprehensive and more efficient transportation system.

6. Whether circumstances may justify giving to a single company the exclusive right to perform motor common carrier services in a defined territory is a question concerning which

there will be difference of opinion. It is doubtless to the advantage of Philadelphia to have only one company operating passenger busses, and that the street railway company. If there were more companies, none of them would be capable of doing so much as the Philadelphia Rapid Transit Company can do. Similarly there may be suburban and interurban districts with traffic sufficient to enable one bus company to prosper, while two or more companies would have a precarious and feeble existence.

The same situation may prevail as regards motor trucking. There may be in a given district enough business for one concern, but not enough for two. Under such conditions the public is not benefited by carrier competition, its best interests are served by the granting of a monopoly to a company whose services and charges are intelligently regulated by a state commission having liberal administrative discretion. A motor common carrier, having such a monopoly may of course be inefficient and negligent of its duties and opportunities, but if the company is well managed it will endeavor to build up its business by making its service attractive, and it will be alert in seeking and developing new traffic. A company thus wisely managed will find the economic law of increasing returns operative—expenses will not rise proportionately to the increase in the volume of business done while net returns will rise more rapidly than the tonnage of traffic. If a common carrier trucking company is efficient and renders an adequate service in the district within which it is without a competitor, it may be allowed to remain the sole carrier but, if it is not well managed, the state should allow another and a more progressive company to enter the field; in which case the carrier that has not given satisfaction will soon retire or more probably be bought out by the new and stronger rival.

7. Whether or not connecting railroad and motor lines, or electric railways and motor lines that join, are under common ownership or control the public should have the benefit of through traveling and shipping arrangements. Coördinated services by connecting carriers should be favored by the state and if necessary insisted upon. In granting certificates of public convenience and necessity to railroad, electric railway or motor carriers, the state commission should promote the fullest possible

measure of coördination of all facilities of transport, in order that the public may enjoy that completeness of service that is obtainable only from an integrated and unified transportation system.

Federal Regulation of Motor Transportation

The Constitution of the United States gives the Federal Government power to regulate interstate commerce and the courts have long since held this authority to be plenary. The states are not only excluded from regulating interstate carriers; they must also so regulate commerce and carriers within their respective boundaries as not to limit the control of interstate commerce by the United States. Commerce includes the agencies and facilities by which it is carried on, and motor carriers engaged in transporting passengers or freight between states are subject to the jurisdiction of Congress. The interstate business of such carriers cannot be regulated by the states.

The interstate passenger and freight traffic of motor carriers is rapidly becoming large, and is important both *per se* and because of its close supplementary relation to the travel and tonnage on electric and steam railways. The reasons that make desirable and necessary the regulation of interstate railways apply to motor carriers whose routes cross state boundaries; and the principles of regulation that have been found to be sound where applied to steam and electric railways may logically be followed for motor carriers.

Whether interstate motor carriers, be they those performing contract or common carrier services, should be regulated by Congress, is a question of what is expedient and in the public interest. Public sentiment as to the wisdom of Federal regulation of motor carriers at the present time is divided. There are those who think that this new kind of transport should be permitted to develop for a while without government restriction and should be allowed unhampered to find and establish its place in the general transportation system. The regulation of interstate bus lines is not especially opposed, but there is much opposition by the motor truck companies to proposed Federal regulatory legislation. Most shippers prefer to be allowed

to bargain with unregulated motor carriers, while the steam and electric railway companies, which are now fully regulated, feel that their new competitor should be subject to the same rules and requirements as are other carriers.

The "motor industries"—those engaged in the manufacture and sale of busses and trucks—generally favor the comprehensive but conservative regulation of motor transportation by the states and the Federal Government; because they believe, and correctly, that it will in the long run be best for the motor interests as a whole, both manufacturers and carriers, to welcome government regulation and to seek state and Federal coöperation in the orderly and sound development of motor transportation. Those best informed realize that it is of special importance that motor transport should be coördinated with railroad, electric, and waterway transportation, and that this can best be brought about by having all agencies of transportation, subject to regulation that is intended to promote the balanced development of an integrated system of transportation.

Division of Powers of State and Federal Governments

As the states have extended the scope of regulation of motor carriers it has become necessary for the United States Supreme Court, which is the final arbiter, to define the limits of state authority, just as it has been called upon from time to time during the past fifty years to determine how far the states may go in regulating railroads. While the principles laid down by the courts regarding the powers of the states and Federal Government as regards the regulation of railroads apply equally to common carriers by motor, certain special questions not previously decided have arisen in the state regulation of motor carriers, due mainly to the fact that many operators of motors in intrastate and interstate traffic do not have the status of common carriers.

Some states have sought to compel all motor carriers operating over fixed routes to obtain certificates of public conveniences and necessity, the state to exercise its option to decide whether such certificate should be issued. It is manifest that such state laws, if applied to a carrier operating over an interstate route,

might place a burden upon interstate commerce or prevent a motor carrier from engaging therein. Such laws definitely raised the question of the location of the line dividing state and Federal authority—a question that the Supreme Court has answered in several decisions.

As early as 1915, the Court held that

> In the absence of national legislation covering the subject a state may rightfully prescribe uniform regulations necessary for public safety and order in respect to the operation upon its highways of all motor vehicles—those moving in interstate commerce as well as others. And to this end it may require the registration of such vehicles and the licensing of their drivers, charging therefor reasonable fees graduated according to the horse power of the engines—a practical measure of size, speed, and difficulty of control. This is but an exercise of the police power uniformly recognized as belonging to the states and essential to the preservation of the health, safety and comfort of their citizens; and it does not constitute a direct and material burden on interstate commerce. The reasonableness of the state's action is always subject to inquiry in so far as it affects interstate commerce, and in that regard it is likewise subordinate to the will of Congress.[2]

In 1923, the state of Michigan enacted a law providing that no person might transport persons or property for hire by motor over fixed highway routes unless he had previously obtained a permit from the Public Utilities Commission. The commission might refuse to grant a certificate if the applicant was thought to be unable to furnish a service that would be adequate, safe, and convenient to the public. The law also provided that "Any and all persons . . . engaged . . . in the transportation of persons or property for hire by motor vehicle, upon or over the public highways of this state . . . shall be common carriers, and, so far as applicable, all laws of this state . . . regulating . . . common carriers . . . shall apply . . . to such common carriers . . . by motor vehicles." Another provision of the law was that "All common carriers under this act shall carry insurance for the protection of the . . . property carried by them in such amount as shall be ordered by said commission . . . or shall furnish an indemnity bond."

The validity of this law as applied to an interstate motor car-

[2] Hendrick *v.* State of Maryland, 235 U. S. 610.

rier was tested by a plaintiff who had three contracts to transport automobile bodies from Detroit, Michigan, to Toledo, Ohio. He did not hold himself out as a common carrier for the general public, and he alleged that the law if enforced against him, would cause him to lose his contracts and would destroy a part of his invested capital. The United States Circuit Court granted an interlocutory injunction and the decree was affirmed by the Supreme Court which held that

> It is a burden upon interstate commerce to impose on plaintiff the onerous duties and strict liability of common carrier, and the obligation of furnishing such indemnity bond to cover the automobile bodies under his contracts as conditions precedent to his right to continue to carry them in interstate commerce.
>
> Moreover, it is beyond the power of the state by legislative fiat to convert property used exclusively in the business of a private carrier into a public utility, or to make the owner a public carrier, for that would be taking private property for public use without just compensation.[3]

The limitation of state jurisdiction and the scope of Federal authority over interstate motor carriers were clearly defined in an issue raised in the enforcement of a statute enacted in 1921 by the State of Washington which prohibited "common carriers for hire from using the highways by auto vehicles between fixed termini or over regular routes, without having first obtained from the Director of Public Works a certificate declaring that public convenience and necessity require such operation." A citizen of Washington by the name of Buck sought to operate a stage line over the Pacific Highway between Seattle, Washington, and Portland, Oregon, transporting passengers and express as a common carrier. This highway had been constructed by the states with the aid of the Federal Government. He obtained a license from Oregon, but was denied one by Washington. "The grounds of the refusal were that, under the laws of the state, the certificate may not be granted for any territory which is already being adequately served by the holder of a certificate."[4] The United States Circuit Court denied a petition for an injunction, but the Supreme Court reversed the decree of

[3] Duke *v.* Public Utilities Commission, 266 U. S. 570.
[4] Buck *v.* Kuykendall, 267 U. S. 307, decided March 2, 1925.

the lower court, holding that the primary purpose of the Washington statute is

> Not regulation with a view to safety or to conservation of the highways, but the prohibition of competition. It determines not the manner of use, but the persons by whom the highway may be used. It prohibits such use to some persons while permitting it to others for the same purpose and in the same manner. Moreover, it determines whether the prohibition shall be applied by resort, through state officials, to a test which is peculiarly within the provinces of Federal action—the existence of adequate facilities for conducting interstate commerce.

The Court referred to the fact that the State of Oregon had issued such a certificate as had been denied by Washington and held that

> The provision of the Washington statute is a regulation, not of the use of its own highways, but of interstate commerce. Its effect upon such commerce is not merely to burden but to obstruct it. Such action is forbidden by the Commerce Clause. It also defeats the purpose of Congress expressed in the legislation giving federal aid for the construction of interstate highways.

A case involving a Maryland law was decided on the same date as the Buck Case. The Maryland Statute was similar to that of Washington except that the Maryland Commission could exercise its discretion in deciding whether a motor common carrier should be permitted to operate over a highway route. The law was not mandatory. Moreover, the interstate highway in question had not been constructed partly by Federal funds. The plaintiff, George W. Bush and Sons Company, claimed that it was entitled to use the highways of Maryland as a common carrier exclusively in interstate commerce, regardless of the permission of the state. The state courts dismissed the plaintiff's bill for an injunction, but the United States Supreme Court reversed the decree of the state courts on two grounds:

> The Federal-aid legislation is of significance, not because of the aid given by the United States for the construction of particular highways, but because those acts make clear the purpose of Congress that state highways shall be open to interstate commerce. The second feature is that here the permit was refused by the Commission, not in obedience to a mandatory provision of the statute, but in the exer-

cise, in a proper manner, of the broad discretion vested in it. This difference also is not of legal significance in this connection. The state action in the Buck Case was held to be unconstitutional, not because the statute prescribed an arbitrary test for the granting of permits, or because the Director of Public Works had exercised the power conferred arbitrarily, but because the statute as construed and applied invaded a field reserved by the Commerce Clause for Federal regulation.[5]

In ruling upon a California statute the Supreme Court of the United States has denied to the states the power of imposing upon motor carriers engaged in contract or noncommon carrier services the same requirements as are exacted of common carriers. The California law of 1917, required a motor common carrier upon the highways to secure a permit from the city, town, or county in which it proposed to operate and then to obtain from the State Railroad Commission a certificate of public convenience and necessity. In 1919 the Act was so amended as to extend the powers of the Railroad Commission under the law of 1917 to "automotive carriers of persons or property operating under private contracts of carriage."

This statute applies only to intrastate carriers and commerce. The case of the plaintiff who sought relief from the enforcement of the Act did not involve any question of the power of the state over interstate commerce. The issue was whether the state had in effect, though not in form, violated the fourteenth amendment of the United States Constitution which provides that no person shall be deprived of property without due process of law. The State of California had not required private motor carriers for hire to become, or to acquire the legal status of common carriers, but had imposed upon such private carriers the same measure of regulation, including the fixing of their rates by the Railroad Commission, as was placed upon common carriers. Although the State of California could not constitutionally convert private into common carriers by legislative fiat, it had in effect accomplished the same result by the Act of 1919. The Supreme Court held that while "the state, having the power to deny a privilege altogether, may grant it upon such conditions as it sees fit to impose, . . . the power of the state

[5] George W. Bush and Sons Co. *v.* Maloy *et al.*, 267 U. S. 317.

in that respect is not unlimited; and one of the limitations is that it may not impose conditions which require the relinquishment of constitutional rights."[6]

The judgment of the Supreme Court of California sustaining the constitutionality of the statute was reversed by the United States Supreme Court; but it is significant as to the position that the Court may possibly take in the future that the Court was divided, there being three dissenting judges among whom was Justice Brandeis who wrote the opinions of the Court in the Buck Case and the Bush Case. Justice Brandeis concurred in the dissenting opinion of Justice Holmes who made the following practical and weighty observation:

> We know what serious problems the automobile has introduced. The difficulties of keeping the streets reasonably clear for travel and traffic are very great. If a state speaking through its legislature should think that, in order to make its highways most useful, the business traffic upon them must be controlled, I suppose no one would doubt that it constitutionally could, as I presume most states or cities do, exercise some such control. The only question is how far it can go. I see nothing to prevent it going to the point of requiring a license and bringing the whole business under the control of a railroad commission so far as to determine the number, character and conduct of transportation companies and so to prevent the streets from being made useless and dangerous by the number and lawlessness of those who seek to use them. . . . As to what is before us, I see no great difference between requiring a certificate and requiring a bond.

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PART VI

TRANSPORTATION BY WATER

CHAPTER XLI

THE OCEAN CARRIER

TRANSPORTATION by water became an important link in international and domestic commerce long before the railroad locomotive was invented, and to this day it continues to be one of the major forms of transportation. Railroad transportation indeed cannot be studied with any degree of completeness without taking into account the coördination of rail-and-water transportation, for a vast quantity of freight and many passengers are carried over joint rail-and-water routes. Nowadays many facilities especially designed to foster interchange movements are provided at the ports where rail-water freight traffic is interchanged. Delivery points, storage facilities, switching connections, belt-line railroads, grain elevators, bulkhead wharves and piers with rail connections, lighters, trucks, etc., are to an increasing extent being provided for the accommodation of through rail-water shipments. The rail carriers themselves own and operate piers at many ports, and subject to restrictions imposed by law, some of them own and operate fleets of barges and steamships.

The physical facilities for interchange between carriers by water and rail, moreover, have been accompanied by direct and indirect business arrangements between the connecting carriers. Through export bills of lading and through domestic rail-water bills of lading are issued in connection with many shipments; at many points rail-water freight rates are quoted in domestic commerce and proportional railroad freight rates for use in connection with coastwise steamship lines have been established by various railroads; special export and import freight rates have been put in force to and from a large number of ocean ports; special rules governing railroad demurrage and storage, loading and unloading services or allowances, and other regula-

tions especially applicable to freight that is interchanged at ocean ports are in many instances applied by the rail carriers. It will be recalled that at the basic rate ports of the North Atlantic seaboard—New York, Philadelphia, and Baltimore—where few special export and import rates are in effect, the domestic rail rates which apply in both domestic and foreign commerce have for many years been influenced in a large measure by the great volume of through export and import traffic that is carried by the eastern trunk lines.

The public regulation of transportation services, shipping rules, practices, charges, and facilities cannot be discussed separately for carriers by rail and water. Subsequent pages [1] will necessarily refer to the efforts that have been made through legislative enactment and commission supervision to coördinate the two groups of carriers and to regulate them at least partially with reference to the large volume of traffic that is interchanged between them.

Many terminal agencies besides those that are directly a part of the carriers' organization have also been established at the ports for the handling of through traffic. Ocean freight forwarders, port traffic departments of exporting manufacturers, commission houses and other exporting and importing agencies, trucking and transfer firms, lighterage companies, switching and belt-line railroads, warehousing companies, public and private wharfage agencies, customhouse brokers, etc., are variously concerned with the through as well as with the port-to-port traffic of ocean carriers.

Transportation by water is an important business. The combined port-to-port and through business of the world's overseas ocean carriers is an essential part of the business of international commerce. The future development of the foreign trade of the United States depends to a very appreciable extent upon reasonable and equitable ocean freight rates and efficient ocean transportation services.

Coastwise and inland transportation by water, and traffic on the Great Lakes, have also been coördinated with railroad transportation at many seaboard and inland ports, and many carriers

[1] See Chapter LIV.

by water regularly interchange traffic with the railroads in domestic commerce. For some of their business, however, they act as competitors of the railroads, and water competition has to a marked degree affected the railroad rate structures that have developed in a number of important rate territories.[2] Carriers by water have also at times made inroads into the volume of railroad traffic.

General Types of Merchant Marine Services and Ocean Carriers

Ocean transportation services are of three principal types: (*a*) the chartered or tramp service, (*b*) the regular line service, and (*c*) the services of privately operated or industrial carriers; and although there is at times a transfer of vessels from one class of service to another, each type of service has for the most part developed distinct types of carriers.

The chartered service is distinctive in that it is not limited to fixed routes. Tramp vessels, as they are called, may be chartered to transport cargoes of any kind not requiring vessels of special design over any route and to any destination not prohibited by physical conditions or legal restrictions. They are usually chartered to carry shipload lots of commodities, such as coal, ore, nitrates, grain, lumber, sugar, building materials, steel, chalk, etc., but they may also be placed "on the berth" for smaller shipments of general cargo. The basic document governing the transportation service is the charter, many forms of which have been adopted both for vessels that are chartered for a defined voyage and for those chartered for a stated period of time.[3] Large tramp operators usually give much attention to careful planning of voyages for fleets of tramps, but the primary agencies through which most chartering arrangements are made are the many ship brokers located at the principal ocean ports everywhere throughout the commercial world. Tramp operators do not need to provide themselves with permanent port facilities, nor need they maintain expensive traffic offices and freight soliciting agencies; and they usually need not conduct extensive advertising campaigns.

[2] See Part III.

[3] See Chapter XLVIII.

The vessels engaged in the tramp service are cargo freighters built for economy of operation rather than for speed, and for carrying maximum quantities of ordinary traffic of the kinds that move in shipload lots rather than high-class general merchandise or commodities requiring vessels of specialized design. Most of them are slow vessels of moderate tonnage. Ordinary tramp steamers having a tonnage varying from 5,000 to 10,000 tons gross, a speed varying from 8 to 11 knots and a length rarely exceeding 400 feet serve the purpose of the largest number of shippers seeking cheap transportation for large consignments, and are not deterred by excessive size or draft from picking up and delivering cargo at a wide range of ocean ports. There are, of course, tramp vessels that do not come within the usual range of speed and tonnage; the tendency is to increase their speed somewhat.

The regular line service is performed by vessels that are operated over definite routes between fixed ports and on announced schedules. Some lines carry freight exclusively, while others carry a varying proportion of freight and passengers. They carry most of the world's oversea general cargo, passenger, mail, and express traffic. But they also compete with the tramps for bulky commodities or heavy traffic of regular volume and they sometimes supplement their regular cargoes by placing a vessel "on the berth" for part cargoes of commodities, such as grain or case oil, which they may be willing to carry at low rates to avoid the necessity of carrying ballast. The relative position of line tonnage in ocean shipping has made rapid strides since the World War.

The vessels used in the line service range everywhere from ordinary freighters, which do not differ from the better types of tramps, to large cargo vessels especially built for the line-freight service, and to the great passenger-carrying vessels that frequent the North Atlantic route. They differ from the tramps in that they usually are larger, faster, and more expensively equipped. While the tramp service is rendered both by sailing vessels and by self-propelled vessels, practically all the line vessels on the high seas are at present equipped with engines.

The number of vessels in a line and the frequency of sailings

are determined by the volume of business. Whether the company shall have the same number of ships in commission at all times will depend upon the seasonal or periodical fluctuations in traffic. The company operating a freight line sometimes owns vessels enough to handle only the business of the periods of lighter traffic, and charters such additional ships as may be needed from time to ime.

The vessels operated in the regular line service may be grouped as follows: (1) Mail and passenger steamships or "express liners," which have but a relatively small cargo space, and carry mainly passengers, mail, express goods, and high-class freight; and (2) passenger and cargo steamships or "combination liners," which have a relatively larger cargo space and carry, in addition to the passengers, mail, express goods and high-class freight, bulky freight, such as grain, cotton, iron and steel goods and foodstuffs. The distinction between these two types of vessels is not always clear, but the two together comprise the world's deep-sea passenger-carrying vessels, and, as compared with other vessels on a given route, are known by their speed, size, beauty, luxurious equipment and by the regularity with which they operate on fixed routes and schedules. (3) Fast cargo steamships or "cargo liners" are vessels which carry cargo exclusively, but nevertheless operate over definite routes on fixed schedules. They are adapted to the carriage of the many different kinds of freight which move over their routes in less-than-shipload lots. Such vessels are frequently constructed for the particular trade in which they engage, and include many of the world's best-built, fastest, and most efficiently operated freighters. The tendency to increase the speed of cargo liners has become quite general since the World War.

Both tramp and regular line ocean vessels differ from privately operated or industrial vessels in that they are operated as common carriers. Industrial carriers are primarily engaged in the carriage of freight for the industrial or mercantile concerns which operate them. The difference between them and tramps or liners cannot in some cases be easily disinguished, because they frequently transport cargoes for others as well as for the companies which operate them. Even such vessels,

however, are primarily engaged in a private service, and act as common carriers only to fill surplus space or to obtain return cargoes. Many vessels engaged in this service are special types of ships constructed to transport some particular commodity, such as coal, ore, lumber, fruit, asphalt, or petroleum.

Power Development and the Ocean Carriers

Improvements in power development are equally as significant in ocean shipping as in transportation by rail.[4] Although increased efficiency in service has been due in part to more effective business management, better terminal facilities, increased ocean tonnage, improved vessel construction and operating methods, and closer coördination with land carriers, no factor has exerted such widespread influence as the improvements that have been made in marine motive power. The greatly enhanced size of ocean carriers and the speed and regularity they maintain are due to improved motive power. Moreover the present-day emphasis upon operating economies is stimulating marine engineers to develop more efficient marine engines.

Carriers by water may be classified on the basis of motive power as follows: (1) sailing vessels and auxiliary sailers, (2) steamers, (3) vessels equipped with internal combustion engines, (4) vessels equipped with electric power units and (5) unrigged craft.

Until the fifth decade of the nineteenth century the sailing vessel was the only ship employed in ocean commerce, and important improvements in construction were made in American shipyards. American "clipper" ships were the highest type of square-rigged sailing vessel during the forties and fifties, and after 1858 and particularly after the Civil War, large schooners were constructed in the United States. Square-rigged ships, fore-and-aft "schooners" and many other types [5] of sailing craft continue to be used in international and domestic commerce, but the sailing vessel has in recent years become of small importance. In the merchant marine of the world as a whole,

[4] See Chapter II.

[5] See E. R. Johnson and G. G. Huebner, *Principles of Ocean Transportation*, Chap. i.

the tonnage of steamers first exceeded that of sailing vessels in 1893, yet in 1927 less than 4 per cent of the world's gross-register tonnage consisted of sailing vessels.[6] Less than 6 per cent of the documented gross tonnage operating under the flag of the United States now consists of sailing vessels.[7]

The sailing vessel has given way to the steamer and other vessels equipped with engines, because engined vessels are more efficient and more economical. The motive power of the sailing vessel costs nothing, the net cargo capacity is large, and the crew required is smaller than is needed for a steamer of equal tonnage; but these advantages are more than offset by the slow average speed of the sailing ship, and the uncertainty as to the time of delivering cargo assigned to a ship whose movements depend upon winds and currents instead of upon its own propelling power. At the present time a vessel propelled by engines is considered to have on the average from three to four times the efficiency (as a freight carrier) of a sailing vessel of equal tonnage. This enables the steamer to take traffic away from the sailing vessel, despite the disadvantages which the steamer has as regards the cost of fuel, the large amount of space taken up in many steamers for coal bunkers and machinery and the somewhat larger crew required.

The recently invented "rotor vessel" has not passed beyond its first experimental stage. Whether this invention will result in a revival of sailing craft is doubtful. Experiments to date seem to indicate that the increased regularity in the movement of a rotor ship depends largely upon the use of its auxiliary engines.

An attempt to revive the sailing vessel, in a modified form has indeed been made by equipping such vessels with auxiliary engines. The gross tonnage of auxiliary sailing ships advanced from 13,000 in 1915 to 486,000 in 1924, "a great impetus having been given to this type of craft by the development of the oil-burning Diesel motor."[8] The use of auxiliary engines when

[6] The Bureau Veritas reports a percentage 96.6 and Lloyds Register reports 97.1 steam and motor tonnage.

[7] Bureau of Navigation, Merchant Marine Statistics, 1927, p. 14.

[8] H. C. Calvin and E. G. Stuart, *The Merchant Shipping Industry* (1925), p. 8.

the wind fails adds to the regularity and dependability of the auxiliary sailer.

Although the practicability of using steam power to propel vessels was demonstrated by Robert Fulton in 1807, and the use of steamboats on rivers and bays became general during the succeeding decade, thirty years passed after the *Clermont's* first trip before it was demonstrated that the steamer could be used with commercial success in the transoceanic service. A sailing packet, the *Savannah*, equipped with an auxiliary steam engine, crossed the Atlantic in 1819, but the first vessel to cross the ocean entirely under steam power was the *Royal William*, which completed a voyage from Quebec to London in 1833. The first seagoing steamer built expressly for the transatlantic service was launched at Bristol, England, in 1837.

The earliest seagoing steamers were equipped with reciprocating engines of the side-lever type and with paddle wheels. Many improved types of marine steam engines have been used since then, and the screw propeller has displaced the paddle wheel in deep-sea navigation.[9] The last large ocean vessel to be fitted with side-lever engines and paddle wheels was the *Scotia* which was constructed for the Cunard Line in 1862. The reciprocating steam engine continues to be an important general type of marine engine. After 1870 the inverted direct-acting engine came to be exclusively used because it was the best arrangement for the compound engine which allows steam to enter one cylinder at high pressure, and after moving the piston in this cylinder, to escape into one or more larger cylinders in succession. Triple expansion engines made their appearance in 1881 and quadruple expansion engines in 1894. Gradual improvement was also made in marine boiler construction. Reciprocating marine engines of the direct-action, triple-expansion type are still used to propel cargo steamers, particularly on the shorter voyages, while engines of the quadruple expansion type are used to propel large cargo steamers and large passenger vessels, particularly on long voyages.

A radically different power principle is applied in the turbine

[9] See E. R. Johnson and G. G. Huebner, *Principles of Ocean Transportation.*

engine with which many ocean vessels are now partly or wholly equipped. Two general types of marine steam turbines, the "impulse" and the "impulse-and-reaction" types, have been developed since they were invented respectively by DeLaval in 1883 and Parsons in 1884. The general principle is the same in both of the general types of turbine engines, power being generated by the impact of steam upon movable blades. The largest group of merchant steamers equipped with turbines consists of large, fast vessels, particularly passenger steamers. The turbine marine engine facilitates the concentration of power in single units. Great power and speed can also be obtained with reciprocating engines, but it is recognized that the change from triple-expansion to quadruple-expansion engines carried with it a substantial increase in weight and fuel consumption.

Turbine engines weigh comparatively less, they require less fuel and they occupy less space, thus exerting a favorable effect upon the steamer's displacement and dead-weight tonnage, its capacity for cargo and its operating expenses. They also reduce vibration due to machinery; the simplicity of their construction and operation at times reduces delays and repair costs; and the absence of sliding parts reduces friction.

During later years turbines have also been installed in a number of cargo vessels. The efficiency of turbines on steamers operated at high speeds was recognized long before plans were devised for the use of turbines on slow-moving cargo steamers. It was necessary to reduce velocity and this was done in various ways. Various cargo vessels have also been equipped with combination turbine and reciprocating steam engines. Use of a reciprocating engine for the high-pressure steam and a turbine for the low-pressure steam makes the turbine available for cargo steamers of less than 15 knots. There have indeed been instances of large and fast passenger steamers that were equipped with two sets of four-cylinder triple expansion, reciprocating engines operating the wing shafts and a low-pressure Parsons turbine driving the center shaft.

One of the most noteworthy developments in the operation of steamers during the last decade, has been the rapidly increas ing use of oil instead of coal as bunker fuel. In the maritime

world as a whole the oil-burning steam tonnage has advanced from 1,527,728 on June 30, 1914, to 17,980,414 on June 30, 1927.[10] The change from coal to oil has been particularly rapid in the United States, where on June 30, 1927, 1,803 steamers having a tonnage of 9,007,907 tons[11] gross were equipped to burn oil. Bunker coal still is the standard fuel for a large proportion of foreign steamers, but over 60 per cent of the steam tonnage registered and enrolled under the American flag is using fuel oil. Some progress has recently been made in the use of pulverized coal.

Temporary reasons applicable during the European War, when so many American steamers were being constructed, are partly responsible for the rapid adoption of fuel oil in the American shipping industry, but more permanent advantages can also be claimed for oil as fuel for the development of steam. As fuel oil occupies less space than an equivalent amount of coal and much of it can be stored in double-bottom tanks, substantial spaces for cargo may be released.[12] Conversely, the adoption of fuel oil makes it possible to carry a large quantity of fuel on a voyage and in that way either to increase the vessel's steaming radius or reduce the number of stops. It, moreover, reduces the working force required in the engineers' department so greatly as very materially to affect operating costs, particularly on American vessels where the wages paid are comparatively high. It can be taken on board rapidly and at small cost. Its greater cleanliness is a factor of moment in the operation of passenger steamers, and facilitates the cleaning of vessels and the loading of stores while fuel is being taken on board. The use of fuel oil also reduces the cost and delay incident to starting and hauling the fires of coal burners; it frequently enhances economy and efficiency in that it may be more easily controlled and regulated to meet the exact needs of the vessel, and in some instances it has been found that fuel

[10] Bureau of Navigation, Merchant Marine Statistics, 1927, p. 69. Vessels of 500 gross tons and over, and excluding vessels propelled by internal combustion oil engines.

[11] Including oil burners on Great Lakes.

[12] Under current vessel measurement rules net-register tonnage is not increased proportionately by this increase in cargo spaces. See Chapter XLII.

oil has directly increased the efficiency and speed of particular steamers the performance of which had formerly been unsatisfactory.

Direct economy as measured by the amount of the fuel bill incurred on a voyage is affected by the relative prices of bunker coal and fuel oil, and this is one of the uncertainties of fuel oil for bunker purposes. Should the increasing demand for oil cause a greatly disproportionate rise in fuel oil prices, it would behoove operators of oil burners to analyze their fuel bills in the light of the various advantages that have been referred to.

A third type of ocean vessel, classified with reference to power, includes those equipped with internal combustion oil engines, Diesel engines, named after their inventor, Rudolf Diesel, and first put into practical use in Germany in 1897. Thousands of stationary Diesel engines have been constructed and sold throughout the world since then, and considerable progress has been made in the introduction of Diesel marine engines. Since 1902-03, when the first Diesel marine engine was built, and particularly since 1905, when the first reversible engine of this type was constructed, many improvements have been made and numerous variations have been introduced by the several marine engine manufacturers who have undertaken their construction. The number of merchant vessels of 500 tons gross and over, equipped with internal combustion oil engines has increased from 60 on June 30, 1914, to 881 on June 30, 1927, and their gross tonnage advanced from 194,019 to 3,674,426 tons.[13] One hundred and thirty merchant vessels of 500 tons gross register or over, having a combined tonnage of 339,820 tons gross are documented in the United States.[14] Diesel marine engines have thus far been adopted on a larger scale in Norway, Sweden, Germany, and Denmark than in the United States. Large fleets of motor vessels are operated by several lines in these countries. Great Britain has the largest aggregate motor marine tonnage (1,172,968 tons gross).

Diesel-engined vessels are not to be confused with oil-burning steamers, which merely substitute oil for coal as a means of

[13] Bureau of Navigation, Merchant Marine Statistics, 1927, p. 69.
[14] *Ibid.*

generating steam in boilers. Diesel oil engines dispense with boilers, the oil being injected directly into the cylinders. Neither are they to be confused with gas motor vessels, the engines of which depend upon the explosion of gas made out of light oils or coal. Diesel oil engines burn the oil in the cylinders. Special Diesel oil and also crude petroleum, tar, or creosote oils, the residual mineral oils which remain at the refineries after the lighter oils have been distilled, and a variety of other oils are injected under high pressure into the cylinders in the form of a fine spray where it is ignited, not by an electric spark or other local ignition, but by the high temperature resulting from the compression of air in the cylinders.

Diesel oil engines require less fuel than oil burners, and that is one of the reasons for their more general adoption in countries which do not possess large supplies of petroleum. The cost and the space required for oil being at a minimum, the net space available for cargo is greater than when oil is used as fuel to generate steam power. The sailing radius of vessels is increased and the number of stops on long voyages to replenish the fuel supply is reduced by the adoption of Diesel engines. Diesel engines, moreover, may be started at any time and within a very short time, no extensive preparations being required to get up pressure and power, and the necessity for an adequate and satisfactory water supply is eliminated. The weight of the ship's machinery and the space occupied by it is less in some instances, but this depends upon the types of engines installed and the use to which the motor vessel is to be put. The weight of a Diesel marine engine in many cases exceeds that of a comparable steam engine, and the spaces occupied by Diesel and steam engines owing to the national measurement rules according to which the net tonnage of vessels is determined, are frequently substantially alike. Fuel economy at sea and in port, and maximum space for cargo are the outstanding advantages of the Diesel-engined vessel.

These advantages are offset in part by several disadvantages. The initial capital cost of a Diesel engine is greater than that of a marine steam engine of equivalent power. Ship owners have also in some instances been deterred from adopting Diesel

engines because of their absolute dependence upon oil. Should a shortage of fuel oil occur at any time or the price of fuel oil become exorbitant, the oil-burning steamer may revert to the use of bunker coal, but the motor vessel does not possess the advantage of such an alternative. The probability of such an occurrence is reduced somewhat because "Diesel engines are capable of burning almost all known liquid fuels, provided they are sufficiently free from sand, earthy matter or water,"[15] but the best results have thus far been attained from a grade of oil that is somewhat lighter and purer than heavy boiler oil and which usually sells at a somewhat higher price.

The use of Diesel engines in merchant shipping has been largely confined to cargo and combination vessels in the operation of which economy rather than maximum speed is the principal aim. Diesel engines have not been installed in the world's largest passenger liners the high speed of which is a controlling consideration, but a number of large passenger vessels have recently been fitted with Diesel engines.

Internal combustion oil engines depending upon hot tubes, electric sparks, or hot bulbs for ignition are usually referred to as semi-Diesel engines. They are sometimes known as vaporizer oil engines because they vaporize the oil in the cylinders, but they should not be confused with gas engines because they depend primarily upon combustion rather than explosion as a method of developing power.

Marine gas engines are of two general types, those driven by gasoline or other light refined oils, and those depending upon producer gas. The fuel needed for the gasoline engine is too costly, and in addition tends to reduce the safety factor when carried in large quantities for use as fuel on board ship. The available supply, moreover, is too uncertain to warrant the extensive adoption of gas engines in the shipping industry.

Producer gas engines depend upon gas obtained by the partial combustion of coal or other fuel in a gas producer plant. Greater progress has been made in the use of Diesel oil engines because the economy in fuel claimed for the producer gas engine is reduced when the better grades of coal are required

[15] Lord Inverforth in *The Nautical Gazette*, Nov. 21, 1925, p. 575.

to obtain the best results, and also because little if any saving in the space required by the vessel's power plant is gained. The saving in fuel space, moreover, is less than on vessels equipped with Diesel engines, a larger crew is needed than on an oil-motor ship, and greater difficulty has been experienced in reversing the producer gas engine. Difficulties encountered in reversing the Diesel oil engine during the earlier years of its development have been overcome to the satisfaction of the shipping industry.

The most recent development in marine engine construction is the application of electricity to ship propulsion, the electric current being developed by using either steam or internal combustion oil engines. The United States superdreadnought *Colorado* is an example of a vessel on which power is generated by nonreversible turbogenerators. The yacht *Aloha* is typical of a vessel recently equipped with nonreversible Diesel engines which are used to drive electric generators and exciters. An increasing number of yachts, tugs, fire boats, and oil tankers have been fitted with Diesel-electric plants during the past two years, and a beginning has been made in so equipping larger general merchant vessels.

There has been a tendency in recent years to supplement and partly to displace self-propelled vessels by using unrigged craft of various kinds for transporting bulky commodities. The number of barges documented under the flag of the United States has increased from 3,022 in 1905 to 4,956 in 1927, and their gross tonnage from 681,512 to 1,354,783 tons. In the latter year as many as 1,225 of 167,419 tons gross were registered for the foreign trade, and many of the enrolled barges engaged in the coastwise trade of the United States are of the seagoing type. The importance of barge transportation as a whole is understated in these figures, for many small barges have not been officially documented.

Much the larger share of barges are small craft engaged in short-distance coastwise and inland traffic, and but few venture into the oversea trade. Distinct types of seagoing barges have, however, been developed, the small "inland barges" on the Atlantic seaboard which mainly use the inland route, being

distinguished from the large seagoing barges which are towed on the outside or open-sea route. Many of the latter are known as "schooner barges" because they are fitted with short masts and sails, so that they may not be entirely helpless in case they break away from their towing steamer or tug. Schooner barges are towed singly or in fleets and some of them have cargo capacities of over 3,000 tons.

Barges are especially adapted to the transportation of bulky freight, such as coal, ore and pig iron, lumber, shingles and railroad ties, sand, stone, gravel, brick, lime, cement, tile and terra cotta, fertilizers and phosphate rock, wood pulp, structural iron and steel, grain and other farm produce not requiring rapid delivery. Where sea conditions will permit of their use with a reasonable degree of safety, the large seagoing barges or schooner barges provide the least expensive means of transporting such commodities. The initial cost of construction is smaller than for either sailing vessel or steamer; barges being towed in fleets, the costly machinery of the tug serves to move several craft at once and may be more continuously employed than either the sailing vessel or steamship may be; they do not require so large a crew, each barge in a fleet of large seagoing schooner barges being manned by a crew of but 3 or 4 men; and, as compared with sailing vessels, barges have the advantage of greater regularity of service.

The principal handicap of the seagoing barge is its liability to be wrecked by heavy seas. The need of avoiding rough weather interferes to some extent with their regularity of movement, and affects the marine insurance premiums which both barge and cargo are obliged to pay. Weather conditions will doubtless at all times limit the use of towed barges in the coastwise and oversea trade. The provision of protected toll-free inland routes sufficiently large to accommodate schooner barges would greatly increase their use in the coastwise trade.

Structural Features of the Ocean Carrier

While marine power has been developing, attention has been devoted to improvements in hull construction. The first steamers had wooden hulls, and, as was true of the substitution of

the screw propeller for the paddle wheel, the change from wooden to iron vessels was brought about slowly. The pioneer seagoing iron vessels were constructed at Liverpool in 1837-38, but rapid headway in the transition from wood to iron did not occur in Great Britain until after 1850, and in the United States not until after 1870. The next general change in structural material was from iron to steel. The change began in Great Britain shortly before 1880 and has become so general that at present steel has almost displaced iron. Steel and iron vessels combined comprise over 98 per cent of the world's seagoing tonnage. The remainder consists of wooden, composite, and concrete vessels. Concrete had at various times been used successfully in the construction of barges, scows, etc., but its use in ocean shipping was not given serious attention until the World War created a demand for rapid construction. Only a few concrete vessels, however, were built and the use of concrete for hull construction except for barges, has not proven successful, and for barge hulls wood and steel are preferred to concrete. A composite hull contains a metal framework and a wooden shell.

Attention has also been given to improvements in the construction of the framing of steel hulls. Framing may be transverse, longitudinal, or a combination of both, and although all frames have longitudinal as well as transverse members, some construction plans distinctly emphasize the one or the other. The three most generally used construction plans placing the emphasis upon the transverse members are: (1) the use of hold beams which prevent the frames from spreading because of the weight of cargo, or closing because of pressure of water; (2) the use of web frames in lieu of hold beams, the floor plates of the vessel being continued up its sides; and (3) the use of "deep framing composed of two angles fitted together so as to form an extra heavy frame."[16] The so-called Isherwood system places the emphasis upon the vessel's longitudinal frames. Its principal frames extend fore-and-aft, and its transverse frames and beams "are at widely spaced intervals and form complete transverse belts around the vessel."[17]

[16] See Riegel, *Merchant Vessels*, p. 39. [17] *Ibid.*

Ocean vessels may also be grouped according to the number and arrangement of their decks and holds, and their above decks or superstructures, and these in turn signify still further the efforts of marine engineers and architects to design vessels closely adapted to the particular services for which they are intended.

Among the simplest of seagoing steamships are the relatively small two-decked cargo vessels which have for the full length of the vessel a lower and main deck, above which the three most usual superstructures—the forecastle, bridge, and poop—are placed. In many instances, however, the main deck from abaft the bridge to the stern is raised 4 or 5 feet, so as to increase the capacity of the after-cargo hold and prevent the loaded vessel from trimming to the bow. Such a vessel is known as a "raised quarter-decker." The bridge, moreover, is often extended and brought nearer to the forecastle, thus creating a so-called "well" between the bridge and forecastle, which in heavy weather may be awash. Vessels of this type are commonly known as "well-decked steamers." When the main deck forward of the bridge is raised so as to increase the freeboard and reduce the shipping of water, the vessel is called a "raised foredecker."

Larger steamers are fitted with three full-length decks, above which there may be any number of superstructures and part-length or partial decks. When the frames of a three-decked vessel are carried full-sized to the upper deck, which is the strength deck, it is known as a "three-decker." When the frames are made somewhat lighter between its middle and upper deck and the upper deck is of lighter construction, the vessel is a "spar-deck vessel"; and when the construction above the middle deck is still lighter, and the middle deck is the strength deck, the vessel is known as an "awning-deck vessel." Should the upper deck of a three-decked vessel be fitted with a small so-called "tonnage opening," the opening being placed there to meet the requirements of the vessel measurement rules of the United States, Great Britain, and other countries recognizing such openings, the steamer would be known as a three-decked "shelter-deck vessel." The tonnage opening is provided

for the purpose of obtaining a lower net-register tonnage. The space under the deck with tonnage openings is only technically open. The openings are really closed at sea and dry cargo is carried in the space below the shelter deck.

Large cargo liners and many express and combination liners have 4 full-length decks and, from the standpoint of deck arrangements, become four-deckers. The uppermost full-length deck, as in the case of three-deckers, may be of the shelter-deck type. In fact, the fourth deck of large vessels is frequently called the shelter deck even when not fitted with a tonnage opening; but in the absence of such an opening the term is a misnomer. Four-decked vessels, especially when engaged in the passenger service, may be fitted with various part-length decks, such as the bridge, promenade and boat decks. Large express and combination liners may have more than four full-length decks, and in addition a "sun" or boat deck or other decks not extending the entire length of the vessel.

Numerous types of ocean-going cargo vessels have been designed for the transportation of special kinds of cargo or to accomplish some special purpose. A "turret" vessel, for example, is fitted with a narrow "turret deck" and a rounded "harbor deck," the main purpose of the unusual deck construction being to evade the measurement rules of Great Britain. Some of them are "self-trimming" vessels with unobstructed holds extending all the way from the collision bulkhead to the boiler-room bulkhead. Since the British measurement rules have been so adjusted as to counteract the tonnage-evading purpose of turret vessels, the construction of such vessels has been discontinued.

"Trunk steamers" are also designed to transport bulk cargoes, their holds being clear except for widely spaced pillars. They derive their name from the trunk erection, which is about 7 feet high and half the width of the upper deck on which it is located. Vessels need not be fitted with trunks or turrets in order to be self-trimming. The principles of a clear hold without a lower deck, lower-deck beams, pillars, or other hold obstructions, and with arrangements to facilitate the trimming of bulk freight may be applied to cargo vessels which have their

walls carried to the upper deck in an unbroken line. There is, for example, the "cantilever vessel" in which the frames several feet before reaching the deck, bend inward and are attached to top girders which extend throughout the length of the vessel. The deck is supported by the leverage obtained from the angle to the frame, and the hold is free from all obstructions. There are also large iron ore vessels with clear holds and with raised inclines at the sides to facilitate mechanical unloading of the ore.

"Whaleback" steamers, which were built chiefly for the carriage of grain and coal, aimed to provide absolutely clear decks without deck erections and a rounded form which broke the force of the sea. They are now relatively few in number, however, and no new ones are being built.

For the transportation of petroleum and sometimes of other oils in bulk, special "tank steamers" have been constructed. The portions of the vessel used for the stowage of the oil are subdivided into small tanks by a strong longitudinal bulkhead extending the entire length of the ship above the center line of the vessel and rising to the uppermost deck, and by transverse bulkheads. When these tanks are filled with oil the fore-and-aft and side-to-side movement of the oil caused by the pitching and rolling of the vessel at sea is reduced to a minimum. To provide for the expansion of oil due to increase in temperature and to prevent explosion due to the forming of gases, each tank is also fitted with an expansion trunk. Some tank vessels are very large, having numerous deep oil tanks, additional "summer tanks" between the main and after decks for the stowage of oil during the warmer seasons, and a cargo hold as well as additional spaces below the "shelter deck" for the transportation of miscellaneous freight cargoes other than oil. A more recent innovation in the construction of oil tankers is to fit an ordinary hull with cylindrical tanks which may be removed when it is desired to convert the tanker into an ordinary cargo carrier.

A special type of bulk-cargo vessel, known as the "steam schooner," has also been developed in the lumber trade of the Pacific coast of the United States. Although these vessels were

originally the outgrowth of lumber schooners, the modern steam schooner depends wholly upon its engines. Their general structure, however, resembles that of sailing schooners. They have a greater proportionate beam than the ordinary steamer, great sheer forward, and a long unobstructed deck space between the forecastle and the bridge, which is located far aft. Large quantities of lumber are frequently carried on this open deck space as "deck loads."

Refrigerator vessels have been designed for use in the international trade in frozen and chilled meats and fresh fruits. Many passenger vessels are, of course, equipped with insulated rooms and the refrigeration facilities needed to preserve meats and other perishables, but vessels assigned to the meat and fruit trade, are more extensively fitted with insulated holds and refrigerating machinery. Refrigeration is as essential in sea as in land transportation.

Technical progress in marine power development and vessel construction has made possible the close adaptation of ocean carriers to the varying requirements of the shipping industry. It has made possible the specialized vessels needed in particular trades, the economical, medium-sized tramps required in the chartered service, and the mammoth passenger liners required in the international passenger business. The first steamships of the Cunard Line had an average tonnage of 1,139 tons gross and an average speed of 8 to 10 knots per hour. In 1908 this line began operating the *Mauretania* which registers 30,696 gross and maintains a speed of about 25 knots an hour. Since then it has added to its fleet two even larger vessels, the *Aquitania* having a gross-register tonnage of 45,647 tons, and the *Berengaria* with a gross-register tonnage of 52,226 tons. The White Star Line similarly has its *Olympic* with a tonnage of 46,439 tons gross and the *Majestic* with a gross-register tonnage of 56,551 tons. The United States Shipping Board rivals their vessels with the reconditioned *Leviathan* which has a gross-register tonnage of 59,957 tons. The lengths of the *Majestic* and *Leviathan* are 915 feet 5 inches and 907 feet 6 inches respectively, their breadths 100 feet 1 inch and 100 feet 3 inches respectively, and their depths 58 feet 2 inches.

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CHAPTER XLII

THE MEASUREMENT OF VESSELS AND TRAFFIC.

In describing the various types of vessels and discussing ocean transportation frequent use must be made of the words "ton" and "tonnage," and in order to avoid confusion and error, it is necessary to keep clearly in mind the several meanings in which these terms are employed. Tonnage may refer either to the size of the vessel or to the amount of the ship's cargo; accordingly, there are two distinct kinds of tons: the vessel ton and the cargo ton. Each of these two kinds of tons is used with several different meanings.

Vessel tonnage is of four kinds: displacement, dead weight, gross, and net. Each has a definite meaning and each has its particular uses.

Displacement Tonnage

The displacement tonnage of a vessel is its weight, and is equal to the weight of water displaced by the ship when afloat. Unless the term is especially qualified the displacement of a merchant vessel is its weight when its crew and supplies are on board, but before any fuel, cargo, or passengers have been taken on. This is the vessel's displacement "light," and is to be distinguished from its displacement "loaded," which is its weight when fully loaded to its maximum draft, *i. e.*, to its deep-load line. A merchant vessel's "actual" displacement during a particular voyage is its weight when loaded to any given draft and varies with the amount of fuel and cargo and the number of passengers on board.

In rating war vessels the term "normal displacement" is commonly used. Its meaning varies in the different countries, for although their rules commonly include the vessel's full complement of officers, men and their belongings, and all general equipment, armament and machinery, the rules differ as to

the allowance of stores, fuel oil, coal and water on board when the displacement shall be taken as normal.[1] There is, likewise, no uniformity among the various countries as to the meaning of a war vessel's displacement "light." Its "full-load" displacement, on the contrary, is calculated with substantial uniformity throughout the world, and corresponds to the usual meaning of a merchant vessel's displacement "loaded." A naval vessel's "actual" displacement, of course, refers to its weight with everything on board and varies from day to day.

The displacement of a vessel is expressed in tons of either 2,240 or 2,204.62 pounds avoirdupois, according to whether the English or metric system of measurement prevails. In the United States the displacement tonnage may be found by dividing by 35, the contents in cubic feet of the part of a vessel's hull that is below the water line, because a cubic foot of sea water weighs 64 pounds or one-thirty-fifth of a ton of 2,240 pounds avoirdupois. The cubical content is accurately determined at the time of the vessel's construction by means of special mathematical rules.[2] Since a vessel is not a parallelopiped, *i. e.*, not box-shaped, its cubical contents cannot be determined by a simple multiplication of length, breadth, and depth. The marine architect is obliged to determine the ship's "block coefficient" or "coefficient of fineness," which is the ratio of the actual contents of the submerged portion of the vessel's hull to the contents of a parallelopiped of the same length, breadth, and depth. When this coefficient is known, the vessel's displacement may be determined by multiplying the product of its length, breadth, and depth by its coefficient of fineness and dividing that product by 35. The coefficient may vary anywhere from 0.8 in case of a full-shaped slow freighter to 0.4 in case of a racing yacht.

When determining a vessel's displacement light and loaded, shipbuilders usually prepare a "displacement curve" and scale. Knowing the draft of his vessel, a glance at the ship's displacement curve and scale will tell the captain substantially what the actual displacement of his vessel is on any given voyage.

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[1] See E. R. Johnson, *Measurement of Vessels for the Panama Canal*, 104.
[2] See Thomas Walton, *Know Your Own Ship*, Chap. x.

The displacement tonnage of merchant vessels is of special interest to shipbuilders. It is also of use in the loading and operation of vessels, for the difference between displacement light and displacement loaded indicates the maximum weight of cargo, passengers, and fuel that the ship may take on board; and the difference between displacement light and the tonnage of the ship's actual displacement indicates the weight of whatever the ship contains at any given time other than crew and supplies. The "normal" displacement of naval vessels has the additional use of serving as the basis for officially rating or expressing the size of war craft; and the actual displacement of warships, other than transports, colliers, supply ships, and hospital ships serves as the basis upon which such vessels pay tolls at the Panama Canal.

Dead-Weight Tonnage

The total carrying capacity of a merchant vessel is sometimes expressed in terms of its dead-weight tonnage, which represents the maximum weight of cargo, passengers and fuel that it is able to carry when loaded to its deep-load line. It is the difference between the vessel's displacement light and its displacement loaded. The actual dead weight on board at any given time will, of course, vary from voyage to voyage, but can be readily determined with substantial accuracy from the displacement curve and scale mentioned in connection with displacement tonnage. Knowing the draft to which his vessel is loaded, the captain can read the dead weight on board from the curve and scale which is prepared when the vessel is constructed.

Dead-weight tonnage is expressed in terms of either the long ton of 2,240 pounds or the metric ton of 2,204.62 pounds and it is the usual basis for the charter rates paid when cargo-carrying vessels are operated on time charters. It is also of use in the loading and transportation, in vessel-load lots, of certain heavy, bulky commodities, such as coal and iron ore, and in the construction of vessels designed for such services; for, knowing the amount of fuel needed to operate over a particular route, the dead-weight tonnage discloses to the master of the vessel

its net cargo capacity, or the maximum weight of cargo that may be shipped. It is sometimes used as a statistical unit in recording the size of the cargo-carrying fleet of a steamship company or of a Government agency such as the United States Shipping Board. The term dead-weight tonnage is ordinarily not used in the shipping industry in connection with express steamers and combination passenger and freight vessels; for vessels of that type are rarely loaded to their deep-load line, and the prime consideration at the time of their construction is seldom the attainment of maximum capacity for heavy or so-called dead-weight commodities.

Gross Tonnage

The gross tonnage of a merchant vessel is its total measured cubic contents expressed in "tons" of 100 cubic feet or 2.83 cubic meters.[3] The actual cubical contents of any particular space in a vessel is measured in accordance with prescribed methods or formulas which were originated by Mr. George Moorsom, of England, and were first incorporated in the British measurement law of 1854, and later in the measurement rules of all the leading maritime countries of the world. The lack of uniformity in gross tonnage results, not from the methods of measurement employed, but from differences as to the number of vessel spaces that are entirely exempted from measurement. When certain spaces are excluded from measurement, it more-

[3] This method of stating gross-register tonnage dates from 1854. To secure a uniform practice in measuring and registering vessels, the British Government, in 1852, adopted a method of measuring the cubical capacity of hulls that Mr. George Moorsom had worked out. The Admiralty, not wishing to change the statistics of the tonnage of the British marine more than necessary, instructed Mr. Moorsom to submit a plan of applying his method in such a way as to cause a minimum change in the existing registry of ships. Mr. Moorsom found that the total registered tonnage of the British merchant marine as then registered was 3,700,000, and he found that by the application of his system of measurement the total capacity of the hulls of the British Fleet was 363,412,456 cubic feet. "If," said he, "the real total capacity in cubic feet is divided by the total registered tonnage the dividend will be the figure by which the capacity in cubic feet must be divided in order to produce this registered tonnage." The ratio of existing tonnage (3,700,000) to Moorsom's figures for capacity (363,412,456) was 98.22, but for the purpose of easy calculation the British Government adopted a divisor of 100 instead of 98.22, and this figure was incorporated in the Merchant Shipping Act of 1854.

over follows that in practice the gross tonnage of a vessel does not represent its entire enclosed cubical contents.

The national gross-tonnage rules of the United States which are applied by the surveyors of the Customs Service and interpreted by the United States Commission of Navigation provide that the following spaces in a vessel shall be exempted from measurement:

1. Sheltered places or superstructures with openings at the sides or ends. This exemption was the result of the way in which the rules were interpreted by the United States Commissioner of Navigation on September 5, 1914.
2. So-called shelter-deck spaces, *i.e.*, spaces beneath a "shelter deck" with approved "tonnage openings." This exemption was not allowed prior to March 16, 1915, and is also the result of the interpretation of the national measurement rules by the Commissioner of Navigation. Both of these exemptions had for many years been granted under the measurement rules of Great Britain, and had also been exempted in Germany since 1895, when the endeavor to induce Great Britain to measure all enclosed superstructures and shelter-deck spaces was abandoned.
3. Passenger accommodations in tiers of superstructures over the first tier above the upper deck.
4. Hatchways up to one-half of 1 per cent of the vessel's gross tonnage.
5. Galleys, bakeries, toilets, and bathhouses above decks.
6. Spaces above decks occupied by the ship's machinery or for the working of the vessel.
7. "Light and air and funnel space over the engine and boiler room to the extent that such space is above the upper deck, or the 'shelter deck' when it is taken as the uppermost full-length deck, except when special request is made by the shipowner to have the space measured."
8. "Domes and skylights, companionways (except portion used as smoking room), and ladders and stairways located in exempted spaces." [4]
9. Double bottoms for water ballast since March 2, 1895, and other spaces adapted only for water ballast since February 6, 1909.
10. Open spaces occupied by deck loads.

Enclosed spaces other than those especially exempted are measured in accordance with the Moorsom rules which were adopted in the United States in 1864, and the cubic contents

[4] E. R. Johnson, *Measurement of Vessels for the Panama Canal*, p. 58.

in cubic feet divided by 100 represents the official gross-register tonnage of an American vessel. It understates a vessel's real gross capacity as also does the gross-register tonnage determined in the principal foreign maritime countries. A special code of measurement rules was therefore formulated for the Suez Canal by an International Tonnage Commission in 1873, with a view to arriving at a gross tonnage that discloses real gross capacity. The Suez rules do not include all enclosed spaces in a vessel's gross tonnage, but result in a figure considerably above the gross-register tonnage provided for in the measurement rules of Great Britain, Germany, or the United States as at present interpreted. The special gross-tonnage rules in accordance with which all vessels navigating the Panama Canal are measured were based largely upon the principles that controlled in framing the Suez Canal rules, but certain changes were necessary so as to adapt them more closely to the many variations in present-day vessel construction, and so as to ascertain a gross tonnage that even more closely approximates real gross capacity.[5]

It is in terms of gross-register tonnage that the official mercantile marine statistics of the United States are published, and merchant vessels the world round are officially listed in terms of their gross and net-register tonnages and their principal dimensions. In some foreign countries, moreover, the gross-register tonnage of merchant vessels is utilized, as the basis for certain ship subsidies. Indeed, the classification of American vessels under the Mail Contract Act of 1891 and the Merchant Marine Act, 1928 (see appendix) depended in part upon gross-register tonnage. It also serves as a basis for vessel dockage charges at some ports, and is commonly utilized as the basis for charter rates in case of passenger vessels operated on time charter parties. The primary purpose of computing gross tonnage, however, is to use it as the basis for determining net tonnage.

Net Tonnage

The net tonnage of merchant vessels was originally intended to represent their total cubic contents available for cargo and

[5] E. R. Johnson, *Measurement of Vessels for the Panama Canal*, pp. 225-242.

passengers, expressed in tons of 100 cubic feet or 2.83 cubic meters each. It is ascertained by deducting from a vessel's gross tonnage the cubic contents of certain spaces that are specified in the measurement laws and rules of the various maritime nations or in the measurement rules applicable at the Suez and Panama Canals. As gross-register tonnage varies throughout the world and understates a vessel's gross capacity, so also does the official net-register tonnage of a vessel as determined in the maritime countries vary and understate its real net capacity for carrying cargoes and passengers.

The deduction made from gross-register tonnage in order to arrive at net-register tonnage under the national measurement rules of the United States are as follows:

1. Spaces occupied by the propelling machinery and fuel.
2. Spaces occupied by or appropriated to the use of the crew, officers and master subject to the navigation laws, which specify that a minimum crew space varying from 72 to 120 cubic feet and from 12 to 16 square feet of floor space per man must be provided on American vessels.
3. Spaces used exclusively for the working of the helm, capstan and anchor gear, unless they are located above decks and consequently have been excluded from gross tonnage.
4. Spaces used for keeping charts, signals, and other instruments of navigation.
5. Spaces occupied by the donkey engine and boiler if located below decks and connected with the main pumps of the vessel.
6. Spaces required for boatswain's stores.
7. Galleys, bakeries, toilets, and bathrooms for the accommodation of the officers and crew, when situated below decks.
8. Spaces on sailing vessels used for the storing of sails not exceeding 2½ per cent of the gross tonnage.

The principal deduction in the case of all vessels propelled by engines is the space occupied by propelling machinery and coal bunkers or fuel oil tanks. The engine and boiler rooms can be readily measured because they occupy fixed spaces, but the spaces used for fuel are, in many instances, variable. Many vessels are fitted with movable partitions that may be shifted so as to enlarge or contract either the coal bunkers or the cargo holds as is desired on a particular voyage. For this reason it is necessary to have a general or average rule for deducting

propelling machinery and fuel spaces. Under the national measurement rules of the United States the "percentage rule" is applied to some vessels and the "Danube rule" to others. The former provides that if the space occupied by the engine and boiler rooms of a screw-propelled vessel is above 13 per cent and under 20 per cent of the vessel's gross tonnage, the combined deduction for propelling machinery and fuel spaces shall be 32 per cent of the gross tonnage. The corresponding percentage rule for vessels propelled by paddle wheels is that if their propelling machinery occupies over 20 per cent and under 30 per cent of the gross tonnage, a deduction of 37 per cent of a vessel's gross tonnage shall be made. The Danube rule, on the contrary, is applied to vessels the engine and boiler rooms of which do not come within the 13 to 20 or 20 to 30 per cent limits. It provides for a deduction of the actual spaces occupied by the propelling machinery plus 50 per cent in the case of vessels propelled with paddle wheels, and plus 75 per cent in the case of screw-propelled craft. Both rules are liberal to the vessel owner.

A large proportion of all ocean-going vessels are constructed so as to come within the percentage rule, because it usually results in a larger deduction than the Danube rule provides and in a deduction of more space than is actually occupied by propelling machinery and fuel bunkers. The net-register tonnage of American vessels is consequently in many instances an understatement of actual tonnage, and not all vessels are treated alike. The same is true of Great Britain, where the rule originated in 1854 and is still applied. The rule is also followed in Germany and many other foreign countries. Being based upon gross-register tonnage the net tonnage as registered in the United States and in other shipping countries is also understated as a result of the exemption from measurement of various spaces which are in fact available for cargo or passengers.

As the special gross-tonnage rules applied at the Suez and Panama Canals were so formulated as more nearly to disclose the real gross capacity of vessels, so also were the rules governing deductions of spaces not available for cargo or passen-

gers devised with a view to disclosing the real net capacity. Especially was this the purpose in promulgating the "Panama Canal measurement rules," which differ from the Suez rules in some respects. Both the Panama and Suez rules differ from the official tonnage rules of the principal countries in that they provide that the Danube rule shall be applied in deducting machinery and fuel spaces, with the option of the actual measurement of such spaces in the case of vessels equipped with fixed fuel bunkers. The average deduction made from gross tonnage in arriving at net tonnage during the fiscal year 1927 under the Panama Canal measurement rules was 22 per cent. The average deduction from gross tonnage under the Suez rules was 28 per cent. In contrast with this the average difference between the gross and net-register tonnage of the vessels using the Panama Canal in 1926 was 38 per cent. The deductions authorized under the national measurement rules are excessive.

The net-register tonnage of merchant vessels is highly important to their owners, to governmental authorities who administer the navigation laws, and to commercial concerns of various kinds. Net-register tonnage is the basis of tonnage taxes and other tonnage dues the world round; and commercial charges, such as those for towage, dockage, and wharfage, are also at times based on net-register tonnage. The official statistics of entrances and clearances published by the United States and most foreign governments are stated in terms of net-register tonnage. Time charter rates, when not based on dead-weight or gross-register tonnage, are based on net-register tonnage; and tolls at some canals, such as the Kiel and Manchester Canals, are based in part on this form of tonnage. The incentive to understate net-register tonnage in the various maritime countries has consequently been strong, and when some of them follow that policy it is difficult for the others not to do likewise. The net tonnage ascertained in accordance with the Suez and Panama Canal measurement rules are important, because they serve as the principal basis for the tolls charged at these waterways. Suez net tonnage is the basis for the vessel tolls paid by both merchant and naval craft for using the Suez Canal, and Panama net tonnage is the basis of the tolls paid at Panama

by merchant vessels and by army and navy transports, colliers, supply ships and hospital ships.

Cargo Tonnage

Entirely different from vessel tons and tonnage are the various forms of cargo tons and tonnage in terms of which the amount of cargo on board an ocean vessel and its cargo capacity are expressed. Cargo tonnage may be stated either in weight or measurement tons. A weight ton, moreover, may be a long ton of 2,240 pounds, a metric ton of 2,204.62 pounds, or a short ton of 2,000 pounds. The long ton is of chief importance in the overseas trade of the United States and of British countries in so far as goods are shipped as weight cargo, and the metric ton in the trade of such foreign countries as adhere to the metric system. The short ton, although commonly used in the shipment of freight by rail in the United States, is only occasionally used in the overseas trade.

Much ocean freight, however, is shipped not by weight but by measurement tons, usually of 40 cubic feet each. Light package freight is frequently shipped as "measurement cargo," which means that its quantity is stated in measurement tons. It is a paradoxical fact that a vessel may carry a larger number of tons of light package freight than of heavy bulk cargo.

In selecting general cargo for a vessel, careful attention is given to the stowage factor of different kinds of freight, that is to the number of cubic feet occupied by an avoirdupois ton; and also to the fact that the ocean freight rates of some commodities are based upon their weight tonnage and those paid by others upon their measurement tonnage. Careful selection of weight and measurement cargo may make it possible to load a vessel so that all or nearly all available cargo space will be utilized and also that the vessel will have on board a maximum weight of cargo. When this is done the vessel is fully loaded; it is carrying a maximum number of paying tons of cargo, some of the tons being weight tons and others measurement tons. The total number of tons on which freight charges are paid may exceed the number of weight tons that the vessel could carry at load-line draft.

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CHAPTER XLIII

OCEAN ROUTES

As in the case of railroad lines, ocean routes are many in number and of different degrees of importance. There are the ocean trunk lines and auxiliary routes of first importance, main-line routes of the second rank and their feeders, direct routes of lesser importance, and the indirect routes requiring transfer from one vessel to another. Their location is determined mainly by the traffic importance of the areas between which trade is being carried on, by the sphericity of the earth, by the size of the land masses lying between the trading areas, by the location of fuel stations, and by the cost of coal or fuel oil. The routes followed by sailing vessels are also determined by the location and direction of ocean currents and prevailing winds. Among the minor causes influencing the routes of both steamers and sailing vessels may be mentioned the absence or prevalence in certain areas of the sea of floating ice, or of severe storms at different seasons of the year.

On account of the spherical shape of the earth, the shortest distance between any two places is the arc of a great circle connecting the two points. This fact influences nearly all ocean routes, and particularly those across the North Atlantic and the North Pacific. For instance, Yokohama and San Francisco are in practically the same latitude—*i.e.*, Yokohama lies directly west of San Francisco; but the short route between the two places, being the arc of a great circle, curves northward to the Aleutian Islands.

The steamer can usually take the short route, but the sailing vessel must shape its course with reference to the currents and prevailing winds, although by so doing the distance may be greatly increased. In sailing from New York to Rio Janeiro, for example, a vessel will steer southeastward with the

westerly winds and currents to the vicinity of the Azores, or nearly across the Atlantic, where a longitude east of Cape St. Roque having been reached, the ship will turn toward the south, and with the aid of the northeast trade winds north of the equator and of the southeast trades of southern latitude, will readily make the port of Rio Janeiro.

Each vessel-operating agency must determine definitely how it will utilize the various ocean routes in the planning of its voyages. The vessels of one line may be operated between two definite ocean terminal ports over a single major ocean route. Traffic may perhaps be interchanged at these ports with other vessels operating over different routes, the steamship line's direct service being confined to one trunk line route and two ports. Another line may confine its sailings to a single major ocean route, but arrange its schedule so as to include stops at various points intermediate between its home and destination ports. Still another line may operate over a triangular route, the volume of trade between the termini of any of the great ocean routes seldom being equal in both directions. Triangular routes are especially numerous in the tramp freight service. A tramp having no definite termini, may indeed make many voyages over several ocean routes before returning to its original port of clearance. But triangular routes are not uncommon even in the steamship line service, and a line may so plan the voyages of its several vessels so as to include many routes and to serve a wide range of ports. The Dollar Steamship Line offers a "round the world" service in which its vessels, leaving New York, circle the globe before returning. Its schedule includes stops at Havana, Colon and Balboa, at the ports of Los Angeles and San Francisco, at Honolulu, at Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Penang and Colombo, at Suez and Port Said, at Alexandria, at Naples, Genoa and Marseilles and at Boston. Each vessel making this voyage makes use of four major ocean routes, the Panama Canal route, the North Pacific route, and Suez Canal route and the North Atlantic route.

From one to four major routes are utilized by steamship lines in planning scheduled vessel voyages, but each route has dis-

tinctive characteristics. There are four major ocean routes in addition to those just referred to: the South African, the South American, the Caribbean, and the South Pacific routes.

The North Atlantic Route

The ocean trunk line having the heaviest freight and passenger traffic is the one connecting the northeastern seaports of the United States with the entrance to the British Channel. Upon this North Atlantic trunk route more than one-sixth of the world's entire shipping is employed, it being the direct route between the principal commercial countries of the world. In order to conform as closely as possible to a great circle, this route skirts the coast of North America northward to the Banks of Newfoundland, and then curves across the Atlantic. The branch lines which unite in this North Atlantic trunk route reach American ports from Canada to the Caribbean, and European ports from the Baltic to the Mediterranean. Vessels plying between Europe and Gulf and West Indian ports take a course but slightly south of this route, and pass comparatively close to the coast of the United States. The route from Great Britain to the Panama Canal via New York is only 323 miles longer than the most direct course; and vessels plying between the West Indies or Central America and northern European ports frequently call at Hampton Roads to replenish their coal supplies.

The North Atlantic route connects the eastern and Gulf ports of the United States and the eastern ports of Canada with the ports of Europe, Great Britain and Mediterranean Africa. Eastward there flows a vast quantity of farm products, raw materials, semifinished manufactures and a substantial quantity of finished manufactures. The volume of westbound freight traffic has normally been smaller because the imports received from Europe and Great Britain have been less in tonnage as well as in value than the exports shipped from the United States and Canada. They consist more largely of manufactured products, but a wide range of commodities are included and the total imports received from Europe may probably increase in the future. The North Atlantic route, moreover, is the

world's greatest ocean passenger route. No other route can at present provide the heavy operating returns that are essential to the profitable operation of the large fast passenger steamers that regularly ply between the large eastern ports of the United States and the ports of western Europe and Great Britain. The heaviest international mail and express shipments are also made over this route. The large volume and the nature of much of the aggregate traffic moving over the North Atlantic route has aided the growth of regular line traffic.

The Suez Canal Route

The ocean trunk line ranking next to the one across the North Atlantic is the route from the eastern United States and from western and southern Europe via the Mediterranean and the Suez Canal to India, the East Indies, China and Japan. Before the Suez Canal was opened in 1869, the ocean commerce of Europe and the United States with eastern countries was carried in sailing vessels around the Cape of Good Hope, and was small in comparison with the great volume of traffic now passing through the Suez Canal. As sailing vessels cannot navigate the Red Sea, only steamers use the Suez Canal route, and sailing vessels are seriously handicapped.

This ocean trunk line has an especially large number of branch lines or feeders both east and west of the canal. At Gibraltar the routes from the United States, Great Britain, and western European countries unite in a single route for Suez; in the Mediterranean this route is connected by branch routes with the ports of southern Europe; at Aden, although the main ocean track proceeds to Colombo, some vessels branch off southward to Zanzibar, Mauritius and Delagoa Bay, others turn northward to the Persian Gulf, and still others proceed northeastward to Bombay and Kurrachee. At Colombo the trunk route is again divided into branch routes extending northward to Calcutta and Burma, southward to Australia, and eastward to the East Indies, Singapore, Manila, and the ports of China and Japan.

Vessels navigating this route pay tolls for passing through the Suez Canal. In accordance with its rights under the provi-

sions of its concession of 1856 and the international treaty of 1888, the Suez Canal Company requires each merchant vessel to pay a vessel toll of 7 gold francs per net vessel ton, if loaded, and 2 francs 50 centimes less than this standard toll if in ballast; and if it has passengers on board, an additional passenger toll of 10 francs for each passenger above twelve years of age and 5 francs for each passenger between the ages of 3 and 12 is collected. So greatly, however, does the Suez Canal reduce sailing distance and time as compared with the route around South Africa, that during 1927 over 5,245 vessels measuring 27,507,626 tons net tonnage, and carrying approximately 27,132,000 weight tons of cargo, navigated the canal route to and from points beyond Suez.

The Suez Canal was promoted by the famous French engineer, Ferdinand de Lesseps, and was built by a private company, the Suez Maritime Canal Company, at an original cost of 16,632,953 pounds (about $80,000,000). Enlargements and improvements required additional investments in later years, the total inventory value of the company's properties in June, 1928, being reported at $193,442,685. The construction difficulties were small in comparison with those encountered in the building of the Panama Canal. Its length from Port Said to Suez is 87 nautical, or 100 English, miles, but relatively little expensive excavation was necessary because its route follows low ground, and two easily formed inland lakes could be utilized.

It is a sea-level waterway, having an original depth of 26 feet 3 inches, and a bottom width of 72 feet 2 inches. These dimensions were in the main adequate for two decades, as the draft of the vessels engaged in the Oriental trade did not reach the authorized maximum of 24 feet 7 inches until 1880. Although numerous improvements had meanwhile been made, the general enlargement of the canal's dimensions was not inaugurated until 1887. Since then the depth has gradually been increased. By 1908 a depth of 32 feet 9 inches was attained and a maximum vessel draft of 28 feet was authorized; and in 1909 a new program, calling for a depth of 36 feet 1 inch and an authorized vessel draft of 31 or 32 feet was adopted. Further

improvement was authorized in 1912, and at present vessels having a draft of 33 feet are permitted to navigate the canal. A new improvement plan, adopted in 1921, contemplates a vessel draft of 35 or 36 feet.[1]

The Suez Canal is still the property of the original company. In 1875 the British Government through Lord Beaconsfield, purchased 176,602 shares from the Khedive of Egypt, and although the British Government, according to latest reports, does not own a majority of the total 400,000 shares of the company, it has a controlling position in the affairs of the canal.

Great Britain's rights as a stockholder have not been exercised to the exclusive advantage of British shipping, nor may the French company which operates the canal legally discriminate in favor of French shipping. The canal is an international waterway, and in times of peace is open to the vessels of all nations on terms of equality. The second concession, which the company obtained from Viceroy of Egypt, January 15, 1856, provides that the canal shall be open to all as a neutral highway "without any exclusive distinction or preference of persons or nationalities." The international convention of October, 1888, signed by Great Britain, Germany, Austria, Spain, France, Italy, the Netherlands, Russia and Turkey, likewise provides that the canal shall "always be free and open, in times of war as in times of peace, to every vessel of commerce or of war without distinction of flag." Great Britain made certain reservations as to the use of the canal by vessels of war, but these were modified by an additional special agreement—the Anglo-French agreement of April 8, 1904.

The great commercial advantages which the world has obtained from the construction of the Suez Canal are due to its service as a short route to the East for merchant steamships, which otherwise would be obliged to navigate the South African route. The vessels which the canal draws from Europe and the United States branch off in different directions at Aden, at Colombo, and again at Singapore, and proceed to widely scattered Asiatic, African, and Australasian destinations.

[1] P. Solente, Chief Engineer, Report to International Congress of Navigation, Cairo, 1926.

The Panama Canal Route

As the opening of the Suez Canal in November, 1869, created a great ocean route, so the opening of the Panama Canal in August, 1914, provided another that is destined to play an important rôle in the world's commerce. The Panama route is in a sense but an extension of the Caribbean route, much freight having formerly been transshipped between the Atlantic and Pacific by rail across the Isthmus at Panama and at Tehuantepec. The opening of the canal, however, made the Panama route a distinct ocean highway. It not only obtained the traffic which was formerly transshipped by rail, but also a portion of the traffic which was shipped via the South American, South African, and Suez Canal routes. Moreover, it will to an increasing extent in the future stimulate the international commerce of the world and the intercoastal trade of the United States, and in that way create much new ocean traffic.

As at the Suez Canal, so also at Panama, all merchant vessels are required to pay tolls. The Panama toll on merchant ships with cargo or passengers on board is $1.20 per ton upon the vessel's net tonnage, and on vessels in ballast 40 per cent less, or 72 cents per ton. These tolls, based on net vessel tonnage as ascertained in accordance with the special measurement rules of the Panama Canal, are subject to a statutory limitation [2] that the tolls collected from any vessel shall not exceed a maximum of $1.25 per net ton based on its net-register tonnage as ascertained in accordance with the national measurement rules of the United States.

The Panama Canal extends from Cristobal on Limon Bay on the Caribbean side to Balboa on the Bay of Panama. Its course is nearly north and south across the isthmus which here extends northeast and southwest. The Pacific end of the canal lies about 20 miles east of its Atlantic end. The canal is 43.84 nautical miles—about 50 statute miles—in length, and has a minimum depth of 41 feet and a minimum bottom width of 300 feet. It is a lock canal.

The expenditure of nearly $400,000,000 in the construction of

[2] Panama Canal Act of Aug. 24, 1912.

the Panama Canal and its military defenses was large in comparison with the relatively small cost and heavy traffic of the Suez Canal, but the investment was fully justified. The economic and naval value of the Panama Canal is undoubted, although there may be a difference of opinion as to the extent of its value and as to the policy best suited to enhance its economic efficiency.

The economic value of the canal depends fundamentally upon the influence which it exerts over ocean steamship routes. Three important ocean routes—the South American or Magellan, the South African, and the Suez—are directly affected by the canal; the canal itself creates a fourth trunk line route; and indirectly the canal has influenced the volume of traffic which moves over the remainder of the 8 principal ocean highways. It is also taken by the through traffic which was formerly transferred between the Atlantic and the Pacific by rail across the Isthmuses of Panama and Tehuantepec.

Traffic is routed via Panama chiefly because of the saving in distance and time which the canal makes possible. The distance from New York to San Francisco is 7,873 nautical miles shorter via Panama than by way of the Straits of Magellan; and the saving in distance between New York and Valparaiso, Chile, is 3,747 miles; Iquique, the great Chilean nitrate port, 5,139 miles, and Guayaquil, Equador, 7,405 miles. The distance from New York to Yokohama via Panama is 3,768 miles shorter than via the Suez Canal, and the saving on voyages to Shanghai is 1,876 miles, to Sydney, 3,932 miles, and to Wellington, 2,493 miles. The accompanying table shows how much is saved by vessels proceeding from Liverpool, as a typical north European port, in their sailing distance; and the table also shows that for ports on the Gulf of Mexico, such as New Orleans, there is more reduction in distance than for the ports on the Atlantic seaboard of the United States.

The saving in distance via the Panama Canal is greater for vessels to and from American ports than for those which enter or clear at the ports of Europe. The "twilight" or competitive zone as between the Panama and Suez Canals is reached far out in the Pacific Ocean. The line connecting points equally

REDUCTION IN NAUTICAL MILES EFFECTED BY THE PANAMA CANAL[3]

To	From			
	New York	Savannah	New Orleans	Liverpool
San Francisco [1]	7,873	8,267	8,868	5,666
Honolulu [1]	6,610	7,004	7,605	4,403
Guayaquil [1]	7,405	7,799	8,400	5,198
Iquique [1]	5,139	5,533	6,134	2,932
Valparaiso [1]	3,747	4,141	4,742	1,540
Yokohama [2]	3,768	4,649	5,705	— 694 [3]
Shanghai [2]	1,876	2,757	3,813	—2,852 [3]
Hongkong [2]	— 18 [3]	863	1,919	—4,172 [3]
Manila [2]	41	922	1,978	—4,421 [3]
Sydney [4]	3,932	4,598	5,444	— 150 [3]
Wellington [1]	2,493	2,887	3,488	1,564 [2]

[1] Difference between Panama and Magellan routes.
[2] Difference between Panama and Suez routes.
[3] Distance less via Suez route.
[4] Difference between Panama and Good Hope routes.

distant from New York via Panama and Suez runs near Hongkong and Manila, while the line connecting the points equally distant from Liverpool via the two great canals runs east of Australia and the large ports of Japan. For shipments from the eastern seaboard of the United States the distance is less via Panama to practically all the leading ports of Australia, Japan, China, and the Philippines; while steamers sailing from Liverpool continue to find the Suez route shorter to all Australasian and Oriental ports except those of New Zealand and the extreme northern ports of Japan and Siberia.

The saving in distance occasioned by the Panama Canal brings about a corresponding reduction in sailing time. For an ordinary 10-knot steamer, from New York the reduction in time via the canal as compared with the shortest competitive all-water route, is 9.9 days to Wellington; to Sydney, 15.8; Yokohama, 15.2; Valparaiso, 15.1; Honolulu, 27; Shanghai, 7.3, and San Francisco or other Pacific coast ports, 32.3 days. Reduction in time makes possible more frequent steamship services, more rapid delivery and lower operating costs. The actual economy effected is different for vessels of unlike speed and types.

Besides distance and sailing time other routing factors are

[3] See E. R. Johnson, *Panama Canal Traffic and Tolls.*

in favor of the Panama route. Fuel cost is less via Panama than via the Suez, Magellan, and South African routes, primarily because less fuel is needed to reach the ports which are tributary to the canal, and also because more American and native coals are available, the prices of which are lower than those charged for British coal at many of the coaling stations on the Suez and Magellan routes. The greater ease of obtaining cargoes on particular voyages, moreover, at times causes vessels to take the Panama route from outlying ports even though it is not the shortest route. Vessels which formerly transshipped cargoes by rail at Tehuantepec now use the canal because they avoid the difference between the transshipment costs and the canal tolls; and, in general, as the canal encourages the establishment of direct steamship lines, it discourages indirect shipments and the payment of the transshipment costs incident to them.

The volume of shipping using the Panama Canal fluctuated greatly during the early years of its operation, because of the disruption of international and intercoastal commerce occasioned by the European War and also of several interruptions of traffic caused by slides in Gaillard Cut. Later the international commerce of the United States and Europe with the countries of the Pacific improved and many vessels which had been attracted to the foreign trade prior to 1921 by high ocean freights returned to the intercoastal trade. During the fiscal year 1927, 5,475 merchant vessels, having a net tonnage of 26,227,815 tons and carrying 27,748,215 long tons of cargo, navigated the canal. The international traffic through the Panama Canal may be expected to increase largely in the future, as the foreign trade of the Pacific will in all probability become of increasing importance, and the Panama route may be expected to share in it to a large extent. The trade of the eastern and Gulf ports of the United States with the western coast of South and Central America, British Columbia, Australia, New Zealand, Japan, northern and central China, and the Philippines is making use of the canal, and traffic considerations at times give to it some of the trade of points beyond Hongkong. The trade between Europe and the west coasts of the

United States, South and Central America and Canada, and some of the trade of European countries with parts of the Far East and Australia, is also being routed through the Panama Canal.

At present the largest category of traffic moving through the canal is the intercoastal. The canal will stimulate foreign commerce in the future, as it has already stimulated the domestic trade between the eastern and Pacific coast sections of the United States. From 1,062,000 tons of intercoastal traffic in 1920, the intercoastal business of the canal advanced from 8,069,000 in 1923 to 13,528,000 in 1924 and 10,862,000 in 1927.[4] Some of the large growth of canal tonnage represents a diversion of general commodity traffic from the transcontinental railroads to the canal route, but a portion of the increase is the result of the stimulating influence of the canal upon intercoastal business as a whole.

The use of the Suez Canal under like terms by the vessels of all countries is protected by an international convention, and the Panama Canal has been neutralized by the United States. Long before the Panama Canal was constructed the United States entered into a series of treaties bearing upon possible canals connecting the Atlantic with the Pacific. There was a treaty with New Granada (Colombia) in 1846, Great Britain in 1850, with Mexico in 1853, with Honduras in 1864 and with Nicaragua in 1867. These treaties variously guaranteed the neutrality or equal use of interoceanic canals wherever or by whomever they might be built; or guaranteed most favored nation treatment to the citizens of the United States; or defined the management of such waterways. In 1901 a new treaty—the Hay-Pauncefote Treaty—was made with Great Britain to supersede the old Clayton-Bulwer Treaty of 1850. This treaty retained the "general principle of neutralization" established in the treaty of 1850 and also provides specifically that "the canal shall be free and open to the vessels of commerce and of war of all nations observing these rules, on terms of entire equality, so that there shall be no discrimination against any such nation, or its citizens or subjects, in respect of the con-

[4] For fuller discussion see Chapter LVII.

ditions or charges of traffic, or otherwise. Such conditions and charges of traffic shall be just and equitable."[5]

Although its economic functions, its effect on commerce, industry, shipping and railroad freight rates are of greatest importance, the canal largely increases the effectiveness of the Navy of the United States. The saving in sailing distance and time noted in connection with ocean routes benefits naval as well as merchant vessels.

The long dangerous trip made by the battleship *Oregon* from the Pacific coast to the West Indies at the opening of the war with Spain in 1898 need not be repeated by American warships, unless an enemy should succeed in seriously damaging the canal.

The South African Route

A fourth ocean trunk line is the South African. Its Atlantic termini are in Europe and America; its main eastern connections are with the western, southern and southeastern coasts of Africa, with Australia and New Zealand, and, for sailing vessels, with the East Indies and the Orient. Some ships on this route from Europe engage in the West African coasting trade, but more do not. A large share, but not all of the shipping on this route, calls at Cape Town, the most important center of the South African trade, and at Durban in Natal, for coal. The heaviest traffic over this South African route is carried by the numerous lines of freight steamers running from northwestern Europe to Australasia. Passenger and mail steamers take the Suez route from the British Channel to Australia; but the distance saved, being less than 1,000 miles, is not enough to cause freight vessels to abandon the Cape route. Any extensive interference with the Suez route—such as occurred during the great European War—causes a diversion to the South African route of many vessels which normally are engaged in the Australian and Oriental trade via the Suez Canal.

The South American Route

Corresponding with the route just described is the trunk line around South America, connecting the eastern and western

[5] Article III.

shores of the North Atlantic with the Pacific coast of the Americas. In addition to the through traffic carried between the Atlantic and Pacific regions over this route, there are carried on, usually distinct from the interocean through traffic, the Pacific coastwise trade, and the trade of Europe and the eastern United States with Brazil and the countries of the Rio de la Plata.

Vessels engaged in the trade between the countries of the North Atlantic and the east coast of South America usually do not engage in the through traffic with regions beyond the Straits of Magellan. Various lines of ships ply back and forth between Europe and Brazil and the mouth of the Plata, and some also between the United States and those sections of South America, and a substantial amount of tramp tonnage is employed. Triangular shipments in regular lines from the United States to South America by way of European ports have been discontinued since the establishment of a largely enhanced direct line service between the United States and the eastern seaboard of South America. Tramps, however, continue to operate to and from the ports of Brazil and the mouth of the Plata either directly or over a triangular route. Cargoes of South American products are at times brought to the United States in vessels that take cargoes from Europe to South America, and load there for the eastern or Gulf ports of North America, where cargo for Europe may at times be obtained. The comparative growth of the line services of the North Atlantic route during recent years has, however, affected the triangular business of tramp operators.

When the Panama Canal was completed, all or nearly all of the steamships which formerly operated via the Straits of Magellan were diverted to the isthmian route. Indeed, the main reason for constructing the Panama Canal was to shorten the water route between the countries of the North Atlantic and the Pacific coast of the three Americas. Sailing vessels may continue to sail around South America between Atlantic and Pacific ports, for the calms of Panama Bay make their use of the Panama Canal impracticable, but they have found difficulty in competing against steamers using the canal route. Since

the opening of the Panama Canal the importance of the South American route depends almost entirely upon the commerce of the ports of the east coast of South America with the United States and Europe.

The Caribbean Route

Although the traffic of the Gulf of Mexico and the Caribbean Sea—the two bodies of water which together are often called the American Mediterranean—may be said to be handled over routes that are southern branches and extensions of the North Atlantic trunk line, the present and prospective importance of the trade of the countries along the Caribbean and Gulf littoral affords good reason for placing the routes of that trade in a separate class. The main entrance from the Atlantic to the Gulf is the Florida Strait; the principal gateway to the Caribbean is the Windward Passage, at the east end of Cuba; but the Mona Passage east of Porto Rico, and other channels to the south, are also used. Vessels enter the Gulf either to handle the grain, cotton and lumber exports from the Gulf cities of the United States, or to make the circuit of the Gulf and to share in the general trade of the adjacent countries with each other and with Europe and the North Atlantic ports of the United States. Likewise many of the ships entering the Caribbean from the United States or Europe call at several ports and make at least a partial circuit. There is a growing trade carried on entirely within the American Mediterranean between the Gulf coast of the United States and the ports to the south. The lines followed by the traffic of the Gulf and Caribbean are so complex that they may be more accurately called a system or group of routes than a trunk line, but together they comprise what is usually known as the Caribbean route.

A gradual increase in traffic, as in case of the South American route, may be anticipated, for the commerce of the Caribbean countries is growing. The trade of the United States in this region, particularly with Cuba, Mexico, Porto Rico, and some of the Central American countries, has indeed grown so substantially as to merit the most careful consideration of the entire Caribbean region by American exporters and importers.

The North Pacific Route

The most important trade route within the Pacific is the one connecting North America and Asia. Having for its American termini the chief ports from San Diego to Prince Rupert, and for its Asiatic focus Yokohama, with extensions from that port of call to other Japanese ports, to Shanghai and other cities of the mainland, and to Manila, this North Pacific trunk line is the route of the rapidly developing transpacific trade. The shortest course across the ocean being by the great circle, the northerly route is taken, except by such line vessels as call at Honolulu and thereby add 1,000 miles to the voyage from San Francisco across.

It will be recalled that the interests of the transcontinental railroads and the transpacific steamship lines are common in that both groups of carriers seek to share in the heavy traffic that moves between Oriental ports and the central western and eastern regions of the United States. They both compete against the eastern trunk line railroads and rival ocean routes. The transcontinental railroads have established special import and export rates,[6] and the traffic of the North Pacific ocean route as a result, is not limited exclusively to the Oriental commerce of the Pacific coast states.

The South Pacific Route

One other Pacific route calls for special mention, the one from the Pacific coast of North America to Australasia. This Pacific coast-Australasian trunk line has for its two main termini in the United States, San Francisco and the Vancouver-Puget Sound section. New Zealand and Australia are its western termini. The sailings over this trunk line are most frequent via Honolulu and Samoa or Fiji, and thence either to New Zealand or to Australia; but another course much followed is from San Francsico via Tahiti in the Society Islands, and thence either direct to Sydney or to New Zealand, and on to Australia. The fast-mail route from Australia to Europe is across the Pacific to San Francisco or Vancouver, across the continent by

[6] See Chapter XXV.

rail to New York or Halifax, and on by express steamer; but in the absence of adequate mail steamers on the Australasian route the mails have frequently been forwarded through the Suez Canal. Export and import rates are also utilized by the transcontinental railroads as a means for sharing in the commerce of Australia and New Zealand with the central western and eastern states, but the freight traffic moving between Australasia and the western coast of North America is not so heavy as that over the other ocean trunk routes described, and the Panama Canal will restrict the future growth of the business of this route.

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CHAPTER XLIV

OCEAN TERMINALS AND TERMINAL CHARGES

PORTS and terminals at which the trunk line and branch-line routes of ocean carriers terminate, and at which they ship and discharge their cargoes, are an indispensable part of the facilities of ocean shipping and railroad transportation. At the ocean terminals, ocean carriers and railroads and other inland or coastwise carriers meet for the interchange of traffic. The extent to which terminal facilities are provided and efficient methods are followed in handling traffic at the ports is the measure of effective coördination of ocean and inland carriers.

General Types of Ocean Ports

Ocean ports may be conveniently classified according to their general location and the manner in which they are owned and administered. On the basis of location, ocean ports are of four different types; the roadstead, the natural bay, the river port, and the combination of river and bay port. As examples of the roadstead type, Boulogne (France), Dover (England), and the port of Los Angeles (California) may be mentioned. These ports are located on the ocean shore, where no natural embayment provides quiet water for anchorage. Harbors are created at such ports at government expense, by the construction of costly breakwaters, and by dredging of artificially enclosed basins.

The Puget Sound ports, and San Francisco, Pensacola, and Boston, in the United States, Southampton in England and many other cities similarly located are examples of natural bay ports. In some cases, as, for instance, at Mobile, Alabama, the bay on which the city is located has to be dredged to accommodate the deep-draft vessels now employed in ocean commerce. The city located on a bay of ample area, and of 30 feet and more

in depth at low tide, can provide a terminal for handling ocean traffic at a relatively small expense; but the trade of a city so located will generally be less than that handled at a city located near the mouth of a large river, because the river affords connection with a large inland area of production and consumption.

Shanghai, London, Hamburg, Bremen, Rotterdam, Antwerp, Philadelphia, New Orleans, and Portland are conspicuous examples of river ports, and this partial list shows that most of the great seaports are located on rivers. The cheapening of rail transportation, and the increasing efficiency of the railroad, are giving the roadstead and bay ports greater possibilities, by enabling them to compete with river ports over a wider traffic area; but the extensive improvements of inland waterways and the technical development of inland navigation are likewise building up the trade of the river ports. The location of an ocean port on a river many miles inland no longer has the advantages that it possessed before the development of railroad transportation. Unless located near the mouth of a large river, a river port may be at a disadvantage, particularly in the passenger, express, mail, and general cargo services, where promptness in delivery and arrival at destination are becoming an important transportation factor.

A city located as New York is, at the head of a bay and also on a large river, has the most favorable location possible. The maritime commerce of New York, coastwise and foreign, exceeds that of any other port of the world. The traffic territory of New York City extends west beyond the Missouri River.

Classified according to ownership and the authority that administers them, ocean ports are: (1) public ports, which are owned and administered directly by states or municipalities; (2) semipublic ports, at which some properties are owned privately and others by states or municipalities, and at which a varying degree of public control is exercised; (3) public trust ports which are owned by and administered through public trusts composed of representatives of the municipality and of the various commercial organizations and interests centered at the ports; and (4) private ports owned and primarily admin-

istered by private transportation, terminal, or industrial concerns.

The public administration of American ports is by the Federal Government, the states, and the municipalities. The Federal Government through the Corps of Engineers of the War Department, establishes the official pierhead lines beyond which harbor structures may not extend. The Interstate Commerce Commission, in so far as railroads serve and use ocean ports, exercises regulatory powers over the terminal charges imposed at the ports on railroad traffic and over the terminal rules and practices of the railroads. The Shipping Board is vested with regulatory power to require steamship lines, forwarders and other concerns that provide wharfage, warehousing or other ocean terminal facilities to observe "just and reasonable regulations and practices relating to or connected with the receiving, handling, storing or delivering of property." The United States Bureau of Public Health, jointly with the states, is instrumental in the enforcement of health and quarantine regulations. The Custom Service controls the entry and clearance of vessels and cargoes, and Congress has enacted pilotage laws which must be observed by the states in their local administration of pilotage. The Federal Government, in many instances, also dredges and maintains the harbor basin and channel from the sea, but the actual detailed public administration of American ports on the mainland of the United States is left to the states and municipalities.

Some of the ports of the United States are public ports. At the port of New Orleans the major portion of the water frontage is owned by the State of Louisiana, and all privately owned frontage is subject to expropriation by the State Board of Commissioners. The port is administered by three public administrative bodies—the State Board of Commissioners of the Port of New Orleans, or so-called Dock Board, which operates the public wharf system of New Orleans and has general control over the port; the State Board of Commissioners of the New Orleans Levee District, which constructs and maintains levees, and by acquiring river frontage provides the Dock Board with space for wharves and wharf sheds and the Public Belt Railroad with

a portion of its right of way; and the Public Belt Railroad Commission, a municipal body, which operates the city's belt-line railway.

San Francisco is another example of an American public port, the water front from the Presidio on the north to the Union Iron Works on the south being owned by the State of California. The port is administered directly by the state through the Board of State Harbor Commissioners. The ports of Los Angeles, San Diego, and Oakland, in California, are public ports at which all or most of the water frontage is owned by the municipalities and where port administration is vested in the municipal authorities.

Semipublic ports are far more numerous in the United States than public ports. At nearly all the larger ocean ports, other than the public ones just mentioned, the ownership of the water frontage and wharves is partly private and partly public. Private ownership is by the railroads and navigation companies, dock or terminal companies, and industrial concerns; while public ownership is either municipal or state. The relative extent of private and public ownership varies widely at the large ports. The degree of public control also varies, but some public authority over private port facilities is exercised at every semipublic port, some water frontage is publicly owned, and municipalities or states provide some of the wharves.

Three general types of administration prevail at these ports:

1. Many small ports and some of the larger ocean ports are administered mainly by municipal departments. At the port of New York, for example, there is a Department of Docks and Ferries, which, under the direction of a Commissioner of Docks, employs engineers, draftsmen, surveyors, clerks, auditors, inspectors, foremen, mechanics, artisans, ticket agents, deckhands, watchmen, and other employees. The department has direct charge of the municipal docks and ferries, leases some municipal wharf property to private concerns, and is empowered to regulate all privately owned wharf properties. Hell Gate pilots are licensed and regulated by a Board of Port Wardens acting under authority of the State of New York, and Sandy Hook pilots by a board of pilot commissioners appointed by

the States of New York and New Jersey. A bistate "Port of New York Authority," has been organized by compact between the States of New York and New Jersey to coördinate the port as a whole and to guide its comprehensive development.

The port of Philadelphia is in charge of a Department of Wharves, Docks and Ferries, at the head of which is a director appointed by the mayor, subject to approval by the Select Council. There is also a Pennsylvania State Board of Commissioners of Navigation of the Delaware River, with jurisdiction over the licensing and control of pilots, the rules for the anchorage of vessels, and the general supervision of the Delaware River water front, outside of Philadelphia.

2. Some American ports, such as Baltimore, Maryland, and Portland, Oregon, are administered by municipal harbor boards or commissions. Instead of regarding port regulation and development as a problem similar to street paving, street cleaning, or sewer construction to be handled by the usual municipal officers, a special governing body is created. Sometimes the board is merely a body advisory to the port authority and sometimes it has but one active member and differs but slightly from a municipal department.

3. Some of the semipublic ports of the United States are administered in whole or part by state harbor boards. The port of Boston is under a special state board known as the Commission on Waterways and Public Lands, and boards are similarly maintained in Connecticut and Rhode Island. It should be noted that state boards in some instances administer the ports only in part, there being also separate municipal departments or boards as at other semipublic ports.

Some of the ports of the United States are administered in part by so-called independent port authorities, modeled after the "public trusts" found at so many British ports. Separate municipal corporations, independent in all respects from the municipal governments of the port cities, have recently been created by the legislatures of various states. Under the Washington Port District Act of 1911 an independent "port district" managed by an elective Port Commission has been established at Seattle for the improvement and administration of the port.

A similar independent port commission was established at Gray's Harbor, Washington, under the Act of 1911, at Jacksonville, Florida, in 1912, and at Tampa, Florida, in 1913. The port of Portland, Oregon, is administered primarily by a municipal Commission of Public Docks, but its work is supplemented by an independent authority known as the "Port of Portland," which was created by the state legislature in 1891 to levy taxes independently of the city and to improve the harbor and the Willamette and Columbia Rivers from Portland to the sea. Later it was charged with the construction and operation of a state dry-dock and with the maintenance of pilotage and towage services.

A step in the direction of the independent port authority is the bistate Port of New York Authority referred to above. This authority does not, however, displace the administrative departments maintained by New York City and New Jersey municipalities. It is a corporate body upon which the two states in 1921 conferred power to carry out the comprehensive plan for development of the port that was approved by the legislatures of both states in 1922, and, subject to certain restriction, "to purchase, lease, and/or operate any terminal or transportation facility within said district (Port of New York District), and to make charges for the use therefor, and for any of such purposes to own, hold, lease and/or operate real or personal property, to borrow money and secure the same by bonds or by mortgages upon any property held or to be held by it."[1]

Many of the smaller ocean ports of the United States, such as Port Arthur and Texas City, Texas, are private ports. Their facilities are provided by private interests, which manage them with but a minimum of public control. Some of the larger ocean ports may likewise be classed as private ports; Norfolk, Galveston, Savannah, and Pensacola, for example, depend very largely upon privately owned terminals.

Ocean Terminal Facilities

A complete description of ocean ports requires consideration of the terminal facilities. Ocean terminals perform two distinct

[1] Compact between States of New York and New Jersey, 1921, Article V.

functions, commercial and industrial, a fact which determines the facilities they need to provide. The commercial facilities have to do with the handling and shipment of the through traffic brought to them for exportation, from many outlying points by rail or by inland and coastwise water carriers, and also with traffic imported from foreign countries for transshipment to outlying destinations. Facilities must also be provided to serve the local industries situated at the port, or in the city or territory adjacent to the harbor.

The terminal facilities at ocean ports include, first of all, the necessary "docks and wharves." These terms are frequently used interchangeably, but technically the latter refers to the structures over which the vessels receive or deliver their cargoes, and the former to the harbor space alongside of the wharves in which the vessels are placed when loading or discharging. Wharves may be provided either on longitudinal shore bulkheads sometimes known as "quays," or on "piers" projecting from the shore into the harbor. The docks at most American ports or open spaces dredged alongside the longitudinal wharves or between piers. At some European ocean ports, because of the great difference in tide levels, the docks are closed in and have locks connecting them with the rest of the harbors. London, Liverpool, and Bremerhaven are notable examples of "closed dock" ports, many of their docks being excavated in the dry to the required depth and having locks uniting them with the tidal waters. At certain European ports, such as Glasgow, Hamburg, and Copenhagen, moreover, although the docks are without locks, some of them are "tidal docks" excavated in the dry with open entrances leading to the navigable channel.

Some wharves are used for the handling of the passenger traffic, but many more are freight cargo wharves, some of which serve only general cargoes, while others are employed for special traffic, such as coal, lumber, oil, and sugar. Many are covered with "sheds" or warehouses for the protection, assembling, and handling of cargoes. Bonded warehouses are also provided at American ports for the storage of imported wares to be held in bond until they are re-exported or the import duties on them have been paid.

The freight-handling facilities at the wharves, in the harbor, or on board the vessels constitute a second port essential. They are of two general types: general appliances for handling miscellaneous cargoes, and special facilities for handling special bulky commodities. There may be, in fact, more specialization of loading and unloading facilities at some ports. Special provision may be made for uniform package freight, dangerous commodities and precious goods.

In handling miscellaneous general cargo, particularly at American ports, where the use of extensive wharf machinery is on the whole less prevalent than at the larger European ports, the common hand truck is still much used in moving general cargo to and from shipside, to and from lighters, to and from railroad cars and drays or motor trucks, and from point to point on the wharves. Power-driven trucks have, however, been substituted to some extent and a beginning has been made in the use of mechanical conveyances for the movement of miscellaneous freight from vessel hatches to warehouses for subsequent sorting.

General cargo may be loaded or discharged by means of the ship's machinery or by wharf cranes, derricks, and other appliances. Although wharf machinery for general cargo is provided at some American ports, the prevailing American system places the burden of transfer upon the vessel. Various plans for operating ship's machinery are in current use, but all of these depend primarily upon power-driven deck winches, and cargo masts and booms fitted with blocks and ropes or cables. Dependence upon shore machinery for loading and discharging of general cargo is more prevalent at some of the large European ports, where many types of stationary and movable cranes and derricks and other appliances have been installed both for light and heavy freight.

The advantages cited in favor of the continued use of ship's machinery includes the heavy initial expense and overhead incurred in equipping wharves with large cranes and derricks; the lack, on many piers, of the space needed for large wharf freight-handling appliances; the necessity of constructing wharves of sufficient strength and the resulting increase in

construction costs; the absence in many instances of any marked advantage on the part of cranes or derricks in the time consumed in transferring cargoes; and the necessity of employing skilled expert operators in the operation of complicated wharf appliances. The extent to which the cranes and derricks can be used to reduce subsequent freight handlings, moreover, is limited because many piers are not sufficiently wide to be equipped with railroad tracks upon which cars could be placed for direct loading by means of the same shore appliances that are used in discharging vessels. Inertia, and in some instances, opposition on the part of longshoremen, have probably deterred pier and wharf owners from adopting shore machinery for the loading and unloading of general cargo in the United States. Only such piers and wharfs as handle a sufficiently large volume of traffic to warrant the added investment, will be equipped.

The advantages cited in favor of the use of shore cranes and derricks instead of the ship's machinery are that they reduce the number of freight handlers and the amount of hard labor employed in loading, discharging and moving cargo; that cranes are practically always ready for action and are frequently in better working condition than the ship's machinery; that their range of deposit on the wharf is larger than that of ship's tackle; that they can also be used for handling cargo from point to point on the wharf and sometimes for the direct loading of freight into cars, and that they possess a special advantage at ports having unusually heavy tides.

The freight-handling machinery on the vessels and on the wharves is supplemented by large numbers of harbor craft. A vessel may be at anchor out in the open harbor when loading or discharging; and even when it is at a dock or in a slip, or alongside a bulkhead much freight may be brought to it or received from it by harbor craft, and lighters may also be utilized so as to work both sides of the vessel at the same time. At New York cargo is moved about the harbor by thousands of harbor craft, including lighters of 300 to 800 tons freight capacity, covered barges of 300 to 500 tons capacity, floating derricks, scows, tugs, and other small craft. At London it is said that some 11,000 river barges are employed to handle about four-fifths

of the goods loaded on or discharged from the ships in dock.[2] At many ocean ports the amount of lighterage work performed is relatively less extensive.

American ports have, on the whole, done more to provide special freight-handling equipment than to install general cargo facilities. Special piers at many ocean and Great Lakes ports are equipped with chutes and pockets, car-dumping machines, movable loading and unloading buckets, electric conveyors, floating tipples, or "fast plants" of various kinds for loading or discharging coal and ore. Grain is handled in bulk at many points through stationary and floating elevators. Petroleum wharves with special appliances have been erected at various Atlantic, Gulf and Pacific ports; and at some ports special machinery is used for handling bananas, phosphate and fertilizer materials, sand, gravel, and other building materials.

Standardized package freight conveyors have been installed more largely in Europe than in the United States. Although conveyors are at times used in loading, discharging, and handling miscellaneous general cargo, they are especially adapted to freight shipped in standardized packages. The costs and time of handling packages are reduced and there is less damage to cargo.

It is especially important that the various parts of an ocean terminal be so coördinated as to minimize expenses for drayage and lighterage. Belt-line railroads are operated along the water front at some ports to connect the piers and wharves used by ocean vessels with each other, with those used by coastwise and inland vessels, with the premises of local industrial and mercantile establishments, and with the railroads serving the port. A good example of such a belt line is the one operated by the city of New Orleans. Coördination of the water-front terminals with the railroads is one of the most serious needs at American ports.

Several charges must be paid by a vessel when it enters or clears a port. Some of these charges are levied upon the vessel, and others are assessed against the cargo. Some of the fees or dues are imposed by the state, the municipality or the Federal

[2] D. Owen, *Ocean Trade and Shipping*, p. 24.

Government, and still others are of a strictly commercial character.

Dockage and Wharfage Practices

Two of the principal port charges incurred are for "dockage" levied upon the vessel and "wharfage" based upon cargo. The practice of different ports regarding the collection of dockage or wharfage varies widely. Five principal variations are readily discernible:

1. At ports where the facilities are largely controlled by the trunk line railroads it is sometimes the practice of the railroads to give the use of their facilities for through traffic free or for small charges. At Philadelphia, for example, no dockage is charged at railroad terminals if the vessel loads or discharges through export or import freight. Most of the municipal piers are leased on exclusive terms, but some of them are open to public use upon payment of a dockage charge based upon the net-registered tonnage of the vessel. No wharfage charge is collected at the municipal wharves of Philadelphia in case cargoes are promptly removed, and the wharfage at the railroad terminals is absorbed by the owning carriers on all through export and import traffic, unless the railroad freight rates fall below certain minima specified in the carrier's local tariffs. Export grain at most ocean ports of the United States is required to pay an elevation charge. Additional examples of the large ports at which the railroads either furnish terminal facilities free of charge or at small expense to shippers are Boston, Baltimore, and Norfolk.

2. At some ports, notably at New York, most of the port facilities are leased to steamship lines or railroads under time contracts. In such case neither the vessel nor the cargo of the concerns that lease the facilities is required to pay dockage or wharfage charges. Some of the municipal piers at New York, however, are not leased under time contracts, but are open for public use, and vessels using them pay a dockage charge per net-register ton per day. No dockage is charged at railroad piers, but at other privately owned piers various dockage rates based upon net-register tonnage are collected. No wharfage

charge upon cargo handled at either privately owned or municipal wharves is collected at New York except that at some municipal and privately owned piers a so-called "top-wharfage" charge is levied after the expiration of the first 24 hours.

3. At some ports, such as Newport News, the port facilities are open to all vessels on substantially similar terms regardless of whether the vessels are tramps or regular liners, the principal charge being for dockage which is levied upon the vessels.

4. In contrast with the plan of depending entirely upon vessel dockage charges is the system of wharfage fees in effect at Seattle, Washington, and Portland, Oregon. At these ports no charge is made against vessels, but a wharfage fee is assessed against their cargoes.

5. At other ports, such as Galveston and San Francisco, dependence is principally upon tolls or wharfage charges, which vary with the nature and quantities of the cargoes handled, but a relatively small dockage charge upon vessels is also collected. At either of these two ports the facilities are open to all on substantially equal terms. The system of port charges recently put in effect at New Orleans also provides for both dockage and wharfage charges, but the amounts are more equally divided.

Other Port Charges upon Vessels

Pilotage service, with certain exceptions, is compulsory upon vessels entering and clearing American ports, and the charges therefor vary at different ports according to vessel draft, the amount of service required, whether the service is rendered to inbound or outbound vessels, the season of the year, and the class or type of vessel. A vessel, in docking and undocking or in entering and clearing, usually requires the services of tugboats, charges for which vary with the number of tugs used, the net-register tonnage of the vessels, the distance that the vessel is towed, and the character of the towage service. Sometimes there are port warden's harbor fees and fees for each survey of stowage of cargo or of damaged goods on board a vessel or in warehouses, stores, dwellings, or public streets, and for each survey of hull, sails, spars, or rigging, and for survey certificates. A vessel may also need to pay local health or quarantine fees for

fumigating services and for sanitary inspection, charges for running lines for vessels; and other miscellaneous charges that are subject to regulation by local port authorities.

A vessel engaged in the foreign trade will also have to pay various Federal charges, such as tonnage taxes, customhouse entrance and clearance fees, and survey charges. There are additional variable payments such as the consular fees that a foreign vessel may need to make at American ports, charges for telegrams and cablegrams, for cooperage and carpenters' services, for lumber, for supplies and provisions, for trimming cargo, for dry-dock services, for ship brokerage in case the vessel is in the chartered freight service, and for necessary fuel.

Bunker coal or fuel oil may be purchased from numerous concerns that make a business of providing vessels with fuel. Regular steamship companies may enter into yearly contracts whereby the coal company agrees to provide whatever coal is needed at stated prices, and the navigation company agrees to purchase from the particular coal concern all the bunker coal required at that port. Tramp steamers and other vessels not entering into time contracts will purchase fuel at current prices. Numerous coaling stations have been established at convenient points on all the principal ocean routes throughout the world, and it is also possible to obtain fuel oil at various ports in the United States and at a growing number of foreign fuel stations.

Port Charges upon Cargoes

Wharfage charges distinct from the dockage charges paid by the vessels are sometimes assessed against cargoes. They may be collected directly from operators of the vessels, but are charges against cargoes. The heaviest burden upon freight loaded or discharged is for stevedoring which may be borne in the first instance by the vessel instead of the shipper, consignee, or shipping agent, but will be passed on by the regular line vessels to the shippers who pay the freight charges. Who pays loading or unloading charges in the tramp service depends upon the terms of the charter party. The cost of loading, discharging, or transshipping cargo at ports, may also include special

charges for the use of cranes or derricks, even when ordinary stevedoring charges are absorbed by the carrier in its freight rates. There may likewise be elevator charges or allowances in the shipment of grain, cargo-trimming charges, freight-forwarding charges, railroad demurrage in case freight is not unloaded from railroad cars within the prescribed number of days, vessel demurrage in case freight is not loaded into the vessel or delivered to or received alongside the vessel within the prescribed free time or at the rate of an agreed number of tons per day, unabsorbed railroad switching charges, fees for consular invoices in case of shipments to certain countries requiring such invoices, drayage or cartage and lighterage charges for transporting freight from one wharf to another or between a railroad station and the water front, storage or warehouse fees, and miscellaneous charges incurred in the preparation of shipping documents. There are also the costs incident to the transfer of rail-ocean freight between piers and freight car, which are in many instances absorbed by the carriers in the export and import trades. When not so absorbed the freight-handling charge is collected in addition to the railroad rate and may be a substantial item of expense. Many of the terminal charges collected at American ports depend upon local conditions and are not uniform. They may, moreover, be paid either directly by shippers or consignees, be absorbed by the ocean or the rail carriers, or be included in the freight rate.

Of a somewhat different character are cargo charges such as import duties collected on many imported commodities under the tariff laws of the United States, and the brokerage charges, collected by customs brokers for entering imported merchandise through the customhouse. These charges are not directly connected with the shipping and handling of cargoes in the foreign trade, and are to be considered as port charges only in an indirect way.

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CHAPTER XLV

COÖPERATION AND COMPETITION IN THE OCEAN TRANSPORTATION SERVICE

THE competitive and coöperative aspects of the railroad industry were considered in Parts II and III in connection with railroad charges and services. It will be evident from the following discussion that the ocean shipping industry is more competitive than the railroad business, and that in some respects ocean and rail transportation differ fundamentally.

Ocean and Rail Competition

The magnitude of the larger present-day steamship lines and their tendency to consolidate, the rise of companies with large fleets of tramp vessels, and the almost universal tendency of ocean lines in recent years to enter into conferences, pools, or agreements, clearly indicate that the ocean transportation business is less competitive than it has been in the past. There are various reasons, however, why even now it continues to be more competitive than the railway business:

1. The ocean is a highway free to all persons. A vessel may sail the sea without purchasing a right of way, and may also enter the ports of every country to load and unload cargo. A small charge may be made for the privilege of entering the port and using its facilities, but the rate of charges is the same for everybody. Even at ports where the commercial facilities have been provided by the capital of a private company, the right of shippers and carriers generally to use those facilities is frequently maintained by public regulation.

2. The ocean vessel has a far greater range of movement than has the railroad car. The entire sea, all its routes and their termini, are available for the ship. Although various lines have at times divided traffic territorially, it is hardly possible "to

divide the field" of traffic operations at sea, and to restrict the shipments via certain ocean routes and termini to a single carrier or combination of carriers. Even though the lines may combine, the competition of the independent vessel is world-wide.

3. It is easier to engage in ocean transportation than in the railway business. The minimum amount of capital required to enter upon the former is relatively small. There are small ships as well as large ones that may ordinarily be purchased or hired by any one desiring to become a public carrier, and a vessel can always be chartered by a manufacturer or trader who may desire to make but a single shipment.

The investment needed to own cargo vessels is relatively small in comparison with the funds required for a large ocean line or for a railroad. The average paid-up capital and indebtedness of some 500 British cargo vessels in 1926, was less than 38,000,000 pounds sterling and their reported book value was 45,898,000 pounds sterling.

It is more difficult to enter the business of ocean-line transportation than to operate independent vessels, both because the amount of capital required is greater and because deferred rebates and other practices of existing lines, as will be described in the following chapter, sometimes make it difficult for newly organized lines to obtain traffic or to withstand organized opposition. Ocean lines, however, differ sharply from railroads in that they do not require so large a capital investment as do the latter. A financial statement for 1926, of 27 British passenger-carrying lines operating over 1,000 vessels, shows an indebtedness and paid-up capital of 98,919,000 pounds sterling. The combined book values of their fleets were 161,786,000 pounds sterling.[1]

4. One may retire from the field of ocean transportation with relative ease. Although property in a ship is "fixed capital," in that the ship can be used only for the one service of transportation, the ownership of this fixed capital may readily change hands. As the vessel represents a relatively small amount of capital, as compared with a railroad, a buyer may under ordinary conditions readily be found. At least there will be little

[1] Angier's Steam Shipping Report, 1926

difficulty in finding a person who will charter a freight vessel. Ocean vessels, whether line or tramp, are not tied down to a fixed right of way as railroads are. If they prove unprofitable on one route, they may be shifted to another or sold to a concern which will operate them elsewhere. Some financial loss may be incurred, but the sale can be made more easily than in the railroad business.

5. Ocean carriers, even the lines which are parties to conference agreements or pools, are subject to commercial competition, much of which is international in scope. The rates from the United States must be made with reference to those from rival commercial countries, and the relative rates from different ports in the same country are greatly influenced by the rivalry of the ports. The commercial or industrial competition affecting railroad rates is mainly domestic; that influencing ocean rates is international in scope. Only a part of the railroad's traffic enters into the foreign trade, while nearly all of the freight traffic of ocean carriers is international, and is subject to a competition that becomes more intense as the foreign trade of the world increases.

A sixth difference between the railroad transportation and ocean shipping, although one less inherent and fundamental in that it may change somewhat in the future, is that railroad charges and services have been subjected to greater public regulation. Ocean carriers, either individually or coöperatively, are as yet far more free than are the railroads, to advance or reduce their charges.

Competition in Line and Tramp Services Contrasted

The difference between line traffic and charter traffic needs to be kept clearly in mind in considering the nature of competition in the ocean transportation service. In charter traffic, competition is full and free, except in certain restricted regions of minor importance in ocean transportation. There is little likelihood that the service of transporting upon the ocean the great staple articles of international and coastwise commerce will be monopolized. As long as the ports of the world are open on equal terms to all shippers and carriers, as long as men may

buy or charter vessels and sail them at will upon the high seas the rates charged for the ocean transportation of the great staples of industry and trade, and hence for the larger share of the tonnage of ocean freight, will be competitive.

The partial restriction of line competition has been possible because it is a costly venture to establish a line of large fast steamers. To fulfill the requirements of the present-day passenger and mail services necessitates the investment of several millions of dollars and the organization of a business that only a large corporation can undertake. The number of ocean lines is consequently limited, and if the small number of rivals can come to an agreement as to rates, division of traffic, or pooling of earnings, competition can be regulated and some measure of monopoly can be established. Each line has a large investment at stake, and while its ships can be transferred to some other ocean route and to some other service, the vessels, having been constructed and equipped with special reference to the particular service they are performing, cannot in normal times be sold or transferred to other routes without heavy financial loss.

The unregulated traffic struggles of the giant lines tend to be financially destructive for both or all combatants; competition becomes so severe as to cease to be a healthy stimulus to business; artificial and unstable conditions of trade are created, and at the close of the struggle the carriers finding themselves financially weak are less able than they were at the beginning of their war to improve their service and to keep their equipment and facilities abreast of business needs.

As with rival railroads so with competing steamship lines, coöperation for the regulation of competition is necessary, a fact that is clearly shown by the history of the interrelations of steamship companies, by the rate and traffic agreements and pooling arrangements they have made, by the merging of small companies into larger ones, and by the consolidation even of large companies into a yet more powerful corporation. It will be helpful before taking up the question of rates, to study the ocean-line conferences, pools, and agreements prevailing in nearly all parts of the maritime world.

The occasional agreements or conferences that have been ar-

ranged among the owners of tramp vessels have been limited in scope and have had no great effect upon charter rates. In 1904, for example, the Sailing Ship Owners' International Union was organized for the object of fixing minimum rates of freight for the principal voyages in which sailing vessels were engaged in bringing freight to European ports from countries outside of Europe. The scope and effect of this conference, however, was limited. It applied only to certain long voyages, such as those from the west coast of South and North America and the return voyages; only sailing vessels were included in the agreement, and these had to be relatively large vessels of an agreed minimum tonnage. The rates agreed upon, moreover, were merely a minimum, which was fixed close to the line of no profit.

There are also various steamship owners' associations, particularly in Great Britain, that have at times endeavored to control charter rates between certain of the larger ports, but have never exerted a widespread effect upon such charges. They are concerned mainly with obtaining favorable harbor regulations and shipping legislation, Government protection against the shipping policies of foreign countries, improved charter parties, reduced coal-trimming charges, favorable tolls, protection against organized labor, or with economical marine insurance.

At times certain ship operators have complained of agreements making it difficult for them to charter vessels for use in particular trades, such as the trade between Porto Rico and the United States.[2] No evidence has, however, been presented that any considerable number of such agreements have ever been in existence nor that their effect was general. The Porto Rican agreement was possible because the trade of the United States with that island is "coastwise" trade and is not open to the competition of foreign vessels.

It is in the ocean-line business that coöperation has displaced unrestricted competition. Conferences, agreements, and pools have become general in the ocean-line traffic because their organization and maintenance are less difficult than in charter traffic, and because the competition between ocean lines, if unrestricted,

[2] House Committee on the Merchant Marine and Fisheries Proceedings in the Investigation of Shipping Combination, I, p. 701.

is likely to become so intense and persistent that their successful and profitable management requires them to enter into arrangements regulating their interrelations. As was stated in the *Report on Steamship Agreements and Affiliations in the American Foreign and Domestic Trade,*[3] made by Professor S. S. Huebner to the House Committee on the Merchant Marine and Fisheries in 1914, "as regards nearly every foreign trade route, nearly all the established lines operating to and from American ports work in harmonious coöperation, either through written or oral agreements, conference arrangements, or gentlemen's understandings. There were but few instances where two or more lines served the same route and denied the existence of written or oral agreements for the regulation of trade."

A report on Shipping Rings, made in 1909 by a British Royal Commission, showed that line conferences and agreements were at that time almost universal in the international trade of foreign countries.

The European War resulted in the disruption of some of the conferences and agreements specifically referred to in the above-mentioned Government reports, and the general reduction in ocean freight that occurred in 1921 and the rivalry for traffic which began at that time still further disturbed conference arrangements. More recently, however, line competition has again been controlled in a measure by coöperative action, and the conferences may be expected gradually to regain their former position in ocean shipping. A report of the Department of Commerce made in 1924, listed 28 active major ocean conferences and formal or informal arrangements in the commerce of the United States, and several of the major conferences are divided into sections or subconferences.[4]

The organizations through which the lines administer their agreements, pools, or understandings are known as "conferences." They may be informal gatherings or intermittent, irregular meetings, at which rates, sailing or other matters of mutual interest are arranged. There may be nothing but an in-

[3] Proceedings in the Investigation of Shipping Combinations, Vol. IV, p. 281.

[4] E. S. Gregg, *Rate Procedure of Steamship Commerce,* T. I. B. No. 221, April 21, 1924.

formal understanding that the traffic officials of one line will consult those of another whenever any rate changes are contemplated, or that a weaker line will charge the rates established by a stronger line. Conferences may, however, be formal organizations with permanent officers, committees, regular or special meetings, rules, and penalties.

Competition between conference lines has frequently been subjected to the restricting influences of fixed, minimum, or differential rate agreements. A fixed rate agreement is one that specifies the actual or absolute freight rate or passenger fare that is charged by a group of conference lines, all charges to be subject to the mutual consent of all members. Certain heavy commodities may be excluded from such an agreement, or may be given special treatment by agreeing merely upon the minimum rates below which they may not be carried. Minimum rate agreements, not prescribing absolute rates for any classes of traffic, have been more numerous than fixed rate agreements, particularly in the freight and passenger business of the North Atlantic route. Differential rate agreements are at times entered into when the service of particular lines is indirect or slower than that of others serving the same ports. Under such conditions the conference lines sometimes agree upon differential rates so as to enable all lines to obtain a fair share of available traffic, the differential lines being authorized to charge 5, 10, or other agreed percentage less than the charges of the direct or standard lines.

Many ocean lines go further than to agree upon their rates. Some of them have at times entered into "pooling" arrangements similar to those which prior to 1887 were prevalent in the railroad industry. Ocean pooling arrangements for many years were virtually unrestricted; and they are now permissible, subject to supervision by the Shipping Board.[5] Both traffic and money pools were more common before the disruption of conference arrangements during the War and post-War period, but they may again become more numerous in the future because they constitute a definite plan for the division of competitive traffic and a method for the enforcement of ocean rate agree-

[5] See Chapter LIV.

ments. Rate agreements, which are not enforceable by law, may depend upon understandings and promises, or a money penalty based upon a requirement to deposit a stipulated sum may be provided for; but, when earnings or traffic pools are carefully arranged and administered, the incentive of conference members secretly to undercut agreed charges is largely destroyed.

Other methods of enforcing rate agreements or controlling competition between conference lines have also been utilized. Instead of entering a formal traffic pool, an indirect line may agree with the direct lines to carry not more than a defined proportion of the total volume of traffic; without pooling its earnings or traffic or being hindered in the quotation of its rates. Conference lines, moreover, may agree to restrict the number of sailings of each line. They may enter into an agreement which stipulates the vessel tonnage that each line may provide. They may allot ports of sailings to particular lines and in that way partially divide the available traffic in certain trades territorially. Sometimes several of these plans are combined as a means for regulating competition. During the competitive post-War shipping period, which began in 1921, most ocean conferences have endeavored partially to control competition between conference lines by means of rate agreements or understandings, but in due time the pooling, tonnage and other comprehensive conference arrangements that were so prevalent before the European War may again be expected to become an important feature of ocean shipping.

One of the most effective measures taken by some of the conference lines to protect themselves against the competition of outside, non-conference lines is the payment of deferred rebates. Shippers are promised a rebate of 5 or 10 per cent of their freight payments at the end of designated periods of 3, 6, or 12 months, provided that they have meanwhile given their exclusive support to the conference lines. The system is now illegal under the Shipping Act of September, 1916, so far as the trade of the United States is concerned, but was formerly common in the long-distance trades to South American and Oriental ports and at times handicapped independent steamship lines.

The use of "fighting ships," or collective competition, has

also been utilized as a means of protection. There have been instances of certain steamers being operated to destroy the competition of nonconference lines, by undercutting the rates of outside lines and by sailing on the same days and between exactly the same ports. Sometimes a separate company was incorporated to operate the fighting ships. The Shipping Act of September, 1916, prohibits the use of fighting ships in the American trade.

Conference lines, either individually or as a group, may make contracts with shippers, whereby in return for reduced rates and an agreed service the shippers promise to dispatch via the conference lines their entire shipments to certain ports during the stipulated periods. The privilege of securing such contracts is usually open to all shippers alike, but at times discrimination has been alleged. Contracts have been made with large shippers for all or a part of their freight at lower rates than those quoted on smaller quantities of similar commodities. The Shipping Act, however, prohibits unfair discrimination, and the Shipping Board has instituted proceedings to determine the legality of time contracts.

The conferences, agreements, and understandings of ocean lines have sometimes been complained of on the ground that their monopolistic power, even though not always complete, is liable to abuse. They have at times prevented the establishment of new lines and crushed nonconference lines; or they may have exerted arbitrary power over rates, have dominated shippers, have been indifferent as to the landing of freight in proper condition and slow to settle claims. They have sometimes granted special rates and accommodations to large shippers, and refused to publish tariffs and classifications. Their secrecy, the questionable practice of paying deferred rebates, and their occasional operation of fighting ships have especially been causes of complaint.

The evils complained of can, however, be remedied by proper legislation.[6] The most objectionable features of ocean conferences and agreements are prohibited by the Shipping Act, and the administration of conferences has been subjected to super-

[6] See Chapter LIV.

vision by the United States Shipping Board. The advantages of ocean conferences and agreements both to the lines and to the shippers need not be sacrificed in order to eliminate the abuses.

Arbitrary rate discrimination by ocean conferences is the exception. For every such instance there are many in which the conferences, by controlling unrestricted competition, have made the rates more uniform to all shippers at a given port. For every arbitrary discrimination between countries there are many instances in which conferences have maintained the rates from the United States to foreign markets on a parity with those from other countries. The arbitrary increase of rates by conferences is likewise exceptional, because they cannot ordinarily disregard the competitive forces mentioned in the preceding section. All such arbitrary actions could be further restricted by Government supervision, but it should be remembered that there is no more prolific cause of discrimination than unrestricted competition.

Ocean conferences benefit both the conference lines and the shippers by stabilizing rates. The merchant engaged in international trade desires an adequate service at rates that are reasonable and fairly stable; fluctuating rates seriously interfere with trade, whether it be domestic or international. Sudden and large changes often characteristic of ocean rates may interfere with the development of commerce as seriously as the unstable competitive rates by rail in the United States have in times past hampered the industrial development of different sections of the country.

The chief benefit of ocean conferences to shippers, however, is in the improved service which they make possible. Conferences reduce the cost of the line service, and while this increases the profits of the line, it also makes possible a lower level of rates and a higher standard of service. For every instance of indifference to the welfare of shippers, there are many in which ocean conferences have promoted regularity of service, better distribution of sailings, and ultimately the operation of more and better vessels than the lines would have felt justified in providing if interline rate competition were absolutely unre-

stricted. The instances in which conferences have prevented a new line from entering a trade or have put a nonconference line out of business should be balanced against the large number of weaker conference lines which would probably be crushed or would suffer severely if they engaged in uncontrolled competition with their stronger fellow members. Against the scattering instances of conferences having discriminated unfairly against certain ports should be balanced their ability so to distribute their cost of service more economically as to increase the number of sailings at the smaller ports where competitive services would be unprofitable. On well-established trade routes where the flow of traffic is heavy in volume it should, moreover, be borne in mind that most of the conferences have to do almost entirely with rates and earnings. Nowhere in the world has such progress in ship construction and service improvement been made as in the North Atlantic passenger business, and yet the great lines that compete so keenly as regards the kind of service rendered are parties to rate agreements and pooling arrangements.

These benefits to the shipper and the ocean traveler may, however, in individual instances, be largely nullified by the steamship conferences if they follow a policy of restricting the development of the service, and a policy of high rates and small volume of business instead of low rates and maximum traffic. Instances are not wanting of arbitrary action on the part of steamship organizations to prevent outside lines from interfering with the established traffic of the associated companies unless they became members of their conferences, and shippers have sometimes been penalized for patronizing lines not belonging to the combination. The tendency of those possessing exclusive privileges is to seek vigorously to retain such privileges against outside interference; accordingly, it is clear that conferences among ocean carriers, which seem to be rendered necessary by the severity of unrestricted competition, should be carefully supervised and regulated by governmental authority, as is required by the Shipping Act of 1916, and the Merchant Marine Act of 1920.[7]

[7] See Chapter LIV.

Ocean Steamship Line Consolidation

The control of line competition by means of conference arrangements has been supplemented somewhat by consolidation. The growth of huge individual ocean lines and groups or combinations has not obviated the need for associated action on the part of all lines operating in a particular trade, for in some instances its effect has been to substitute the competition of giants for that of a larger number of smaller lines. Each consolidation, however, influences the character and scope of competition in that such lines as are brought under common management or financial control cease to compete with each other as independent concerns. Steamship consolidations are stimulated by the failure of conferences fully to control competition, by the need for greater investments, by the hope of more efficient and economical operation, and at times by the desire to extend or enlarge the services of a line. In the latter case a steamship line may have the option of creating a new line or of obtaining control of one or more existing lines.

Many steamship lines have grown from small beginnings to large proportions by adding directly to their tonnage and services without consolidation with other lines. The Hamburg-American Line which in 1914, before the outbreak of the War in Europe, operated 215 vessels of 1,168,000 tons gross register, was the most conspicuous example of a mammoth steamship line created largely, although not entirely, by direct expansion. It operated 70 different services touching at about 300 different ports, and most of them were operated under its own name or by concerns that were affiliated directly with the management of the Hamburg-American Line.

The tendency has been for steamship lines to consolidate or to form affiliated groups. Some of the consolidated lines in such groups may lose their separate identity, but others may continue to be operated under their original names by subsidiary companies.

The Royal Mail Steam Packet Company, since its purchase in 1926 of the White Star Line and of holdings in several subsidiary companies, includes 8 major steamship lines with a

combined fleet of about 2,695,000 tons gross register. The Peninsular and Oriental group includes 14 lines which together operate a combined fleet of about 2,500,000 tons gross. Other large foreign combinations are the Cunard group, the Furness, Withy group, and the Ellerman group. Many large foreign lines, such as the Japanese, the Hamburg-American Line and the North-German Lloyd, the Compagnie Generale Transatlantique and several other large French lines, the Canadian Pacific Railway Company's steamship services, the Holt Line, the Clan Line, the Harrison Line and other British steamship lines of very substantial tonnage are mainly individual lines that have not depended so largely upon consolidation in adding to their tonnage and services.

A number of large steamship consolidations or affiliated groups have similarly been organized in the United States. The largest American consolidation for some years was the International Mercantile Marine Corporation which was organized in 1902 as a holding and operating company. Most of its tonnage is foreign, but the company itself is American in that it was organized in the United States and its capital stock is largely American owned. The International Mercantile group until recently comprised 8 steamship companies with a combined tonnage of over 1,400,000 tons gross register. During 1926, however, it sold the White Star Line and its holdings in the Shaw, Savill and Albion Company, and in George Thompson and Company to the Royal Mail Steam Packet Company. In so doing it disposed of 597,458 tons gross of foreign tonnage.

Another American consolidation is the so-called "A.G.W.I." group which centers around the Atlantic, Gulf and West Indies Line. Its business includes both foreign and coastwise traffic, for besides the parent line itself the group includes the Clyde, the Mallory, the New York and Cuba Mail, New York and Porto Rico and Southern Steamship Company lines with a combined tonnage of about 300,000 tons gross. Still another American combination is the so-called Harriman group which was built around the United American Lines but in 1927 nearly all of its tonnage was sold.

As in the case of British shipping, a number of large indi-

vidual American lines, not depending so largely upon consolidation for their expansion, are actively engaged in ocean shipping. Such, for example, are the Admiral, Barber, Grace, Dollar, Munson, International Freighting, Bull, and Luckenback Lines and many others.[8] Some of these companies in addition to operating privately owned tonnage, manage fleets of vessels owned by the United States Government. The growth of some of them has been partly by consolidation. Mention should be made also of the United States Lines, a company owned and managed by the United States Emergency Fleet Corporation. This organization operates the Government's finest passenger vessels in the North Atlantic trade.

There has been a tendency in the past for industrial concerns both here and abroad to engage in steamship operation. The Standard Oil Company of New Jersey, the Royal Dutch Shell Company and other oil-refining concerns, the United States Steel Corporation, the Bethlehem Steel Corporation, and the British Steel Company are conspicuous examples. The Grace Lines and the steamship services of the United Fruit Company similarly are outstanding examples of important ocean lines that are operated by trading companies.

Coöperation and Combination of Ocean and Rail Carriers

As rail and ocean lines must necessarily come into close business relationship, and as the railroad companies are for traffic reasons interested in the maintenance of adequate ocean transportation service, their tendency as in the case of steamship lines in their dealings with each other, has been to cooperate. There is direct competition between rail and coastwise carriers, and an incentive to consolidate for the purpose of regulating competition.

Coöperation of ocean carriers and American railroads by common ownership or control has been mainly confined to coastwise and other domestic commerce. There have, however, been noteworthy instances in the foreign trade. The Southern Pacific Railroad for some years controlled the Pacific Mail Steamship Lines, the Great Northern Railroad until 1917 operated steam-

[8] See *Pigotts Bulletin, Lloyds Register*, or other current references.

ships from the Pacific coast to the Orient, the Chesapeake and Ohio at one time ran a line from Newport News to London and Liverpool, the Reading Railway once had a service from Philadelphia to London and Avonmouth, and the Pennsylvania Railroad controlled the American Line to England. At present, however, the direct control of steamship tonnage in the foreign trade by American railroads is relatively unimportant. The Canadian Pacific Railway is more heavily interested in steamship tonnage, as it operates lines on the Pacific to the Orient and on the Atlantic to Europe.

The reasons why the principal ocean trades, such as those of the North Atlantic route, are so largely free from the direct or intercorporate control of American railroads are both historical and economic. The ocean transportation service across the North Atlantic was well organized and highly developed long before the railroads began to carry a large volume of traffic for export. As the railroads increased this traffic they, in the main, made use of previously existing ocean carriers, who have developed their facilities with the growth of the tonnage turned over to them by the railroads. The trade of a great port like New York, for example, reaches out to all parts of the world and includes not only the commerce of the large foreign ports with which there is a heavy and regular volume of trade, but also the smaller and more out-of-the-way foreign sources of this country's international trade. To handle such a commerce as New York City has, special ocean carriers are desirable; there is need not only for a few large steamship lines, such as the railroad interests might provide, but also of the services of smaller lines and independent vessels.

Railroad ownership or control of carriers by water in domestic commerce is less prevalent than a dozen years ago because of the prohibitive clause (Section 11) of the Panama Canal Act of 1912, and to some extent of the Sherman Antitrust Act of 1890. There still remains a substantial amount of railroad ownership or control.

The common ownership or control of railroads and ocean carriers engaged in the foreign trade is relatively limited in scope, but the fact should not be overlooked that a measure of

coöperation is obtained at many ports through ocean-rail traffic agreements or preferential contracts. New York, New Orleans, and Galveston are termed "open ports" in the sense that the railroads and ocean carriers serving them apparently are not parties to such contracts. Thirty-two preferential contracts or arrangements covering nearly all the other ocean ports of the United States, however, were reported to a Congressional Committee in 1914 and others may have been overlooked.[9]

Prior to the decision of the Interstate Commerce Commission rendered on May 7, 1912, many of the agreements were mutually "exclusive." Thereafter some of them were modified so as to make them mutually "preferential" rather than exclusive, the Commission having decided that although under the Interstate Commerce Act, as amended in 1906 and 1910, a railroad may reserve wharves for its own use and for preferred ocean carriers, it must at the same time afford the public access to equal facilities elsewhere at equal rates, and that the issue of through bills of lading on export traffic via a favored ocean line obliges the railroad to issue such bills via other lines serving a given port, subject to reasonable regulations.[10] Moreover, Congress in enacting the Panama Canal Act of August 24, 1912, definitely provided that if any rail carrier subject to the Act to regulate commerce enters into arrangements with any carrier by water operating from a port in the United States to a foreign country, through the Panama Canal or otherwise, for the handling of through business between interior points of the United States and such foreign country, "the Interstate Commerce Commission may require such railway to enter into similar arrangements with any or all other lines of steamships operating from said port to the same foreign country."

Railroads and ocean carriers also coöperate in the issuance of through bills of lading, thereby relieving interior shippers, who desire through bills for their foreign consignments, from the need of engaging special port representatives to attend to the transshipment of their cargoes at the ports of export and

[9] Committee on the Merchant Marine and Fisheries, Proceedings in the Investigation of Shipping Combinations, Vol. IV, Chap. ix, p. 238.

[10] Mobile Chamber of Commerce *et al.* v. Mobile & Ohio R. R. Co., *et al.*, 23 I. C. C. Reps., 417, May 7, 1912.

import and to the formalities connected therewith. There have, moreover, been instances in which the rail-and-ocean carriers quoted joint or through freight rates to and from foreign countries. Until after 1890, for example, many American railroads took a percentage of fluctuating through import rates from Europe to inland destinations. Since then the practice of quoting through rail-ocean rates has declined, because of the fluctuating character of ocean rates, and especially because the Hepburn Amendment of 1906 to the Interstate Commerce Act obliges American railroads to publish and file their rail rates on imports and exports as well as on domestic traffic and to give a notice of 30 days of any change in rates. These legal requirements have made it impossible for railroad rates to be a percentage of constantly fluctuating through rail-ocean charges. At present it is mainly in the domestic trade that through rail-water rates are quoted over certain rail-coastwise or rail-lake routes.

Combined rail-and-ocean rates on foreign shipments are made mainly by combination of current ocean rates with legally collectible railroad rates. The latter are either the regular domestic rail rates or special export or import rail rates applicable to and from shipside.[11]

The railroads further coöperate with the ocean carriers in handling the foreign trade by providing special facilities at the terminals, where rail connections have been established at many ports for the purpose of reducing transfer expenses, and where the railroads provide car ferries and floats, freight lighters and barges, floating and stationary grain elevators, wharves, warehouses, coal terminals, and freight-handling appliances. Their special foreign trade regulations include modified demurrage and storage rules; special shipping requirements in case inland freight is forwarded on through bills of lading and in many instances special freight-handling, wharfage, and forwarding services.

The traffic department of many railroads includes one or more "foreign freight agents" who have charge of the solicitation of import and export traffic and are assisted by a special soliciting

[11] See Chapter XXV.

force. There may also be a "European freight agent," "South American agent," or other special agent. A beginning has been made in the development of foreign trade advisory bureaus designed to give expert advice to exporters and importers regarding rates and routes, shipping rules and customs, shipping papers and foreign markets. The well-established coöperative rail-ocean plan for the through transportation of immigrants to interior destinations will be described in Chapter LIII.

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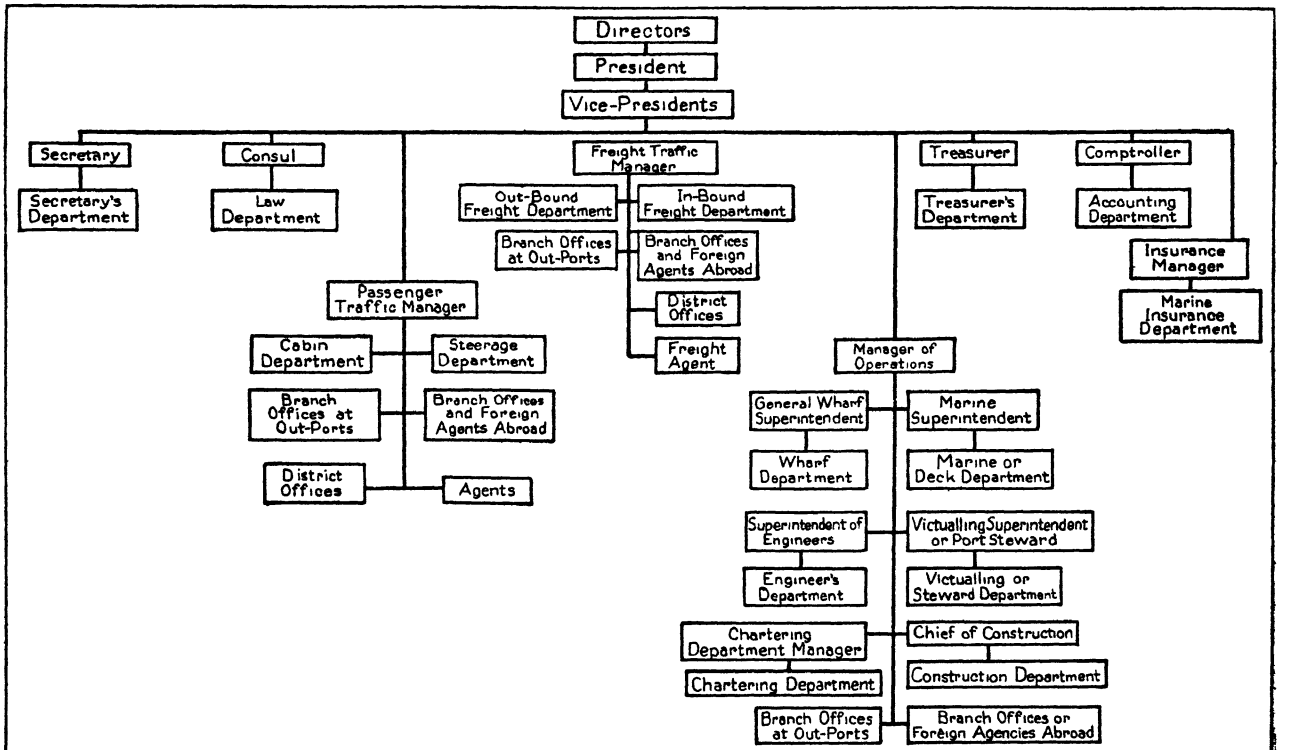
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CHAPTER XLVI

THE BUSINESS ORGANIZATION OF STEAMSHIP LINES

An ocean steamship line may be managed by the company that owns the line or by agents who may manage several lines. In either case there is an extensive business organization. The extent and character of the organization will vary with the volume and character of its traffic, the number and kind of services performed, the number of its ports of call, and the views of its owners and executive officials concerning economical and efficient management. General uniformity has not been attained to any greater degree than in the management of railroads.

No single business organization can be taken as typical of all steamship lines, but certain officials and departments are usually provided for. The executive head, the President, is directly responsible to the Board of Directors and in a large steamship line there will be one or more Vice Presidents in charge of certain departments. Small companies may dispense with the Vice Presidents, heads of the several major departments reporting directly to the President. Each organization has a Secretary, and may either have a Counsel or depend upon outside attorneys when legal assistance becomes necessary. There will be a Traffic Department which may have two divisions, one for freight and one for passenger service. Operation is in charge of the Wharf, the Marine, and the Engineering Departments; and a passenger line also has a Steward or Victualing Department. These subdepartments, each of which is engaged in different operating activities, together constitute the line's Operating Department, the immediate head of each being responsible to a Manager of Operations. A large organization may have additional subdepartments, a Chartering Department and a Construction Department. In a large company the Traffic and Operating Departments are usually separate, each with a distinct admini-



FORM 6.—MAJOR OFFICIALS AND DEPARTMENTS OF A LARGE STEAMSHIP LINE ORGANIZATION.

strative head, but in case of a smaller concern both may be subject to one General Manager or otherwise designated official responsible to the President.

Foreign offices and agencies are essential parts of traffic and operating organizations. Lines operating services at more than one American port, moreover, maintain branch offices in the United States to perform the necessary traffic and operating functions at the outports, a term used to distinguish such ports from the port where the central organization is located. The Passenger and Freight Traffic Departments frequently maintain district offices and agents at interior points in the United States for purposes of effective traffic representation.

The business organization of a steamship line must also include the Treasurer's and the Accounting Departments, and large steamship companies may have a Marine Insurance Department.

The various departments and officials of the business organization of a large steamship company are charted in Form No. 6. The large organizations vary somewhat, and small companies do not require extensive subdivision of functions. The personnel employed within each department may be large or small, and the subdivision of duties will vary as the requirements of each line demand.

The Corporate and Financial Departments

The duties of the Secretary's Department are similar to those usually performed by the secretary of any business concern. The Law Department and its attorneys handle the legal work, the law suits that may arise and the proceedings before the Shipping Board, and furnish the legal advice that may be needed in connection with claims, taxes, contracts, security issues or any other of the many activities of the Traffic, Operating or other Departments. The Insurance Department is intrusted with the placing of marine insurance either in self-insurance funds or in mutual associations, or with insurance companies and underwriters, the department being concerned with the adjustment of claims and with the steamship company's entire insurance requirements.

The Treasurer's Department, consisting of a Treasurer and a staff of subofficials and employees, has charge of the company's routine financial affairs, within the limits set by the Board of Directors, and is concerned with the issue of securities, the management of the company's banking and foreign exchange relations, the receipt of revenues from all sources, the keeping of cash accounts and the disbursement of funds upon voucher or other authorization. Its routine affairs on board ship, in port or at sea, are conducted by pursers.

The Accounting Department headed by the Comptroller or an otherwise designated executive, contains a varying number of subofficials, auditors, and other employees. The Department's activities include the auditing of revenue and expense accounts, the signing of vouchers authorizing disbursements, the keeping of the accounting records, the preparation of financial statements, balance sheets and statistics; and in general, the same duties as are performed in the Accounting Department of a railroad.

The Freight Traffic Department

The solicitation of traffic and providing for its shipment requires a relatively large organization that is usually divided into two parts, one for freight and another for passenger business, each with its manager. A smaller company or one less extensively engaged in the passenger business will have one manager in charge of both freight and passenger traffic, the work under his supervision being subdivided among appropriate officials and employees.

The Freight Traffic Manager not infrequently ranks as a Vice President because the department under his control is one of great importance to the successful operation of a steamship line. Under the Vice President there may be one Assistant Freight Traffic Manager in charge of outbound freight, and another in charge of inbound freight, these officials being designated sometimes as Outbound and Inbound Freight Managers, but the more usual practice is to have one or more General Freight Agents. The General Freight Agents may be in charge of outbound or inbound freight of one line or of the freight traffic work con-

nected with separate lines operating over different routes out of one port or out of different ports.

Freight rates are fixed by the General Freight Traffic Manager and his assistants and require the compilation of reliable information as to commercial needs, active and potential tonnage, operating costs and other matters that will be considered in a subsequent chapter on rate-making. The rates of many ocean lines are made in accordance with conference agreements and understandings, and the General Freight Traffic Manager or his assistants represent their company in negotiations with other lines. The General Freight Traffic Manager sees that the proper instructions as to tariffs are given to the company's freight agents, district officers, solicitors and brokers.

The General Freight Traffic Manager, in the development of traffic, supervises the agents of the line at the ports, at interior district offices, and at offices in foreign countries. Should he decide that the line's traffic warrants the running of additional steamers, or that the company's interests would be furthered by establishing services over routes or at ports not formerly served by the line, he makes appropriate recommendation to the owners, as to the number and type of vessels to be purchased or ordered built.

The Traffic Department adjusts freight claims unless the company should assign this work to another department.

The Outbound Freight Traffic Manager, or a General Freight Agent, coöperates with the General Freight Traffic Manager in making rates and in formulating traffic development policies. He also has charge of outbound traffic, of the booking of freight with a view to taking a maximum tonnage of cargo after allowing necessary space for fuel, stores and supplies. When cargo is scarce, a vessel may sail with a part of its space unoccupied, but when shipments are plentiful the most efficient and profitable use will be made of the vessel's carrying capacity, and the division between heavy and light or measurement cargo will be such as to produce a maximum lading.

The traffic office must keep a record of freight engagements so that the amount of freight that has been booked can be ascertained at any time, and the clerks that issue permits to shippers

informing them when cargo may be delivered at the pier must be given instructions as to when cargoes should be ordered forward. Likewise, there must be a coördination in loading and discharging of cargo by the Wharf Department and the forwarding of the cargo by the Freight Traffic Department.

The masters of vessels and agents at foreign ports receive instructions from the Traffic Department. Bills of lading must be checked by the traffic office and prepared in final form and signed; the ship's manifest, which contains an accurate list of the vessel's entire cargo, must be prepared and the documents needed for the clearance of vessels at the customhouse must be prepared even though the actual clearance of vessels is frequently performed through an outside customs broker. Outbound freight traffic is solicited personally and by advertising. Arrangements are made with railroad lines for the handling of through traffic, the steamship line often performing a general forwarding business. For the performance of these various duties an appropriate official and clerical staff is maintained.

Inbound freight traffic is sometimes placed in charge of an Inbound Freight Traffic Manager who is subordinate to the General Freight Traffic Manager, but even in case of a large steamship company, the inbound traffic organization is usually smaller than the outbound, because most of the solicitation of inbound freight is done abroad by the branch offices or agencies which handle the booking of return cargoes, the issuing of shipping permits, bills of lading, and ship's manifests, and prepare clearance papers at the foreign ports.

The Inbound Freight Traffic Manager of a large organization may have under his direction a number of inbound freight solicitors who endeavor to obtain freight from abroad. The routing of imports to the United States is not always left to the foreign exporter; the importer located in the United States may prefer one line to another and may be in a position to give effect to his preference or at least to make known his wishes to the foreign shipper. It is necessary, moreover, to assemble and prepare the documents needed for the entry of each vessel at the customhouse even though actual entry may be left to the master and a licensed customhouse broker. Arrangement must be made with

the customhouse for the release of imported cargoes, or for their storage, their transshipment to other vessels for reëxportation, or their transportation under customs regulations to internal destinations. Inbound bills of lading must be examined and freight calculations made and arrival notices, freight bills, and delivery orders must be prepared. The collection of the charges due may be left to the cashiers of the Treasurer's Department. The staff of the Inbound Freight Traffic Manager consists mainly of various groups of clerks and of a number of inbound freight solicitors. Abroad the staff depends upon the organization of the line's branch offices or foreign agencies.

The Passenger Traffic Department

The Passenger Traffic Manager, who heads the Passenger Traffic Department, is concerned with the making of passenger fares, with the attendance upon the ocean conferences through which groups of steamship lines coöperate, and with the enforcement of passenger line conference arrangements to which his company is a party. His duties also include the classification of passenger services, the formulation of traffic development policies, and recommendations for the acquisition of suitable passenger vessels and the expansion of the line's passenger services, for the provision of adequate port facilities and for making effective arrangements to facilitate the transportation of steamship passengers to inland destinations.[1] He is aided by an Assistant Passenger Traffic Manager.

The Department is sometimes subdivided into the Cabin and Steerage Departments. The former has charge of the booking of passengers in the cabins by classes, the solicitation of cabin passengers, the management of tourist services, advertising and publicity work, the landing of passengers for inland destinations and giving advice and assistance to them, the preparation and distribution to agents of tickets, forms, certificates of appointment, etc., and other current matters concerned primarily with the cabin classes. The Cabin Department personnel includes booking clerks, traveling passenger agents, landing clerks, railroad booking clerks, a publicity department, and in some

[1] See Chapter LIII.

instances a tourist department and a supply distribution department.

The Steerage Department looks after the steerage traffic of the line. Sometimes it uses the personnel of the Cabin Department to avoid unnecessary duplication of employees, but it usually has its own staff of booking, landing, railroad-booking, and other necessary clerks.

Both branches of the Passenger Traffic Department have the coöperation of the foreign branch offices or foreign agencies, the passenger agents, district offices and outport branch offices, and the pursers of the vessels.

The Wharf Department

The Operating Department of a steamship line is the largest department in its business organization. Its varied duties are performed by subdepartments each having important activities.

The Wharf Department is administered by a General Wharf Superintendent, whose staff includes a Superintendent for each pier, a freight-handling force and a clerical staff, and, in case of passenger lines, a baggage department. The Wharf Department of a small company, operating at but a single pier, may be managed directly by the Pier Superintendent who is assisted by a correspondingly smaller personnel.

In the handling of freight the Wharf Department: (1) Has charge of the receipt of cargo from shippers or their agents as shipments are ordered forward by the Freight Traffic Department. Packages as received at the piers are tallied and measured or weighed, measurements are converted into tons, dock receipts are issued, notations of damage are made, and dock sheets are prepared and sent to the Freight Traffic Department, which is also notified of freight that has been ordered forward but has not arrived. Each Pier Superintendent has a staff of receiving clerks, report clerks, tallymen, dock sheet clerks, etc., for the performance of these duties. (2) Has charge of the loading of cargoes into the vessels' holds. The Freight Traffic Department "stows the ship on paper," that is, endeavors so to select cargo as to provide the most profitable available loading for each voyage and orders shipment to the pier with that pur-

pose in view, but the loading of the vessel is done by the Wharf Department. Loading a vessel includes the movement of the cargo alongside the ship, either directly or via lighters; the lifting of the cargo aboard the vessel and its stowage in the hold. This work is usually performed under contract by a master stevedore, who employs the necessary longshoremen and foremen, organizes them into gangs, and directs their activities. A Wharf Department may, however, have stevedores as a permanent part of its staff or may require Pier Superintendents to do the stevedoring. Cargo is tallied as it is loaded into the vessel's holds or on to lighters. The stowing is done according to a plan which shows graphically where different kinds of cargo are to be placed in the several holds. (3) Has charge of the discharging of cargo from vessels by longshoremen and foremen directed by a contracting stevedore or by the Wharf Department's stevedore or Pier Superintendent. (4) Has charge of the delivery of cargo to consignees. Freight is tallied as it is unloaded from the vessel and upon presentation of delivery orders issued by the Freight Traffic Department, clerks of the Wharf Department make delivery to the consignee or his agent upon the signing of a delivery receipt. The Wharf Department may receive orders to warehouse inbound shipments or release them for transshipment or transportation in bond. (5) Has charge of necessary moving, rehandling, stacking, sorting of freight on the pier or wharf, either by longshoremen or by permanently employed freight handlers. As much of the Department's work is performed by men who are employed on a time basis one or more timekeepers are required.

The handling of baggage on the piers of a passenger line is one of the duties of the Wharf Department. There is a baggage master and perhaps an assistant baggage master, and usually a baggage clerk for each class of passenger service, with the necessary number of longshoremen.

The Marine Department

The Marine Department is conducted by men connected with the Operating Department. In a large organization the head is the Marine Superintendent, who may be assisted by an Assist-

ant Marine Superintendent or Port Captain. Some companies place the "Port Captain" in charge of the entire Marine Department. The duties of these officials include the employment of masters and officers, provision for recruiting deck crews at the home port, the study of ship performance, the sending of orders to vessels, the arrangement of vessel inspections, the safeguarding of vessels as to their seaworthiness, providing for fuel bunkering and stores, the examination and approval of repair bills and the supervision of vessel repairs, and the preparation of the crew list and shipping articles.

There may be an Assistant Port Captain to supervise the loading of vessels so that they will ride safely at sea. The Marine Department includes the nonengineering personnel aboard ship: the master and deck officers, cadets, wireless operators and the seamen, who together constitute the so-called Deck Department, and also the pursers, surgeons, and their assistants.

The Engineer Department

The Engineer Department of some shipping companies is a subdivision of the Marine Department, but the more common practice is to maintain a separate department as a subdivision of the Operating Department. The officials at the head of the Engineer Department of a large line frequently are the Superintendent Engineer and an Assistant Superintendent Engineer or Port Engineer, but the "Port Engineer" of a smaller line is apt to serve as department head. The principal functions of these officials, aside from general executive supervision and department or interdepartment conferences, is to pass upon extensive repairs of engines and supervise them as they progress either in subsidiary or outside shops, to approve requisitions, to make or approve appointments of the chief engineers and assistant engineers aboard ship, to examine marine engines and arrange for inspections, to make arrangements for the employment of the engine-room force at the port, and generally to supervise the performance and maintenance of the engines in port and at sea. Voyage reports and abstracts of various kinds are received from the engineers of each vessel.

The Engineer Department has a small clerical staff ashore.

The work of the Department afloat, including the actual operation of the engines is directed by the chief engineer of the vessel, who is assisted by three assistant engineers. The engine-room force includes oilers, water tenders, stokers and trimmers or firemen and coal passers. On oil-burning ships there are jetmen, and on tankers pumpmen. The Engineer Department afloat also includes an unlicensed deck engineer who repairs winches, oils the steam steering engine and runs the ship's ice machine.

The Victualing or Steward Department

In the successful operation of passenger vessels much depends upon the Victualing or Steward Department. The general functions of the Victualing Superintendent or Port Steward and the Assistant Port Steward are to see to the contentment of those aboard ship and to reduce waste in the use and purchase of the food supplies, linen, silverware, and other supplies needed by the Steward's Department aboard ship. They make or approve appointments, check requisitions and inventories, keep informed as to prices and markets, supervise their buyers, check stocks as they are taken aboard at the home port, order replacements of linen, silverware and similar supplies, receive and examine steward's reports, and maintain records including an efficiency record or statement.

The staff on shore consists of buyers and a clerical force, and afloat, in case of a large passenger liner, includes a large personnel which is subject to the direction of the vessel's chief steward. The chief steward may be assisted by one or more assistant chief stewards. The number of cooks, assistant cooks, bakers, stewards, pastrymen, storekeepers, waiters, etc., on the working staff of the chief steward aboard ship will depend upon the needs of each vessel. The position of the chief steward may vary from that of chief cook on a small steamer to that of a responsible supervisor and diplomat on a large passenger steamer.

Manager of Operations

The Operating Department as a whole includes the Wharf, Marine, Engineer, and Steward Departments, and as already

stated it may also include a Construction Department and a Chartering Department. The Manager of Operations under whom all are coördinated is also concerned directly with branch offices and foreign agencies. The Manager of Operations, who frequently has the rank of Vice President, supervises the activities of the entire Department or group of Departments, but he is especially concerned with certain specific matters that are very directly related to efficient operation. He is particularly interested in the rapid turn-around of the company's vessels. Anything that can be done to keep its vessels on the move contributes to the success of the line. He is keenly interested in making effective port arrangements. He interests himself, in coöperation with the Traffic Departments, in the extension of the line's service and the enlargement of its fleet, and he gives careful consideration to the general policies that are applied throughout the Operating Department.

The adjustment of loss and damage freight claims is also in some instances included among the functions of the Operating Department, but, as in the case of railroad organization, freight claims may be adjusted in any one of several Departments.

Foreign Agencies and Branch Offices

Effective business organizations or arrangements at a steamship company's main port and at outports and interior cities within the United States are obviously essential to its successful management, but experience has repeatedly shown that a line must also have effective representation abroad. Traffic and operating functions that arise at the more important foreign ports which the line serves cannot be left entirely to the ship's officers. Every line, therefore, is represented abroad either by general or specific foreign steamship agencies or by branch offices which it itself establishes. It is important at foreign ports to expedite the turn-around of the vessel, to examine requests for supplies and fuel, make surveys, adjust legal difficulties, check up on the efficiency of the ship's personnel and fill vacancies in the crew, obtain and handle return cargoes, make effective wharf arrangements and perform many of the same traffic and operating duties that are performed at home ports.

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CHAPTER XLVII

SHIP BROKERAGE AND CHARTERED STEAMSHIP SERVICES[1]

THE traffic conditions favorable to the operation of regular steamship lines do not always obtain, and even when the services of lines are available, shippers—particularly those having full cargoes of bulky commodities—often prefer to charter vessels. The fleets of many steamship lines, moreover, consist in part of chartered vessels.

The varying relations between vessel owners and charterers and their respective responsibilities will be described in Chapter XLVIII in connection with the time and voyage charter parties which constitute the basic shipping documents in the chartered freight service. This chapter describes the various kinds of chartered services and types of tramp operators, the services performed by ship brokers, and their charges, and business organization.

Types of Chartered Services

Vessels are chartered most frequently for a trip or voyage to transport a full cargo. The charter may stipulate that the vessel shall proceed to a specified destination or to any one of a range of destinations. In the latter case the master, before sailing, may receive his instructions to proceed to a defined destination or he may be ordered to call at some port for orders. When shipping grain from the United States to Europe, for example, the destination of the cargo is not always known before the vessel sails. The grain may be sold while afloat, after which delivery orders will be transmitted to the master.

A vessel may be chartered for an agreed voyage by a shipper who as charterer is to provide a cargo consisting mainly of a

[1] Reproduced substantially as published in G. G. Huebner's *Ocean Steamship Traffic Management*, Chap. iv.

certain commodity or commodities and is to be responsible for a charter rate based upon a full cargo, but who may also accept cargo for other shippers at a higher or lower rate of freight than that named in the charter party. The shipper in this case puts the vessel "on the berth" to fill available space not needed for his own cargo. He pays the agreed charter rate to the vessel owner and in turn receives freight rates from the shippers who avail themselves of the offer.

A vessel may be put on the berth by its owner either for a full cargo or for smaller shipments to fill space not already contracted for. So, also, may a vessel be put on the berth for large or small shipments of general cargo by a ship broker, general operator, or speculator who has chartered the vessel for this express purpose. The vessel in such case is not in the tramp service in the usual sense, but is being temporarily employed to carry general cargo in competition with regular lines or to provide a general cargo service to points not served by regular lines. The operator is engaging in a speculation and for that reason is most apt to undertake such a transaction when the rates of the regular lines are high due to a shortage of tonnage.

Steamship companies frequently secure vessels on time charters either to supplement their line vessels or to establish a line service by means of chartered vessels. To meet a temporary demand a line may charter a vessel for a single voyage on a trip charter, in which case the vessel is for the time being in the line service.

Types of Tramp Owners or Operators

The owner of but a single vessel or of a small fleet of but two or three vessels may do a profitable business. The master of a tramp vessel may be its owner or part owner. The owner who leases his vessel or vessels on charter makes use of the services of ship brokers who are found at all ocean ports of importance throughout the world.

Small or large operators may lease vessels upon time charters, and may recharter the vessels on trip charters, *i. e.*, for a tramp service in the usual sense, or place the vessels on the berth for

full or part cargoes, or recharter them on time charters at higher rates.

Similar to operators of this kind are the large concerns which in England are known as managing owners, through whom fleets ranging from half a dozen to more than a hundred are managed from one office. Some of the vessels may be owned by the concern, while others are owned by other vessel owners who turn them over to the managing owner for operation on the basis of a percentage of the profits.

Still another variation in type of tramp owner or operator is the general steamship operator or steamship agent, whose operations are not confined to any one branch of shipping. Many of them are large concerns which act as steamship agents for regular line companies, organize and operate one or more lines of vessels which they own or charter, do a general ship brokerage business, act as ocean freight forwarders, handle marine insurance, hold the license of a customhouse broker and manage fleets of tramp vessels. The same concerns in some instances operate as export and import commission houses or merchants. These general steamship operators may lease their own vessels under any of the various forms of charter parties referred to in Chapter XLVIII, if that should be more profitable than to operate them in the line service, or may charter vessels from other owners for operation either in the line or tramp service as the occasion may warrant.

Before chartering vessels under time charters a general steamship operator at times makes time contracts with large shippers of sugar or other staple commodities, so that he may be assured of a portion of the cargoes needed for the chartered vessels. This is his method of limiting his risks, of protecting his profits, or "hedging" his chartering transactions.

A ship broker engaged primarily in the ship brokerage business may also at times become a tramp operator. He may be the owner of one or more vessels and use his brokerage organization and his knowledge of shipping requirements in their efficient operation. He may also charter a vessel on his own account with a view to operating or rechartering it at a profit over and above the charter rate paid to its owner.

There are, moreover, the large shippers who both own vessels and charter others mainly for use in their own business. Their prime purpose in owning or chartering vessels is to provide themselves with transportation. They may operate a line service or dispatch their vessels on an irregular schedule, loading them mainly with their own cargoes, subletting unused space to other shippers, and seeking available cargoes on return trips.

Services Rendered by Ship Brokers

Vessels are usually chartered through ship brokers. Small owners or operators depend upon brokers to find charterers for their vessels, to handle their business affairs ashore, and depend largely upon them for advice as to how the voyage of their vessels should be planned. Larger tramp operators, managing owners and general steamship companies with extensive business organizations of their own and with expert chartering managers are less dependent upon outside ship brokers in planning voyages; but they, too, obtain advice from them and frequently carry out their chartering transactions through the medium of ship brokers.

The main work of ship brokers is to find charterers for vessels and vessels for charterers. The owners or operators of tramp vessels seeking cargoes are served by ship brokers who "cover the market" daily, *i. e.*, they keep in touch with shippers who are likely to become charterers. If the desired full cargoes are not available at the port in which a particular ship broker is located and where the vessel has arrived or is about to arrive, he may be able to locate a charterer elsewhere through a ship broker or agent at another port. Instead of chartering the vessel to a shipper on a trip charter, the broker may be able to charter it on satisfactory terms to a general steamship operator, a regular steamship line, an industrial concern or large shipper, or to a small or large tramp operator on a time or perhaps a trip charter. Having arranged the chartering transaction to the satisfaction of owner and charterer the ship broker sees to the preparation of the charter party and its execution.

Ship brokers sometimes are important factors in the loading, discharging, and operation of chartered vessels. Their services

in this connection depend upon the terms of the charter party as to whether loading and discharging or either of these services are to be performed by the vessel owner. When attending to the loading or discharging of a vessel for the owner, the ship broker in effect becomes what in Great Britain is known as a "loading broker." This term is not in general use in the United States, but the same work is performed by ship brokers who make the necessary arrangements for the vessel owners. Charter parties sometimes specify that the vessel is "to be consigned at port of discharge to owners or their agents, by whom the steamer is to be reported at the customhouse." The owner in this case needs to be represented on the spot, his agent frequently being a ship broker to whom the vessel is consigned. The broker after consulting the principal cargo owners, arranges with the port authorities for the dock at which the vessel shall discharge, and on arrival of the vessel sees that the requirements of the customhouse are duly fulfilled. If any freight payment is due at destination, he will attend to its collection; he will provide for the vessel's disbursements, and after deducting his own charges, remit the balance to the owners.[2]

Should it be decided by the owner or operator to put a vessel on the berth a ship broker may be engaged to provide cargo and handle the transaction. The broker, who in effect becomes a steamship agent, may advertise the voyage, and send notices to shippers who might ship in the vessel, or he may personally solicit cargoes from shippers. The broker makes the necessary docking arrangements, books freight at such rates as the market warrants, arranges for the receipt and loading of the cargoes, signs bills of lading for the owners or master, collects the freight if it is to be prepaid, pays the vessel's disbursements at the port, makes out the ship's manifest and secures the clearance papers at the customhouse, deducts his own expenses and charges, and remits the balance to the owners.[3]

Not all ship brokers are equipped to place a tramp vessel on the berth. Many of them, however, are steamship agents as well as ship brokers and possess a business organization suitable not

[2] Douglas Owen, *Ocean Trade and Shipping*, p. 89.
[3] *Ibid.*, p. 90.

only for chartering vessels but also for loading, discharging, and operating. As has been stated, ship brokers sometimes charter vessels on their own account and put them on the berth for cargo.

Ship brokers are also engaged in the selling of vessels. As in a chartering transaction they serve as a medium through which the owner and purchaser get together. When satisfactory selling terms have been agreed upon, the ship broker executes a form of contract, and when title passes he executes the necessary bill of sale. He also arranges for the transfer of the vessel to its new owner, which in the United States necessitates obtaining a consular bill of health, an inventory of supplies on board, and a certificate of registry. In England some ship brokers are known as "brokers for sale of ship" to distinguish them from "chartering brokers," and "loading brokers."[4] This terminology is not in general use in the United States, and ship brokers here do not confine themselves to one function only. All of them are ready to charter or sell the vessels of shipowners, but some of them are not organized to act as loading brokers.

The business of marine insurance[5] is so closely connected with ocean shipping that ship brokers usually act also as marine insurance brokers so as to be in a position to attend to the insurance of vessels, freight, and cargoes when authorized to do so. They may likewise hold the license of a customhouse broker.

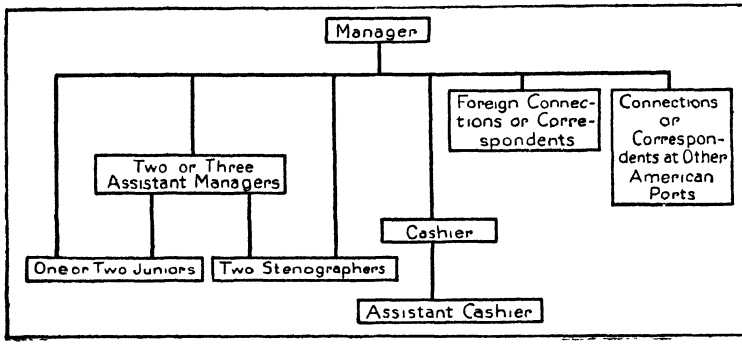
Business Organization of Ship Broker

The ship brokerage business is so organized and the nature of the business is such that the comparatively small staff of a broker's office is able to transact a business of large volume and almost world-wide scope. The business organization shown in the accompanying Form (No. 7) may be regarded as that of a typical large American ship broker. There are many smaller ship brokerage concerns with a simpler organization, in fact, a single individual may conduct a ship brokerage business, his office facilities consisting of desk room in some conveniently located business office.

[4] Thomas E. Scrutton and F. D. Mackinnon, *The Contract of Affreightment as Expressed in Charter Parties and Bills of Lading.*

[5] S. S. Huebner, *Marine Insurance*, 1920.

In the typical organization of a large ship broker there is a Manager to supervise the work of the staff, to establish connections with ship brokers at foreign ports and at other ports in the United States, to decide matters of importance in connection with charter forms and sales contracts, to keep in touch with vessel owners and prospective charterers, to plan operations in case he decides to charter a vessel on his own account, and generally to determine the business policies to be pursued. In the large ship brokerage house, there are two or three Assistant Managers,



FORM 7.—TYPICAL BUSINESS ORGANIZATION OF A LARGE SHIP BROKER.

whose main work consists in covering the market daily. They endeavor to keep in almost constant touch with the large shippers and other business concerns likely to be in the market to charter vessels, and in case a vessel is put on the berth, they solicit freight for it. As charter rates are largely determined by bargaining and the sums involved are large, the broker needs to have a wide knowledge of charter rates, good business sense, and the ability to approach men easily and to negotiate successfully with charterers. The variations in the provisions of charters are so wide and yet so important to both owner and charterer that brokers need to possess expert knowledge of charter forms as well as types of vessels and the essential particulars of the vessels for which charterers are sought.

Junior employees handle office detail work in connection with the preparation of charter parties, sales contracts and bills of sale, maintaining the office files, performing customhouse work,

and other activities engaged in by the brokerage house. A Cashier and Assistant Cashier handle the bookkeeping and financial work.

This is a typical office staff for conducting a general ship brokerage business, whether through a large ship broker engaged exclusively in this business or through the Chartering Department of a steamship agent or general steamship operator. The ship broker may, however, have an additional organization for loading, discharging, and operating vessels. Such a staff is not necessarily included in the business organization of a ship broker. If the ship broker is equipped to put vessels on the berth for cargo he virtually becomes a steamship agent and has an organization approximating that described in Chapter XLVI.

Aside from this office organization each ship broker has connections or correspondents at a large number of American and foreign ports, and he may have branch offices at certain ports. These connections or correspondents usually are themselves ship brokers, so that the ship brokerage business throughout the commercial world constitutes a closely connected business organization. The ship brokers of the world together "make a complicated web that reaches to all cities of commercial importance. The whole is so bound together by telegraph and cable that, like a spider's web, if touched by anything of importance at any point the whole structure vibrates with the news."[6] It is this practice of establishing connections at many ports that enables the individual ship brokerage house to conduct an extensive business with a small office staff. The main expense of a ship broker in a chartering transaction in many instances is the charge for the extensive use of the telegraph and cable.

Ship brokers frequently are members of associations or exchanges, such as the New York Produce Exchange, which has adopted and approved a grain charter party, and approved berth terms contracts which are entered into subject to the rules of the Exchange and with the agreement that disputes arising at the port of loading shall be subject to arbitration as provided in those rules. The rules of the Exchange regulating the steamship business authorize arbitration either by a standing

[6] J. Russell Smith, *Organization of Ocean Commerce*, p. 11.

Committee on Steamship Affairs or by private arbitration, and they standardize the practice of the port with respect to lay days, demurrage, and the notification of readiness, and the practice as to various other matters referred to in the chapter dealing with charter parties. The exchange also affords facilities for quoting grain charter rates, for chartering vessels, engaging space, and contracting marine insurance.

Ship brokers may also be members of maritime exchanges. The Philadelphia Maritime Exchange, for example, keeps records of charter parties and the movement of vessels; it has reporting stations with agents, collects current shipping news and shipping statistics, and provides facilities for the arbitration of shipping disputes. It has also standardized the grain charter party and adopted local rules governing vessel demurrage, loading, and discharging, and the receipt and delivery of various kinds of cargo.

Ship Brokerage Charges and Profits

The usual compensation of a ship broker for chartering a vessel on a voyage charter is a commission in the form of a percentage on the gross amount of freight, dead freight, and the demurrage provided for in the charter. Dead freight is the difference between the charter rate per unit of cargo multiplied by the tons of cargo called for in the charter, and this rate multiplied by the tons of actual cargo on board, which may be less than a full cargo. Demurrage is the amount paid by the charterer in case loading is not completed within a specified number of days after the vessel is ready to receive cargo or does not proceed at the rate of an agreed number of tons per day. The commission is paid by the vessel owner or operator.

When a vessel is put on the berth for its owner or operator by a ship broker his commission is likewise a percentage of the freight. Under a time charter he receives from the owner or operator a percentage of the gross freight or hire, provided for in the charter party. If he sells the vessel he receives a percentage of the price paid for the vessel.

The broker's commission for chartering vessels or putting them on the berth varies. It may be as low as 1¼ per cent or as

high as 5 per cent, depending upon the size of the vessel, the nature of the services required by the owner, the custom of the port, and other contingencies. The printed charter forms do not always disclose the actual rate of commission; old forms may be used in which 5 per cent commission is specified, although the understanding is that the broker shall receive a smaller commission.

Some charter parties provide that in addition to the commission paid to the broker he shall also receive the "customary freight brokerage." This usually refers to an agreed or customary amount over and above his commission for attending to the ship's business at the port of loading. As in case of the broker's commission, the presence of this clause in the printed form is not always evidence that the broker in every case receives "the customary freight brokerage."

When a ship broker provides vessel or cargo owners with marine insurance he is acting as a marine insurance broker and obtains a commission from the insurance company. When he acts in the capacity of a customhouse broker he receives the customary customhouse brokerage fees. Should he charter a vessel on his own account, either to recharter it at a higher rate or put it on the berth, he aims to make a business profit on the venture, for in such case he becomes a vessel operator. If he is a vessel owner as well as a ship broker the revenues derived from his own vessels likewise depend upon whether he can charter his vessels, put them on the berth, or otherwise operate them profitably.

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CHAPTER XLVIII

OCEAN CHARTER PARTIES

THE basic document governing the charter services discussed in the preceding chapter is the charter party. It is imperative that vessel owners or operators, charterers, and ship brokers familiarize themselves with the general forms or types commonly used in ocean shipping, and also with any special or unusual clauses that may be contained in the charters with which they are directly concerned. Two general types of charters are used in ocean shipping as conducted by private concerns—time, and trip or voyage charters—but there are several general forms of commercial voyage charters, and each general form is subject to many variations.

Time charters are to be distinguished from voyage charters in that they extend throughout an agreed period of time or specified number of voyages, while voyage charters cover a single voyage. During normal shipping periods, time charters are requested mainly by shipping firms having large quantities of cargo for shipment over extended periods and by steamship lines. The latter sometimes charter vessels on time charters to supplement their regular fleet when traffic has outgrown the vessels owned by them, or to serve as a temporary expedient while additional vessels are being constructed or purchased. They may also enter into time charter arrangements to carry freight contracted in advance, and there have been instances of lines, particularly newly organized lines, that have depended mainly or entirely upon time-chartered vessels. Tramp operators may also at times supplement their fleets by means of time charters. During abnormal periods, however, when wide fluctuations in ocean freight rates are anticipated, time charters have been utilized for speculative purposes. During the War period, especially during its early stages, ocean vessels were chartered

speculatively on time charters by individuals or concerns whose intention was not to operate them, but to recharter or sublet them at higher charter rates when the demand for tonnage became acute.

Voyage charters are at times entered into by steamship lines, but their principal use is in connection with the shipment of large lots of heavy or bulky commodities. They are the mainstay of the ocean tramp service. Shippers having vessel-load quantities of cargo, but not sufficient tonnage to warrant the purchase of vessels or the negotiation of time charters, usually have the option of either shipping via regular lines or chartering vessels for single voyages. Those having less than a complete cargo may also charter a vessel on a voyage charter and supplement their own shipments by putting the vessel on the berth for additional cargo. Occasionally a vessel is chartered for the express purpose of putting it on the berth for miscellaneous quantities of cargo that different shippers may wish to have transported, and the owners of tramp vessels may themselves engage in such a service at times, but the tramp service is mainly conducted on the basis of voyage charters contracted to shippers of full loads of cargo.

Time Charter Parties

Commercial time charters as ordinarily utilized in ocean shipping have not been standardized, and special clauses may be inserted in the customary forms at the time of their negotiation. Clauses covering certain matters of importance to owner and charterer are usually found in time charters, although their exact content varies in different forms. The principal features of commercial time charters may briefly be summarized as follows:

1. The owner is required to give warranties as to the vessel's tonnage, nominal horse power, space and dead-weight capacity, inspection of hull and engines, its classification rating, its fit condition on delivery and its maintenance in a seaworthy condition, a full complement of officers and crew, and in some instances also its speed, fuel capacity, and fuel consumption. Some of these warranties are only approximate but wide deviations are not lawfully permissible.

2. The nature of the cargoes to be transported in the vessel is defined either specifically or in more general terms permitting the shipment of general merchandise and perhaps of certain named commodities and also passengers.

3. Trading limits are usually set by specifying the use of the vessel in lawful trades between safe ports in a specified range of trades, and certain ports or trades may be excluded.

4. The time or duration of the charter is of course stated in the charter, or the number of voyages in case such is the agreement.

5. The payment of the agreed charter rate or hire is fully provided for in time charter parties. The usual agreement in case of cargo vessels is that a fixed amount per dead-weight ton per calendar month is to be paid, but when a passenger vessel is operated on a time charter the usual basis is its gross-register tonnage, and some time charters provide for the payment of a lump sum. The time or times of payment and the mode of payment are also as a rule definitely specified in present-day time charters. Provision is usually made for the discontinuing of payments when loss of time exceeding an agreed number of hours is caused by fire, stranding, breakdown of engines, deficiency of stores or men. For additional protection the owner is given a lien on the cargo for all freights and amounts due him, and the charterer is given a lien on the vessel for amounts paid in advance and not earned.

6. Commercial time charters usually provide for a division of expenses between owner and charterer. Although the charterer pays an agreed hire for the use of the vessel he is also as a rule required to pay all fuel expenses, loading and unloading charges, and other port charges and consular fees, except those incident to the officers or crew, and also pilotage charges, agencies, commissions, and other charges not specifically imposed upon the owner by the terms of the charter.

It is well to read time charters carefully with respect to port charges and pilotage because they usually define the conditions under which the charterer is relieved from payment when the vessel puts into a port other than the one to which the vessel is bound, due to reasons for which the vessel is responsible. If

dunnage in addition to that found on board is required, the charterer is also required to provide it or bear the expense incurred, and when passengers are carried he is required to pay victualing costs, usually at agreed amounts per day for each passenger. The owner on his part is required to pay the salaries and wages of the officers and crew and consular fees connected with them, all bills for ship's stores and crews supplies, vessel insurance premiums, and maintenance costs. Still other clauses usually specify that the owner shall pay the charter commission to which the ship broker who effected the charter is entitled, and also perhaps an "address commission" to the charterer in case he advances funds beyond his required monthly payments and attends to the ship's business at ports.

7. A reading of any commercial time charter party will disclose many other provisions, some of which are of very material importance. Some of the more important clauses usually included are those variously defining the duties of the master to the charterer and the owner respectively; the signing of bills of lading by the master; the right to sublet the vessel; the right of the charterer to appoint a supercargo; the right of the charterer to cancel the charter in case the vessel is not delivered by the owner within an agreed period of time; the redelivery of the vessel to the owner; the obligation of the owner to place the "whole reach" of the vessel's holds, deck, and customary places of loading and accommodation at the charterer's disposal; the docking of the vessel to be bottom-cleaned and painted; the provision by the owner of customary ship's machinery for loading and unloading; the mutual division of salvage; the payment of penalties in case of nonperformance of contract; the laws and rules that determine liability in case of loss and damage of cargo; and the arbitration of any disputes that may arise between owner and charterer. Charterers now usually insist upon a special "legislation clause" stipulating that charterers shall have "the privilege of canceling this charter at a United States port north of Hatteras at any time legislation may be enforced differentiating against foreign tonnage in United States trade."

During the War period the United States Government adopted various standardized forms of time charters that did not conform

to ordinary commercial practice. It took over many privately owned vessels on "requisition charters," and then rechartered them on the basis of government time charters differing in many respects from the commercial charters customarily used in private international shipping. Many of the requisitioned vessels were rechartered to their owners or their agents for operation in accordance with the terms of these special time charters.

Different forms of government time charters were adopted for special types of requisitioned vessels and to meet special conditions. The Government, moreover, reserved the right to recall requisitioned vessels and operate them according to the terms of its "bare-boat" charter form. Such a charter requires the owner to outfit and equip his vessel and put it into seaworthy condition, the charterer (in this case the Government) thereafter undertaking to operate, man, victual, and supply the vessel at his expense, to pay all port charges, pilotage charges and other expenses incurred in its use and operation, and to assume all risks.

Voyage Charter Parties

Voyage or trip charters, which differ basically from time charters in that they provide for the use of a vessel on a single voyage instead of during a period of time, contain many provisions similar or differing in detail from those contained in time charters, and there is no uniformity in the phraseology of such provisions in different voyage charters. Voyage charters contain clauses in which the owner describes and gives warranties concerning his vessel; others that specify definite ports or a range of ports of shipment and discharge; that variously define the kinds of cargo that may be shipped, either specifically or by setting more general limits permitting the shipment of any "lawful merchandise"; that require the master to sign bills of lading; clauses which provide for cancellation, arbitration, etc., and clauses that refer to the liability statutes and rules that shall apply in case of loss or damage of cargo. Some of these voyage charter clauses must necessarily vary somewhat from similar provisions included in time charters due to the fundamental

differences between making an agreed voyage and operating a vessel during a period of time, sometimes extending over many months. For the same reason, some of the miscellaneous time charter clauses referred to on page 572 need not be included in voyage charters.

It is advisable, perhaps, to note only the outstanding and more important differences between time and voyage charters. No attempt will be made to discuss each of the almost endless variations in the conditions stipulated in the voyage charters utilized in ocean shipping. A more practicable plan is to caution the reader that every voyage charter is a specific contract, and to divide the charters into three general groups: (1) the gross form voyage charter, (2) the net form voyage charter, and (3) modified gross or net voyage charters.

The charter rate or freight paid to the vessel owner under a voyage charter is usually based not upon the vessel's dead weight, or gross-register tonnage, but upon the amount of cargo carried, at agreed rates per quarter of grain, ton of cargo, or other defined cargo units. Voyage charter rates based upon some form of vessel tonnage are exceptional, but there are instances of voyage charters that provide for the payment of a lump sum.

This basing of voyage charter rates upon the amount of cargo carried, and the very fact that the vessel owner agrees to complete a voyage, make it necessary to include provisions not essential in a time charter. The charterer usually agrees to furnish a full and complete cargo; to have the vessel proceed to a discharging berth where she can always float with safety, or failing which, that delivery of cargo will be accepted at the nearest point where this condition of safety can be fully met, and that the owner shall have a lien on the cargo for "all freight, dead freight and demurrage and all and every sum or sums of money which may be due the steamer under this charter," the term "dead freight" referring to the difference between the amount due the vessel when the charter rate is applied to a full and complete cargo and a smaller amount based upon a cargo that is not full and complete. A customary provision is contained in the "cesser clause," which usually provides that the char-

terer's liability ends when the cargo is on board and the bills of lading are signed, the ship thereafter agreeing to have recourse to its lien on the cargo; but this has been interpreted to mean that the charterer is relieved only when the cargo lien offers full protection to the vessel owner.

It has also been found necessary to insert clauses in voyage charters designed to speed up the loading and discharging of cargo, and to avoid misunderstandings concerning receipt and delivery of cargo. Voyage charters, in their "lay-day" clauses, usually specify the number of days allowed for loading cargo and sometimes also for discharging, or the number of tons per day to be loaded or unloaded. In case the vessel is detained by failure of the charterer or his agent to deliver or receive cargo, or actually to load or unload cargo in case the voyage charter so provides, within the number of lay days agreed upon, the charterer agrees to pay "vessel demurrage." When, on the contrary, the agreed lay days are not needed, the vessel owner under some voyage charters agrees to pay "dispatch money" at fixed rates for each lay day not used. Explicit clauses frequently provide where cargo shall be delivered by the charterer and where it shall be received at destination. Provisions of this kind variously state that it shall be within reach of ship's tackles and that lighterage and extra lighterage costs shall be paid by the charterer, or that named wharves shall be used for delivery and receipt of cargo; or other arrangements may be provided for.

The fundamental difference between the general classes of voyage charters referred to above is found in the nature of the services to be performed by the vessel owner for the charter rates paid by the charterer. The distinctive features of the gross form voyage charter is that the charter rate covers the entire transportation service, including loading at the shipping point, discharging at destination, and port charges. It is therefore the simplest form of voyage charter and one often preferred by shippers and consignees who have no special loading and unloading facilities or arrangements. It specifies the delivery and acceptance of cargo by shipper and consignee, usually alongside the ship, but within these limits the gross form charter

rate covers port charges and services as well as operating costs incurred by the vessel in sailing from shipping point to destination. Contingent costs such as vessel demurrage, lighterage, and extra lighterage in case of failure to deliver or receive cargo as agreed upon, or extra expense incurred by reason of working the vessel at ports on Sundays or holidays are variously provided for in gross form charters and are in addition to the charter rate.

The charter rate paid by the charterer under a net form voyage charter party covers only the actual transportation of the cargo from port to port. The charterer, in addition to paying the charter rate, is required to assume the cost of loading his cargo aboard the vessel and of discharging it at the destination port. The agreement may be that these services will be actually performed by the charterers, or that "charterers are to load, stow and trim cargo at their own expense, under the direction of the master," but that "they shall not be responsible for improper stowage," or that the service will be performed by the ship, but at the charterer's expense. The clauses covering loading and unloading have not been standardized in all net form voyage charters. The charterer is also required to pay port charges, customs and harbor dues and wharfage costs at both loading and discharging ports.

Net form voyage charters are sometimes preferred by charterers, especially by those regularly engaged in the foreign trade. Exporting or importing firms may have been able to make favorable arrangements of their own for loading and discharging cargoes. They may indeed own or operate wharves, and they may possess efficient port organizations and excellent freight-handling facilities.

It is especially desirable that charterers, owners, and ship brokers read carefully any modified gross and net form charter parties in which they may become interested, because the clauses defining the services to be performed by the owner under such charters conform neither to those of gross form nor to those of net form charters. They are modifications of the one or the other, some of them being mainly of the gross form and others conforming mainly to the net form, but with modifications

concerning the amount of services covered by the charter rate.

There are so many different general types and special forms of voyage charters and the addition or substitution of special clauses occurs so frequently, that no general account such as this can obviate the necessity of examining each charter carefully whenever a particular chartering transaction is undertaken.

United States Government Managing and Operating Agreements

The Shipping Board, represented by the United States Shipping Board Emergency Fleet Corporation, has chartered some of its vessels to steamship companies, and has operated some vessels directly, but the more general plan has been and still is to allocate its merchant vessels to private steamship concerns for operation in accordance with the conditions imposed in managing and operating agreements. Such agreements are not known as charters and they in fact differ from time charter parties in many respects.

Originally two distinct general types of agreements were used —one being known as a managing agreement and the other as an operating agreement, and there were further variations for special types of vessels such as tankers. The two types of agreements were later consolidated. The provisions of "managing and operating agreements," moreover, were changed a number of times because the Shipping Board and Emergency Fleet Corporation experienced many difficulties and were faced by the problem of avoiding a deficit and at the same time of making its terms sufficiently attractive to the lines that served as their agents.

At present the old forms of managing agreement and operating agreement are still used to some extent in the tanker service,[1] and some general merchant vessels are operated under the terms of its former managing and operating agreement as amended since its original consolidation in 1920, but in 1924 a new consolidated agreement was formulated and this has since been quite generally put into effect. Under the new consolidated agreement, the agent agrees to man and maintain the vessel

[1] Agreements M 2 and O 2.

under government supervision and to pay all expenses incident to its management and operation, but the payments made are for the account of the government. The agent also agrees to use care to avoid damage and loss; to accept orders from the Government relative to charters, freight rates, and other charges, and to issue customary charters to shippers, and bills of lading as prescribed by the Shipping Board;[2] to accept responsibility for the acts of subagents; to collect all freight and other money accruing to the Government and to deposit it in the banks as instructed by the Emergency Fleet Corporation; to draw against such deposits only as directed; to keep separate accounting records for government vessels and for other vessels operated by the agent; and to operate the vessels of the Government under a trade name which is subject to the approval of the Government and may not contain the name of the agent.

The Government, under the new consolidated agreement, agrees to pay to the agent for his services definite commissions based on the gross ocean-freight, dead-freight, demurrage, express, mail, and passenger revenue earned and collected by the vessel, the commissions varying from 3 to 7½ per cent for different trades and kinds of traffic. The agent's percentage of salvage earned for the account of the vessel, after deducting the crew's proportion, is fixed at 5 per cent in case of salvage services rendered to vessels not owned or controlled by the Government and 2½ in case of such services when rendered to Shipping Board vessels. The Government also agrees to reimburse the agent for all freight, passenger, and charter brokerage properly incurred to secure cargo, and for customary fees and commissions for agency services rendered at foreign ports, such fees and commissions, however, to be subject to the approval of the Government. Various possible indirect or hidden profits of the agent are specifically prohibited. Section 18 provides that any agent receiving directly or indirectly any profit or benefit from any services rendered or supplies furnished to government vessels operated by the agent shall be accounted for and paid to the Government, and that the agent is not permitted to trade with a concern in which he is financially

[2] See Chapter XLIX, form 8, for Shipping Board Bill of Lading.

interested except with the written approval of the Government.

The agreements under which Shipping Board vessels are operated and managed are fundamentally different from charter parties in that they are based upon the theory or presumption that the steamship concerns operating the vessels are serving as agents of the Government, and as such are entitled to receive payment for their services. Charters, on the contrary, are based upon the principle that the charterer hires the owner's vessel for a voyage or period of time and should therefore pay to the owner a charter rate or rate of hire. Under the terms of all customary time and voyage charters the owner continues to operate his vessel.

REFERENCES

Consult references at end of Chapter XLVII.

CHAPTER XLIX

OCEAN SHIPPING PAPERS AND SHIP'S DOCUMENTS

MUCH can be learned concerning steamship practice and ocean shipping and also concerning several phases of export and import technique from a study of shipping papers and vessel documents. Some of them are required by ocean carriers, others by the United States Government and by foreign governments, and still others by ocean freight forwarders and marine insurance concerns. The papers employed by the ocean carrier and shipper in their dealings with each other, and those required in the relations of the shipper with public authorities, forwarders, insurance concerns and consignees, may be designated as *shipper's* or shipping papers; while those issued by the carrier in his dealings with government authorities and in the operation of its vessels are generally referred to as *ship's documents.*

Shipper's or Shipping Papers

As it is the ambition of steamship Freight Traffic Managers to book cargo in advance of the arrival of their vessels, and as ocean shippers frequently require assurance that their freight has been definitely booked for shipment at specified freight rates, the beginning step in an ocean steamship transaction normally is the closing of a *freight contract.* This shipping paper, which confirms the booking of described items of cargo, names the steamer, the probable time of loading and the freight rate, is executed with shippers either by mail or personally by freight agents, salesmen, solicitors, freight forwarders, or freight brokers.

The ocean shipper then makes application for a *shipping permit* which grants permission to deliver the goods at a specified wharf on particular days, and constitutes the formal method by which the Freight Traffic Department orders cargoes forward. It lists the various items of cargo, and the shipping

marks and weights; it names the steamer and its destination, the pier and the dates when the Wharf Department will receive the shipment, and it may also contain certain conditions. Upon delivery at the pier the receiving clerk issues a *dock receipt.* This constitutes a receipt to the shipper, but may also contain notations that will be of importance in the final preparation of the carrier's bill of lading.

Meanwhile the shipper or his agent proceeds to clear his goods at the customhouse. He is required by the United States Government to fill out and file an official *shipper's export declaration* or shipper's manifest, which details the goods being exported and states their export value. Affidavit to this manifest is required, for it is one of the bases of the Government's foreign trade statistics and is required in the clearance of cargo and vessel. In exporting certain commodities it is also necessary to obtain government *inspection certificates,* labels, etc., some of which are required by the United States Government and others by foreign governments.

A document known as a *consular invoice* must also be made out when exports are destined to various Latin-American countries, to Portugal and France and to certain other destinations. It is made out on forms prescribed by the governments of these countries and sworn to at their consulates. The number of copies required in the different countries varies, and fees are charged by the foreign consuls for certifying them. American exporters sometimes complain of the consular invoice requirement, forgetting that the United States Government requires foreign exporters to make out such an invoice when shipping to the United States. The announced purposes of consular invoices is to make difficult the understatement of value, to facilitate the correct application of customs regulations, and to provide a basis for compiling or checking trade statistics. In some instances the collection of fees may also be a consideration.

In exporting to some foreign countries it is further necessary to make out before a notary public a *certificate of origin,* to the effect that the goods shipped are the product of manufacture of the United States. Various countries have two tariff schedules, and this certificate is required in order to obtain the

minimum or most favored nation duties. Countries requiring consular invoices usually do not call for a separate certificate of origin, because the former contain all the information needed. In the case of shipments to certain British colonies—Australia, New Zealand, South Africa, and Canada—a *nondumping certificate* is required, the primary purpose of which is to facilitate the enforcement of the "nondumping clause" contained in their tariff laws, and so to prevent the flooding of their markets with foreign products at prices so low as to injure home industries.

The consular invoices and other government-required documents just mentioned are not to be confused with the regular *exporter's invoice,* which is made out by the shipper when the goods are packed for shipment. This is a private invoice, which accurately lists all the packages being shipped, their numbers, weight, measurements, code words, description, and above all, their price. It also contains the name of the vessel on which the goods are being shipped, their destination, marks of the consignee and the signature of the responsible representative of the shipping concern. Additional items must be inserted when the goods are shipped to certain countries. Three or more copies need to be issued, because the exporter's invoice is used for various purposes. If the shipper wishes to negotiate a documentary draft or bill of exchange, two copies will be required by the bank to be attached to the bill of lading. A copy should also be sent to the foreign consignee for his information and ultimately to clear the goods through the foreign customhouse; the shipper and banker may desire copies for their files, and an interior shipper may wish to send a copy to his port representative.

In order to protect his goods against loss or damage while en route at sea or in port, the shipper or importer insures them with a marine insurance company or group of underwriters. The *insurance policies or certificates* which he may obtain are essential to his protection and usually play an important part in the financial settlement of the export or import transaction.

The principal shipping paper that the shipper obtains is the *ocean bill of lading.* It is a fundamental document, because it represents the goods being shipped. It is the final receipt

from the carrier and a shipping contract between the carrier and shipper; it frequently is needed to establish ownership, which is important in financing and in making delivery to the consignee; certified copies are required in many countries for purposes of customs entry; and in times of war, copies of the bill of lading may be carried by the vessel to supplement the ship's manifest in the identification of cargo. When drawn to the shipper's order, moreover, it is a negotiable document, which the shipper may use as the basis for a draft. Indeed, the most widely used method of financial settlement in the foreign trade is by documentary drafts or bills of exchange, to which a negotiable ocean bill of lading, a marine insurance certificate or policy, the shipper's invoice and perhaps also consular invoices, etc., are attached. When drawn to the shipper's order, the ocean bill of lading needs to be endorsed by the shipper either in blank or to the particular foreign consignee, and the latter cannot obtain the goods from the ocean carrier without presenting the endorsed bill of lading. Ocean bills of lading are rarely drawn directly in the name of the consignee unless he has paid for the goods or has provided security for payment before shipment, or unless he has an open account arrangement with the shipper.

The bills of lading are arranged on the carriers' blanks by the shipper who is expected to present them for signature as soon as his cargo has been sent to the dock. The various packages shipped are listed as in the dock receipts that were issued when they were delivered at the dock, care being taken in the entry of contents, numbers, marks and weight. The shipper is supposed to return the dock receipts with bills of lading as they contain the receiving clerk's notations concerning frail containers or packing, signs of tampering, shifting contents or other irregularities. These notations are also made on the dock sheets, but if the receipts are returned, the bill of lading clerks have an additional check. The number of copies of the ocean bill of lading issued varies according to the requirements of the shipper and carrier and in some instances also according to the consular requirements of foreign countries.[1]

The number of negotiable bills is usually three or four and the number of nonnegotiable copies varies from three to ten or

[1] G. G. Huebner, *Ocean Steamship Traffic Management*, p. 98.

more. A steamship line sometimes retains as many as eight copies for its own use. When bills of lading are attached to a draft a "full set" or all of the negotiable copies that have been issued are required by the bankers handling the financial transaction.

The ocean bill of lading reproduced in Form No. 8 is the standard form adopted by the United States Shipping Board for use in connection with its vessels. No uniform ocean bill of lading, however, has been adopted by private ocean carriers.

FORM 8. U. S. SHIPPING BOARD OCEAN BILL OF LADING

B/L No. .....

(*Name of Operator*.....)

MANAGING AGENT FOR

UNITED STATES SHIPPING BOARD

(GENERAL CARGO NORTH ATLANTIC U. K. FORM)

RECEIVED, in apparent good order and condition, from .... to be transported by the American..... ship ..... from the port of ..... and bound for ..... with liberty to call at any port or ports in or out of the customary route, or failing shipment by said vessel, by a subsequent vessel, the following goods:

.....
.....
.....

being marked and numbered as per margin (quality, quantity, gauge, weight, measurement, contents, and value unknown) and to be delivered in like good order and condition at the port of....., or as near thereunto as the vessel may safely get, unto .....
.....
(Notify .....)

or to his or their assigns, on payment of freight and charges thereon in cash without deduction, credit, or discount, immediately on discharge of the goods at the rate as per margin, unless prepaid (all collect freights under this bill of lading including any short paid freight, shall be converted at the current sight rate of exchange at New York on the date the vessel enters customs at the port of discharge), and upon the following terms and conditions:

The vessel shall have liberty to sail with or without pilots, to tow and to be towed, and to assist vessels in all places and in all situations and to take any measures deemed advisable by the master for the purpose of saving life and/or property; to convey goods in craft and/or lighters to and from the vessel at the risk of the owner of the goods; and in case the vessel shall

put into a port of refuge, or for any cause fail to proceed in the ordinary course of her voyage, to transship the goods to their destination, dispatching notice thereof to the consignee, if named herein (at destination named), and otherwise to the shipper. Neither the vessel, her owner, nor agent shall be liable for loss or damage resulting from: Act of God; perils, dangers, and accidents of the sea or other navigable waters; fire, from any cause or wheresoever occurring; barratry of master of crew; enemies, pirates, or robbers; arrest or restraint of princes, rulers, or people, or seizure under legal process; fumigation under governmental orders; riots, strikes, lockouts, or stoppage of labor; saving or attempting to save life or property at sea; inherent vice, nature, defect, or change of character of the goods; insufficiency or absence of marks, numbers, address or description; explosion, bursting of boilers, breakage of shafts, or any latent defects in hull, machinery, or appurtenances, or unseaworthiness of the vessel, whether existing at the time of shipment or at the beginning of the voyage, provided the owners shall have exercised due diligence to make the vessel seaworthy, properly manned, equipped, and supplied. Except when caused by negligence on the part of the vessel, neither the vessel, her owner, nor agent, shall be liable for loss or damage resulting from: Heat, frost, decay, putrefaction, rust, sweat, breakage, leakage, drainage, ullage, vermin, or by explosion of any of the goods, whether shipped with or without disclosure of their nature; nor for risk of craft, hulk, or transshipment; nor for any loss or damage caused by the prolongation of the voyage.

General average shall be payable according to York-Antwerp Rules, 1890, and as to matters not therein provided, according to the laws and customs of the port of New York. If the owners shall have exercised due diligence to make the vessel in all respects seaworthy and properly manned, equipped, and supplied, it is hereby agreed that in case of danger, damage, or disaster resulting from faults or errors in navigation, or in the management of the vessel, or from any latent or other defects in the vessel, her machinery or appurtenances, or from unseaworthiness, whether existing at the time of shipment or at the beginning of the voyage (provided the latent or other defect or the unseaworthiness was not discoverable by the exercise of due diligence), the shippers, consignees, and/or owners of the cargo shall nevertheless pay salvage and any special charges incurred in respect of the cargo, and shall contribute with the shipowner in general average to the payment of any sacrifices, losses, or expenses of a general average nature that may be made or incurred for the common benefit or to relieve the adventure from any common peril.

1. This shipment is subject to all the terms and provisions of, and all the exemptions from liability contained in, the act of Congress of the United States, approved on the 13th day of February, 1893, and entitled "An Act relating to the Navigation of Vessels, etc." This shipment is subject to the provisions of sections 4281-4286, inclusive, of the Revised Statutes of the United States.

2. The value of each package shipped hereunder does not exceed two hundred and fifty dollars ($250), unless otherwise stated herein, on which basis the freight is adjusted, and the vessel's liability shall in no case exceed that sum or the invoice value (including freight charges, if paid, and including duty, if paid, and not returnable), whichever shall be the less, unless a value in excess thereof be specially declared, and stated herein, and extra freight as may be agreed upon, paid. Any partial loss or damage for which the carrier may be liable shall be adjusted prorata on the above basis.

3. The vessel shall have a lien on the goods for all freights and charges, and also for all fines or damages which the vessel or cargo may incur or suffer by reason of the illegal, incorrect, or insufficient marking, numbering, or addressing of packages or description of their contents.

4. If the vessel be prevented from reaching her destination by quarantine, conditions of weather or surf, shallow water, war, or civil disturbances, the carrier may discharge the goods into any depot or lazaretto, under suitable, available protection, dispatching notice thereof to the consignee if named herein (at destination named), and otherwise to the shipper, and such discharge shall be deemed a final delivery under this contract and all the expenses incurred on the goods shall be a lien thereon.

5. The vessel may commence discharging immediately on arrival and discharge continuously, any custom of the port to the contrary notwithstanding; the collector of the port being authorized to grant a general order for discharge immediately on arrival, and if the goods be not taken from alongside by the consignee directly they come to hand in discharging the vessel, the master or vessel's agent to be at liberty to enter and land the goods, or put them into craft, or store at the risk and expense of the owner of the goods, dispatching notice thereof to the consignee, if named herein (at destination named), and otherwise to the shipper, when the goods shall be deemed delivered, and vessel's responsibility ended, but the vessel to have a lien on such goods until the payment of all costs and charges so incurred.

6. Full freight is payable on damaged or unsound goods, but no freight is due on any increase in bulk or weight caused by the absorption of water during the voyage. Freight payable on weight is to be paid on gross weight landed from vessel, unless otherwise herein provided, or unless the carrier elects to take the freight on bill of lading weight. Freight prepaid will not be returned after the goods have been loaded on the vessel, goods and/or vessel lost or not lost. If, on a sale of the goods for freight and charges, the proceeds fail to cover said freight and charges, the vessel shall be entitled to recover the difference from the shipper and/or consignee.

7. Goods on wharf awaiting shipment or delivery are at shipper's risk of loss or damage not happening through the fault or negligence of the owner, master, agent, or manager of the vessel, any custom of the port to the contrary notwithstanding.

8. This bill of lading, duly indorsed, shall be surrendered to the vessel's agent in exchange for delivery order.

9. Master porterage of the delivery of the cargo is to be done by the agents of the vessel; the expenses thereof together with tonnage and shed dues, canal tolls, and charges are to be paid by the receivers of the cargo.

10. Vessels shall not be liable for: Splits, shakes, chafing, or breakage of lumber or logs; damage to metal in slabs, bars, ingots, rods, hoops, plates, etc.; loss of or damage to any articles shipped loose and/or in bundles; loss of broken pieces of same, or for their respective marks; damage to fragile goods or goods not properly packed. Repacking and recoopering shall be done at the expense of the goods unless required as the result of the vessel's negligence.

11. Notice of loss, damage, or delay must be given in writing to the vessel's agent within thirty (30) days after the removal of the goods from the custody of the vessel, or, in case of failure to make delivery within thirty (30) days after the goods should have been delivered: *Provided*, That notice of apparent loss or damage must be given before the goods are removed from the custody of the vessel, and proper notation made on the receipt given to the vessel for the goods shall constitute the notice herein required. Written claim for loss, damage, or delay must be filed with the vessel's agent within six (6) months after giving such written notice. Unless notice is given and claim filed as above provided, neither the vessel, her owner, nor agent shall be liable. No suit to recover for loss, damage, delay, or failure to make delivery shall be maintained unless instituted within one year after the giving of written notice as provided herein.

LONDON CLAUSES.

(A) The vessel owners shall, at their option, be entitled to land the goods within mentioned on the quays, or to discharge them into craft hired by them, immediately on arrival, and at consignee's risk and expense, the vessel owners being entitled to collect the same charges on goods entered for landing at the docks as goods entered for delivery to lighters. Consignees desirous of conveying their goods elsewhere shall, on making application to the vessel's agents or to the dock company within 72 hours after vessel shall have been reported, be entitled to delivery into consignees' lighters at the following rates, to be paid with the freight to the vessel's agent against release, or to the dock company, if so directed by the vessel's agent, viz: Following wooden goods in packages—clothes pegs, spade handles, blind rollers, hubs, spokes, wheels, and oars 1/3 per ton measurement, flour 1/3 per ton weight, hops 2/9 per ton weight; lumber and logs 2/— per ton measurement, or 2/6 per ton weight, at vessel's option. All other general cargo except slates, 1/9 per ton weight or measurement at vessel's option; minimum charge, one ton. Slates to pay 2/— per ton weight. Cheese may also be removed by consignee's vans within one week after vessel shall have reported, subject to a like payment of 3/3 per ton weight, such sum to include loading up and wharfage. Any single article weighing over one ton to be subject to extra expense for handling if incurred. All measurement freight to be on the intake caliper measurement, as stated above or in manifest. Freights by weight (grain excepted) to be paid upon the weight stated above or at vessel's option upon landing weight. If weight has been understated, the cost of weighing to be a charge upon the goods. All shipments of lumber and logs which are sent forward on a weight rate will pay freight on the railroad weights furnished at port of shipment. No alteration will be permitted in any weight or freight included in this bill of lading except at vessel's option.

(B) Grain for overside delivery is to be applied for within twenty-four hours of vessel's arrival (or thereafter immediately it becomes clear) at any dock, quay, river wharf, or other wharf or landing place selected by the vessel's owners or agents. In the absence of sufficient consignees' craft, with responsible persons in charge, to receive as fast as vessel can discharge overside into lighters during usual working hours, the Master or Agent may land or discharge into lighters at the risk and expense of the consignees. The vessel owners or agents may land or discharge continuously day and/or night, any grain landed or discharged for vessel's convenience during usual working hours (consignees' craft being duly in attendance), and any grain that may be landed or discharged before or after usual working hours (whether craft are then in attendance or not) is to be given up free to consignees' craft applying for same within seventy-two hours from its landing or discharge, otherwise it will be subject to the usual dock, quay, river wharf, or other wharf or landing place charges. An extra freight of 7d. per ton shall be paid to the vessel owners or agents on each consignment of grain, whether any portion be landed or not. The grain to be weighed at time of discharge, either on deck and/or dock, quay, river wharf, or other wharf or landing place and/or craft, at vessel's option. Working out charges (including weighing) for grain in bulk and/or vessel's bags to be paid by the consignees with the freight to the vessel's agents or to the authorized representative of the dock, quay, river wharf, or other wharf or landing place if so directed by the vessel's agents, in exchange for release in accordance with the tariff of the Port of London authority. Neither party shall be liable for any interference with the performance of the contract herein contained which is caused by strikes or lockout of seamen, lightermen, stevedores, or shore laborers, or railway or transport or other disturbances of any kind or in furtherance thereof,

whether partial or otherwise, nor for any consequences thereof; and in such case the vessel owners or agent shall be entitled to land or put into craft at the risk and expense of consignee. In case the grain shipped under this bill of lading forms part of a larger bulk, each bill of lading to bear its proportion of shortage and damage, if any.

(C) ACETONE, ASPHALT, CARBON BLACK, CELLULOID, COTTON, COTTON WASTE, HAY, HEMP, HYDROLENE, ISTLE, JUTE, LAMP-BLACK, ILLUMINATING AND OIL OF ALL KINDS, whether animal, vegetable, or mineral, and the liquid products of any of them. PITCH, RAGS, ROSIN, STRAW, TAR, TURPENTINE, VARNISH, WOOD SPIRITS, also any other goods of a more or less hazardous nature. Consignees of any of the foregoing commodities to have craft in attendance immediately on vessel's arrival at dock, quay, river wharf, or other wharf or landing place selected by the vessel owners, to take delivery of any of the above-mentioned commodities from vessel or at vessel owners' option at such dock, quay, river wharf, or landing place as aforesaid, the vessel owners having the option of working continuously day and/or night, paying in any case 1/3 per ton weight or measurement, at vessel owners' option, or otherwise the goods will be put into captain's entry craft at consignee's risk and expense.

(D) Craft which are in attendance for delivery under above clauses and stipulations shall wait free of demurrage their regular turn to receive goods or grain as required by vessel owners, either from steamer or quay or captain's entry craft.

All Port of London authority charges to be paid by consignee of the goods, and the vessel owners shall have the same lien, rights, and remedies on goods or grain, referred to in the above clauses or under any other clauses of the bill of lading, as they have by law in respect to freight.

These London clauses, "A," "B," "C," and "D," are, in respect of goods destined to that port, to form part of this bill of lading, and any words at variance with them are hereby canceled.

IN ACCEPTING THIS BILL OF LADING the shipper, owner, and consignee of the goods and the holder of the bill of lading agree to be bound by all of its stipulations, exceptions, and conditions, whether written, printed, or stamped, as fully as if they were all signed by said shipper, owner, consignee, or holder, any local customs or privileges to the contrary notwithstanding.

IN WITNESS WHEREOF, the Master or Agent of the said vessel has affirmed to ..... bills of lading, all of this tenor and date, one of which being accomplished, the others to stand void.

Dated at ..... this .... day of ....., 192

FOR THE MASTER:

....., *Agents.*

Local conditions at different ports and the customary practice in different trades frequently cause steamship lines to vary the degree of their liability, and lines operating in the same trade may issue bills of lading containing different contract provisions. The legal liability of carriers by water in the United

States is regulated by the Harter Act of 1893, but this act allows considerable opportunity for variation in bill-of-lading provisions, and some lines may voluntarily accept greater responsibility for loss and damage of cargo than others. The legal liability of ocean carriers is radically different from that of the railroads.[2] The difference is so pronounced in its practical effects that a huge marine insurance industry has been created not merely for the insurance of vessels but to provide the cargo protection needed by exporters and importers. The Harter Act exempts ocean carriers from legal liability except under certain conditions which do not include some of the principal risks incurred in ocean shipping.

The ocean carrier is not liable for loss or damage that may occur on its wharves unless negligence can be shown, and such negligence as the law implies may be difficult to establish. A gap may in fact occur at the port during which neither the ocean nor the railroad carrier is legally liable. The extent to which ocean carriers actually assume such liability in their bills of lading varies. Ocean bills of lading moreover, as a rule, contain clauses in which a maximum value for each package is fixed, the liability of the carrier being limited to such amount regardless of the actual value of the package. This practice corresponds to the released values under which certain commodities are shipped by rail, but the practice is very much more general in ocean shipping. It will be noted that the general maximum value per package stated in the Shipping Board bill of lading is $250. That provided for in the uniform through export bill of lading prescribed by the Interstate Commerce Commission is also $250, but the maximum value provided for in the so-called Brussels or Hague rules under which some ocean carriers operate is 100 pounds sterling, and those stated in the ocean bills of lading of other private lines and tramps vary.

Ocean bills of lading contain many other contract provisions. They often contain a "notify" clause which authorizes the carrier's agent at destination to notify the person who will ultimately receive the cargo of its arrival, without, however,

[2] See Chapter XI.

releasing shipments billed on order bills of lading. They variously specify the receipt of goods at "end of ship's tackle" or otherwise, and the payment of lighterage, wharf-handling charges and other costs may be covered by a special clause. A minimum freight charge per shipment may be stipulated; transshipment risks and costs may be provided for; prepayment of freight may be required. The lack of uniformity and the extent to which the ocean carrier's responsibility and liability are variously limited have indeed become a topic for international conference. The much discussed Hague Rules were first proposed in 1921. They were later amended as a result of conferences held in London and Brussels in 1922 and again in Brussels in 1923, and subject to certain alterations, became known as the Brussels Rules; they were then adopted in Great Britain in the Carriage of Goods by Sea Act of 1924. They were also, with certain modifications, incorporated in a bill that was introduced in the Congress of the United States, the bill, however, failing of enactment.[3] The Brussels Rules would increase the liability of ocean carriers somewhat, and they were also proposed for the purpose of bringing about general uniformity.

At times the interior exporter, instead of billing his freight to the port of export on a railroad bill of lading and then rebilling it by obtaining an ocean bill of lading may prefer to bill it through to the foreign port of entry or even to an interior destination in a foreign country. In that case he obtains a through or so-called *export bill of lading* from the rail carrier. The contract contained in such a bill of lading is threefold. One part covers the rail shipment to the port of export and contains the essential clauses of the usual inland bill of lading. The second part covers the ocean voyage and is similar to the contract contained in an ocean bill of lading. The third part of the through bill-of-lading contract, which covers the shipment from the foreign port of entry to interior destination, provides that "the property shall be subject exclusively to all the conditions of the carrier or carriers completing the transit." Each

[3] For texts and full account see United States Department of Commerce, T. I. B., No. 297, "Liability of Ocean Carriers for Cargo Damage or Loss" (1924).

part, however, is virtually a separate contract, the export bill of lading providing for a through service but not for joint liability of the carriers performing the service.[4] Nor does it provide for a joint rail-ocean rate.

As the minimum freight clause usually contained in ocean bills of lading often makes it too costly to ship small parcels via ocean freight lines, some ocean carriers issue *parcel receipts,* which waive the minimum freight clause but usually impose restrictions of various kinds. Such receipts were originally intended solely for samples of export merchandise, but their use later became somewhat more general. The minimum freight clause may also induce exporters to ship parcels through ocean freight forwarders or international express companies, in which case they receive an *express receipt* or a *forwarder's bill of lading.* Forwarder's bills of lading and other forwarding documents will be referred to more fully in Chapter LII. Parcels may also be mailed to certain countries via international parcel-post services, subject to such restrictions as to weight and size as are imposed in the various parcel-post agreements to which the United States is a party.

The list of ocean-shipping papers is further increased at the port of destination where cargoes are discharged. The customary practice in the United States can best be outlined by referring to the additional shipping papers that are required in connection with inbound cargo. The Inbound Freight Department sends a *notice of arrival and freight bill* to the consignee, instructing him to surrender the original bill of lading properly endorsed and to pay the freight charges shown in the bill. In case the consignee is unable to present the original bill of lading with proper endorsement because he has not received it from the shipper, he may be required to furnish a bond. This is followed by a *final notice of arrival* which informs him that his cargo is ready for delivery and that it will be stored at his risk and expense unless it is removed from the pier within a prescribed time limit. When all formalities have been fulfilled the ocean carrier also provides the consignee with a *delivery order* which gives authority to the delivery clerk at

[4] For fuller account see Chapter XI.

the pier actually to release the cargo. Upon delivery the consignee or his agent is required to sign a *delivery receipt.*

It is, moreover, necessary that the importing consignee or his agent should satisfy the requirements of the United States customs authorities. The most complicated set of shipping papers used in the foreign trade are those required in the entering of imports through the customhouses. The requirements frequently are so technical that most importers in the United States depend upon licensed customhouse brokers to obtain possession of their wares. Should there be dissatisfaction with the appraisement of the customs officers, appeals may be made to the Board of General Appraisers, and disputes involving the rate or amount of duty or the application of the administrative provisions of the customs laws may be further appealed to the United States Court of Customs Appeals and in rare cases to the Supreme Court. These appeals are so technical that specialized lawyers known as "customs attorneys" are frequently engaged by dissatisfied importers.

On the entry of imported wares the importer is required by the United States Government to present not only the bill of lading but also a *United States consular invoice.* The foreign exporter has prepared this on prescribed forms which vary according to whether the products were sold or shipped on consignment, and he has presented it to a United States consular officer or other authorized individual for official certification.[5] In case of inability to present such a consular invoice the port collector may permit the importer to enter his merchandise on a pro forma invoice accompanied with a bond. A correct form of *entry form,* moreover, must be presented, together with an *importer's declaration* and *oath,* the form of which is different for purchased commodities than for commodities that are received on consignment. The various kinds of entry blanks are too numerous for complete description.

They vary according to kinds of entry as follows: entries for consumption, warehouse, combined warehouse and immediate exportation, rewarehouse, combined rewarehouse and withdrawal for consumption

[5] Not required for personal effects accompanying a passenger or for merchandise not exceeding $100 in value.

or for immediate exportation, withdrawal at original and secondary ports for consumption or exportation, preliminary entry and immediate delivery and informal entry including entry by appraisement, immediate transportation without appraisement, transportation and exportation, withdrawal from warehouse at original and secondary ports for transportation, exportation with benefit of drawback duties, customs mail entries, and baggage declarations and entries. Further variation is due to separate requirements for different kinds of imported goods.

Altogether there are several hundred forms which are variously used in the entry of imports. They are variously supplied free of charge by the United States Government, sold by privileged individuals, or printed privately by the importers. Some are obtainable at one office and others at another. As the customs' officials offer no assistance in preparing them, the services of a specialist are usually essential.[6]

Ship's Documents

Many papers and documents not directly related to the shipper are required by ocean carriers in their relations with the Government and in the conduct of the transportation business. As outbound cargo is received at the wharf it is tallied, measured, and recorded on *dock sheets,* and damage is noted by receiving tallymen. Copies of these sheets are sent to the Freight Traffic Department to be used in checking against bills of lading, and in calculating freight rates, in ascertaining the basis on which they are determined and the total amount of freight due. When cargo that has been ordered forward fails to arrive the Freight Traffic Department is notified on separate dock sheets as "not arrived," and when cargo is loaded into steamers' holds, lighterage clerks or tallymen or perhaps deck officers or ship's apprentices prepare *tally sheets.* A *stowage plan,* moreover, is prepared by the Wharf Department to show graphically the location of the various shipments that are loaded. From copies of the tally sheets the ship's purser may be required to make up a *ship's cargo book* which lists the entire cargo according to the marks and number assigned to each port and stowed in each hold.

From the completed bills of lading the Freight Traffic Department then prepares the *ship's manifest* which is required

[6] G. G. Huebner, *Ocean Steamship Traffic Management,* p. 156.

by the Government and is needed by the steamship line as an operating and accounting document. It lists every item of cargo in detail so as to bring together the vessel's entire cargo. The ship's manifest is required by the port collector in the clearance of vessels to foreign ports, as a basis for his official export statistical returns, and as a means for the enforcement of customs regulations. At the foreign port of entry it is required in the customs entry of vessels, and inbound vessels arriving at American ports are similarly required to present copies of inbound ship's manifests. This document also serves as a routing guide, as a check upon cargo at the time of discharge, and as a basis for the line's freight revenue accounts, for in these respects it corresponds roughly to a railroad waybill. When a vessel is stopped at sea by a man-of-war it is the principal document examined for the identification of cargo.

When upon arrival the master of the vessel fears that cargo may have suffered damage for which the steamship line should not be held liable, or that the vessel and its fittings have been damaged, he files a *note of protest,* and later when actual damage is discovered he files an *extension of protest.* The line's Insurance Department has of course taken steps to insure the vessel in a self-insurance fund or in properly executed *marine insurance policies.*

Many documents in addition to the ship's manifest are required in the relations of ocean carriers and the Government. Each vessel engaged in the overseas trade is required to be measured and to obtain from the registry authorities of the country in which it is documented an official *ship's register* or measurement certificate. If a vessel operates over the great canal routes it is also required to obtain Panama and Suez Canal measurement certificates. Each vessel is required to carry an *inspection certificate* issued by the United States Steamboat Inspection Service.

In the overseas trade the crews of American vessels are at most ports signed up before a United States Shipping Commissioner, Customs or Deputy Customs Collector, Consular Officer or Commercial Agent in a formal document known as the *shipping articles.* Before the clearance of an American

vessel is approved it is also required that a complete *crews list* be prepared. Oath must be made by the master that the provisions of the Seamen's Act of 1915 with respect to the crew have been complied with, that in case of a cargo vessel, no persons not entered upon its shipping articles will be carried, and that the requirements of the meat inspection law with reference to clearance for certain foreign countries have been complied with.

Other documents required before the vessel may clear in the overseas trade are the *master's certificate of radio apparatus,* a port *sanitary statement,* such *bills of health* as may be required by foreign countries, an informal *report of entrance and clearance of vessels in foreign trade,* and a *clearance certificate.* Should a vessel wish to clear before delivery of its complete manifest and exporters' declarations, it is necessary to prepare a *request for immediate clearance* and a bond to produce them within a stipulated period of time must be filed with the port collector.

Many official documents besides the ship's manifest are similarly required in connection with the entry of a vessel engaged in the foreign trade and with the release of its inbound cargo. Prescribed oaths to be made by the master are usually printed on the reverse side of the official inbound foreign manifest. If the vessel has not been boarded by a customs official within 24 hours after its arrival the master is required to report its arrival on the usual "report of entrance or clearance of vessels in foreign trade," previously referred to. A *list of sea stores,* a *list or manifest of passengers,* and a *radio declaration* are also entry requirements, and the master is required to produce his register and the clearance, bill of health, copies of consular invoices and other documents issued to his vessel abroad, those of a foreign vessel being later deposited with the consular officers of the vessels' native country.

Vessels entering from foreign ports before discharging cargo are required to execute a *vessel bond* and to obtain permission from the customs authorities in an *application and permit to lade or unlade cargo.* This is followed by a *general permit to lade or unlade,* by a *general order* which directs the storage of

unpermitted cargo in named public stores, and perhaps by an *application to allow unpermitted cargo to remain upon wharf* and a *permit to retain cargo upon wharf*. The discharge and release of imported cargoes is supervised by the customs authorities by means of these requirements and the assignment to the discharging piers of inspectors, weighers, gaugers, samplers, or other customhouse employees.

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CHAPTER L

OCEAN FREIGHT CLASSIFICATIONS AND TARIFFS

ONE of the outstanding differences between railroad and ocean steamship traffic practice is the relative extent to which freight is classified and classifications and rate tariffs are published. The railroad freight classifications and tariffs, discussed in Part III, are required by law to be published and are subject to complete public regulation. In the overseas ocean-shipping industry on the contrary neither freight classification nor the publication of freight tariffs is required by law nor are they an accepted part of general traffic practice. This, however, is not the case in coastwise or Great Lakes domestic transportation by water.

Steamship Freight Classifications and Tariffs in Interstate Commerce

The regular steamship lines operating in interstate commerce when handling traffic in connection with a railroad are, with reference to such traffic, subject to the provisions of the Interstate Commerce Act, and when operating in the port-to-port interstate trades are subject to the provisions of the Shipping Act of 1916, as amended by the Merchant Marine Act of 1920. The Shipping Act specifically requires the steamship companies to "establish, observe and enforce just and reasonable rates, fares, charges, classifications, and tariffs, and just and reasonable regulations and practices relating thereto . . . to file with the board and keep open to public inspection, in the form and manner, and within the time prescribed by the board, the maximum rates, fares, charges, for or in connection with transportation on its own route; and if a through route has been established, the maximum rates, fares and charges for or in connection with transportation between points on its own route

and points on the route of any other carrier by water." The companies are also prohibited from charging a higher rate or charge than is stated in the tariffs filed with the Shipping Board, except with the approval of the Board. Ten days' public notice must be given before changes are made, unless the Shipping Board for good cause shown waives the requirement with respect to public notice. The Shipping Board has issued detailed "regulations governing the publication, posting and filing of tariffs by common carriers by water in interstate commerce." These tariff regulations are similar to those of the Interstate Commerce Commission governing both railroad tariffs and those issued in connection with interstate traffic handled partly by rail and partly by water.

Many coastwise and other carriers by water operating in interstate commerce issue tariffs that are governed by the regular freight classifications of the railroads, that is they recognize the classes into which freight is classified by the Official, Southern or Western Classification Committees. Their tariffs may be governed by the railroad classifications as to shipping rules and regulations, subject, however, to specific changes printed in the steamship tariffs.

The customary general types of tariffs referred to in Chapter XVII are also issued by coastwise and Great Lakes carriers: class and commodity tariffs; local, joint, and proportional tariffs; tariffs published directly by steamship lines, and agency tariffs published for them by authorized tariff agents. One general difference, however, is that the freight rates published in interstate commere by or for steamship lines are not necessarily the actual rates in effect. The requirement in the Shipping Act provides merely for the publication of maximum rates, fares, and charges. In practice the actual rates collected by steamship lines may conform to the maximum rates published in their tariffs or may be less than such maximum rates, and competition has at times resulted in differences. The intercoastal tariff to which certain intercoastal lines operating through the Panama Canal are parties, has during the recent period of keen competition constituted a general standard, but lower actual intercoastal freight rates have frequently been in

effect. The actual charges must, under the terms of the Shipping Act, be just and reasonable; and if they are reduced below a fair and remunerative basis with the intent of driving out or injuring a competitive carrier by water, they may not again be increased unless the Shipping Board can be convinced that the proposed increase rests upon changed conditions other than the elimination of water competition; but coastwise and Great Lakes carriers are not required to conform strictly to the maximum rates published in their tariffs.[1]

Ocean Freight Classification

In overseas ocean shipping the classification of freight is the exception rather than the general rule. Ocean carriers in the foreign trade are not required by law to classify freight and most of them have not voluntarily adopted classifications. Several lines operating from certain Atlantic and Gulf ports to Cuban and Mexican ports, ports on the west coast of South America, and to Colon and a few other Caribbean ports classify some of their freight in 3 to 6 classes. The tariffs of the lines operating to the west coast of South America from the Atlantic and Gulf coasts of the United States, for example, contain 4 numbered classes and 2 separate classes, one of which includes valuables and the other, dangerous articles. Traffic moving over most of the great ocean routes, however, is not classified. In the North Atlantic trade of the United States with Europe, for example, no general freight classification has ever been adopted, the only exception being the German lines which before the European War classified freight shipped from Germany to the United States in 6 classes. The Transportation Division of the Department of Commerce recently reported that "so far as can be learned, less than a half dozen steamship companies in this country have a published classification of commodities from which it can readily be determined what rate applies to a particular article.[2]

The failure of most steamship lines operating in the foreign

[1] The Shipping Board in Ex parte 3, has questioned the lawfulness for the future of the intercoastal maximum rate tariffs on file with the Board.

[2] E. S. Gregg, "Rate Procedure of Steamship Conferences," T. I. B., No. 221 (April, 1924).

trade to classify freight is due in part to making traffic arrangements and booking cargoes for shippers in many instances by freight forwarders and brokers, and also to the long-standing custom of quoting rates at stated amounts per ton, weight, or measurement, ship's option, and to the competitive character of ocean shipping referred to in Chapter XLV. Lines are obliged to meet tramp competition, and there is also competition within the line service. When companies, even those that are members of conferences, place steamers on the berth to supplement their regular cargoes, they frequently compete with each other as well as with chartered vessels for berth cargoes, and quote rates either with a free hand or subject only to agreed minimum rates. For the reason that the international commercial competition, previously referred to, obliges the lines operating from American ports to meet the rate changes that may go into effect from European ports to competitive markets, the grouping of freight into standardized classes and the absence of any world-wide classification adhered to by all lines would make the lines serving the United States less free to make promptly the necessary rate adjustments. These reasons do not necessarily preclude the more general use of freight classifications in the future, but they have been of sufficient moment to prevent the voluntary adoption of classifications by most ocean lines.

Ocean Freight Tariffs

Although the publication of rate tariffs by steamship lines operating in the overseas trades is more common than the classification of ocean freight, the relative scarcity of published ocean tariffs is likewise in sharp contrast with railroad and coastwise steamship practice. Ocean tariffs are issued by various lines operating between Pacific coast ports and certain Far Eastern ports; between certain Atlantic ports and a few Oriental ports, and ports in the West Indies, Mexico, and other Caribbean countries, and on the west coast of South America. Rates were published by the German lines on westbound traffic from Germany to the United States in connection with the freight classification mentioned above; and steamship agents at various American ports have published so-called rate cards showing rates

to European ports, but the North Atlantic steamship lines do not regularly publish tariffs. The trades between the Atlantic ports of the United States and Australasia, the Orient, Africa, and the east coast ports of South America, are also characterized by a general absence of published tariffs. The freight agents of steamship lines that do not publish tariffs are provided with tariffs or rate sheets for their own use in quoting rates, but the shipper is usually not permitted to consult these unpublished tariffs.

Published ocean freight tariffs, moreover, are confined to the regular line service. The rates at which tramp vessels are chartered, except during the war emergency, when they were under direct government control, fluctuate almost constantly and in accordance with current changes in the relation between the supply of and demand for tonnage. Charter rates in normal times have not been stabilized in published or unpublished tariffs; each charter rate has usually been the result of bargaining.

Such ocean tariffs as are published, do not necessarily disclose the rates actually in effect. Some of them contain notations to the effect that they are subject to change without previous notice and are only issued on "written application of interested party," or that "rates published herein are subject to change without notice." Some ocean tariffs contain only minimum freight rates, for sometimes a minimum rate agreement is all that a conference can accomplish. Others contain the actual rates that are agreed upon, but there have been instances when the published rates have not been adhered to. Nor are line tariffs all inclusive; they may apply only to the regular cargoes of the steamship lines, and not to berth cargoes which are more highly competitive and subject to bidding between lines and tramps and between the lines themselves. Some ocean freight is also covered by time contracts that fix rates between large shippers and freight forwarders or carriers. The manager of a line of vessels may be glad to secure freight in advance, because a steady volume of traffic, even at moderate rates is ordinarily more profitable than a fluctuating tonnage at current rates. The manufacturer or exporter engaged largely in the

foreign trade can carry on his business more advantageously if he knows what freight rates he will have to pay to place his products upon the foreign markets. The time contracts between shipper and carriers cover various periods—a month, a season, or a year—and stipulate that the carrier shall provide facilities for transporting a designated tonnage of the shipper's wares or products on such dates and at such rates as are named in the agreement. Such contracts, however, may not grant an undue preference, for the Shipping Act prohibits common carriers by water from making "any unfair or unjustly discriminatory contract with any shipper based on the volume of freight offered," and from charging a rate that is "unjustly discriminatory between shippers." In 1926 the Shipping Board instituted proceedings to determine the facts and hear argument respecting the lawfulness of contract rates.

Ocean carriers operating in foreign commerce are not required by law to publish freight tariffs and various reasons have been stated why most of them do not publish them voluntarily. The competitive factors affecting ocean freight classification and rates are a basic reason that applies more directly to the publication of tariffs than to classification. Ocean steamship lines have repeatedly insisted upon the necessity of retaining a free hand to meet tramp and line competition and to adjust rates promptly in order to meet the requirements of international commercial competition. Closely related to this claim is the fact that ocean rates have for many years been more unstable than railroad rates, and that more tariff reissues or supplements would be necessary. Perhaps it would sometimes be difficult to keep shippers supplied with copies posted to date, with the result that export orders would sometimes be executed or prices quoted on the basis of ocean rates no longer in effect. Reference has also at times been made to the possible use of tariffs by a line's competitors, to the cost of publishing and distributing tariffs, to the intricate character of tariffs and the likelihood of errors on the part of shippers in using them, and to the existence of convenient agencies from whom rate quotations can be obtained.

At the principal ocean ports and at important interior points

are forwarders and brokers who solicit, book, and forward ocean freight, and who must therefore maintain close contacts with ocean carriers and currently obtain accurate information concerning their rates. There also are steamship freight agents and offices at the ports and at the principal interior traffic centers; and the Transportation Act of 1920 required railroad freight agents at an extensive list of interior points published by the Interstate Commerce Commission, to obtain rate quotations and space reservations for shippers upon their application in vessels registered under the flag of the United States.[3]

Such ocean tariffs as are published by steamship lines engaged in overseas trades are uniform neither as to form nor content. The tariff regulations of the Shipping Board do not apply to them in port-to-port traffic, nor do those of the Interstate Commerce Commission apply to overseas ocean carriers handling cargoes in connection with railroads on through bills of lading or otherwise. Some tariffs comprise but single sheets, while others are booklets of substantial size, but none approaches in size or complexity the larger railroad or railroad agency tariffs or the larger coastwise steamship tariffs so commonly published by carriers operating in domestic commerce.

In general, ocean tariffs are in three main parts.

1. Ocean steamship lines that classify freight usually include the *classification* within their rate tariff. The tariff contains a statement of the number of classes recognized and a list of classified articles with the class rating assigned to each.

2. A second part contains the *class and commodity rates.* As only a few lines classify freight, most of the tariffs are commodity tariffs which specifically list certain commodities and commodity rates. They may also state general cargo or merchandise rates which are to apply to traffic not specifically provided for; or tariffs containing a classification may provide that all cargo not assigned specific class or commodity rates will be rated within some one of the classes. The tariff of one line, for example, provides that "articles not specifically provided for herein will be rated at second class." The methods of pub-

[3] Section 25 of the Act to Regulate Commerce; foreign commerce order No. 5 of the Interstate Commerce Commission.

lishing ocean rates conform to the customary terms by which such rates are quoted in the ocean-shipping business.

The following account is given in *Ocean Steamship Traffic Management:*[4]

In the past the general practice of ocean lines in quoting rates was to state them at a given number of dollars and cents or shillings and pence per ton, weight or measurement, ship's option. There was little if any difference between the rates on different commodities. The rate at a particular time was so much per ton and the ship operator had the option of computing the freight charge either on the basis of an avoirdupois ton of weight or a measurement ton of space. The weight ton usually was the long ton of 2,240 lbs., and the measurement ton usually represented 40 cubic feet. It depended upon the bulky or weighty character of a commodity as to whether it would go as weight or measurement cargo, and the carrier had the option of selecting the basis which yielded the greater revenue.

In later years the practice of charging different rates for different commodities became more common, but many of these rates continue to be quoted on the basis of the ton, weight or measurement, ship's option. More ocean line rates are quoted on this basis than on any other. . . .

Many ocean line rates are quoted in terms of smaller units than the ton, the carrier, however, retaining an option as between the weight and measurement basis. Two rates may be quoted for a particular class or commodity, one at so much per 100 lbs. and the other at a stated amount per cubic foot, the carrier charging whichever in a particular shipment results in the larger sum.

There are also many instances in which the optional rule is not specifically applied in connection with particular commodities, although their relative weight and measurement is considered in fixing such rates. Thus, grain rates are sometimes quoted per bushel or per quarter of defined weight; flour, per bag or barrel; coffee, per bag; case oil, per case; liquids, acids, etc., per carboy, drum, or similar unit; lumber, per M feet; cement, barbed wire, and other commodities, per weight ton; rosin, per 280 lbs.; cotton or wool, per bale; bricks, per M; dynamite, per pound; or live animals, per head. The use of specific units other than weight or measurement for quoting rates is mainly confined to those trades in which standardized bags, cases, bales, or other commercial units have been widely adopted by shippers.

Rates may also be quoted in terms of a percentage of a commodity's value. Shipments of gold bullion or coin are in many instances assigned an "advalorem" rate equal to ½ of 1 per cent or other per-

[4] G. G. Huebner, *Ocean Steamship Traffic Management*, p. 234.

centage of their value. The extra rates charged over and above the regularly quoted rates, in case a shipment of any kind of cargo exceeds the value limit fixed in the tariff rules or bill of lading, are also in many instances fixed at a percentage of the commodity's value.

3. No general or standard shipping rules, such as are published in the Consolidated Freight Classification for the railroads, have been adopted by ocean carriers, and such ocean-shipping rules as are published or otherwise applied are less comprehensive. Some of the principal shipping rules applicable in ocean shipping are contained in the provisions of ocean bills of lading, dock receipts, and shipping permits and freight contracts, and these may be the only shipping rules actually published by an ocean carrier. Others may, however, be announced when the shipper makes application for a rate quotation or for a cargo booking. Ocean carriers publishing freight-rate tariffs, however, include a part or section containing various tariff or shipping rules. Some of the rules merely repeat or refer to certain rules or provisions of the bill of lading or other shipping papers, while others are tariff rules.

Future Possibilities

There is much to be said in favor of the more general publication, wherever practicable, of ocean-line freight rates and shipping rule in tariffs. Tariff publication is desirable to stabilize line rates somewhat, to reduce rate discriminations, to standardize shipping rules so far as practicable or at least to make those of each line more definite, and in general, by the education of shippers and more stability and uniformity of rates to reduce the uncertainties of ocean shipping experienced by exporters and importers. More attention can in any event be given by ocean steamship lines to their packing requirements, secure packing being even more important in foreign than in domestic commerce. In formulating such instructions, factors other than safe packing may not be disregarded, and although these should be left to the judgment of the exporter and importer, steamship lines should render a service to foreign trade by prescribing packing requirements designed to reduce the amount of loss and damage traceable to insecure packing. From

the standpoint of government regulation of ocean-line rates and shipping practices, moreover, railroad experience would tend to show that published tariffs are a basic necessity.

The competitive character of ocean shipping may prevent ocean rates from being as stable as railroad rates are, and it may also prevent an equally extensive use of published tariffs, but the publication of more ocean-line tariffs than at present would seem to be entirely practicable. Aside from the competitive factors referred to, no other objections are of serious moment. The costs of compiling, publishing, and distributing ocean tariffs would probably not be excessive, for although more frequent changes are necessary, ocean tariffs need not be as large as those of the railroads. If extensive packing rules were promulgated it would be feasible to publish them in separate tariffs so as to avoid the frequent reissues or supplements made necessary by changes in rates. The danger of disclosing information to competitors is more fancied than real, for many of the very agencies that have been established for quoting rates to shippers enable steamship lines to ascertain what rates their competitors are charging. Nor need ocean tariffs be any more intricate than railroad tariffs, and if line rates were stabilized somewhat more there would be no insuperable difficulty in keeping shippers and traffic organizations supplied with copies. The several types of agencies maintained at present for the quoting of ocean rates and the dissemination of shipping information are rendering valuable services to shippers, but the more general publication of tariffs would constitute an appreciable improvement.

For similar reasons it is also desirable that ocean lines should more generally classify freight so far as practicable. There is the added reason that the number of different kinds of products being sold and purchased in international commerce is constantly increasing.

The principal need in connection with tariffs published by steamship lines in the coastwise trade is that they should in all instances contain the actual rates in effect, rather than maximum rates. Maximum rate tariffs inform the shipper as to the highest rate lawfully in effect, but when rates are depressed as

a result of competition, he no longer can depend upon his tariff file as a source of rate information.

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See tariffs and classifications of coastwise steamship lines and those of ocean lines referred to in this chapter.

CHAPTER LI

OCEAN FREIGHT RATES

THE distinction between line and chartered freight services that was referred to in connection with the organization and management of the services is equally fundamental in a discussion of ocean freight rates. Not only are the bases of line and charter rates different,[1] but the factors influencing them differ in some respects and cause both to be less stable than railroad rates.

Ocean-Line Freight Rates

Ocean-line rates are not made by a scientific process. They are not determined by a fixed standard or mathematical calculation, but are the result of business influences or forces. Railroad rates, it was noted, are also largely subject to such influences, but a beginning, and indeed substantial progress, has been made in standardizing to some extent railroad rate structures in several sections of the country. In ocean-shipping charges no distance scales are applied, there are comparatively few fixed rate structures, and charges as a whole and individually are adjusted from time to time to meet the requirements of the carriers, the changes in international commerce, and the shifting of competitive forces in ocean shipping. Such degree of stability as is at times attained is due mainly to the ocean-line conferences that were discussed in Chapter XLV.

Normally, when line competition is in a measure controlled by conferences, the governing principle in making line rates is to fix them at "what the traffic will bear" or at "what will move the traffic." The cost of the service and the length of the voyage are not the principal rate factors. The lines aim to

[1] See Chapter XLVIII for bases of charter rates, and Chapter L for discussion of ocean-line rate quotations.

maintain their rates at a level that will yield the largest revenues in the long run rather than for a single voyage. Rates fixed at what the traffic will bear are not, in periods of normal business, set at the highest possible level that will permit the movement of such traffic as is awaiting shipment, for maximum revenues depend in part upon the steady development of the volume of ocean traffic. The exorbitant charges demanded during the World War and for a while subsequently, when there were more cargoes than available ocean tonnage, temporarily set aside the usual desire of the lines to develop traffic. It is worthy of note that charter rates in the tramp service, which are largely the result of bargaining and are not made by conferences, likewise advanced rapidly when hostilities began in Europe.

The prevalence of ocean conferences indicates that regular line rates are not the result of unrestricted competition. It is equally clear that the occasional arbitrary advance or maintenance of a rate does not prove that the conference lines have an absolute monopoly power over line rates. Many influences not fully controlled by ocean conferences need to be considered when the lines endeavor to fix their rates at "what the traffic will bear," and during a competitive period such as has existed since 1920 the competitive factors of ocean shipping become dominant.

Some competition between steamship lines that are members of a conference persists normally even though they coöperate in the making of their charges. The conferences regulate and restrict rather than eliminate competition. Even when the absolute rates are fixed in conference committee meetings, the effects of competition are not wholly avoided, for the wishes of the weak as well as the strong conference lines need to be heeded. The conference agreements change the form and severity of competition, but its life is not extinguished. On some routes, moreover, independent lines continue to operate, although the competition they are able to maintain is limited by the conferences.

A distinction needs to be made between the regular cargo rates of ocean lines and their "berth cargo" rates. Such rates

are frequently reduced to a low level at large ports that are served by many regular lines. At times grain is carried in lieu of ballast, and the rates are regarded as profitable so long as they yield anything over and above the immediate costs incurred in handling it. Berth cargo is explicitly excluded, in many instances, from the commodities whose actual or minimum rates are fixed in conference, or is subjected to only a modified amount of control. The minimum rate agreements of the lines operating between the United States and the United Kingdom before the outbreak of the War in Europe, for example, did not cover grain, flour, oil cakes, cotton, and similar heavy, bulky commodities. In regard to grain, the lines merely agreed not to accept more than specified quantities per vessel at less than 3 cents per bushel.

Although ocean liners and tramp vessels are mainly engaged in different services, the rates charged for the services of ocean lines are nevertheless influenced to some extent by tramp competition. Tramp competition is particularly acute in the fixing of berth cargo rates, because the commodities carried by lines as berth cargoes are especially adapted to transportation in shipload lots. At large ports, for example, where many lines congregate, the lines sometimes obtain most of the grain cargoes, but at rates that are in a large measure influenced by tramp competition.

The general cargo rates of the lines are less subject to tramp competition, but even they are not wholly free from its influence. Shippers of iron and steel manufactures, and other bulky goods that may be shipped either in shipload lots or as general cargo, frequently have a choice of services; and should the line rates on general cargo that is usually handled almost exclusively by the lines become unreasonable as compared with the cost of chartering vessels, tramp competition may at any time become an active factor.

Ocean-line rates are further influenced by the indirect competition known as "market" or "commercial" competition. Many American exports to non-European markets, for example, need to be marketed in competition with similar goods offered by European exporters. This obliges the lines serving the ex-

porters of the United States to maintain some degree of parity between their rates and those in effect from Europe to a given competitive market. The effect of this competition is similar to the generally recognized force of industrial and commercial competition upon railroad charges, but differs in that it is more largely international in scope. Its influence upon the rate activities of ocean conferences is clearly shown in the following statement made in 1914 by Mr. William Boyd, then president of Houlder, Weir & Boyd, Inc.[2]

> Deprived of the protection offered by the system of rebates or some other effective tie upon the shipper, the existence of conferences depends entirely upon affording the shipper a satisfactory service and reasonable rates. This is the position of the American conference. Theoretically, working under an agreement in a trade where there is no outside competition, conferences can arbitrarily fix rates. They do fix them, but they cannot, because of the international character of the oversea trade and the freedom of the ocean to everything that floats, maintain an unreasonable rate for any length of time. An unreasonable rate on any commodity can result only in that commodity being supplied by some other country, and the loss of its carriage to the conference lines. This would not be good business, nor would it be good policy. . . . The whole history of the shipping business has proved the folly of conferences which tried to trade upon an apparent monopoly, and experience and self-interest have evolved the present-day conference idea, which is combination for the development of trade, and restraint only of wasteful competition amongst themselves. It must surely be evident that, in a business where the buyer has the opportunity of buying in the United States, England, Germany, Belgium or France, the carrying line from America must help the American seller or shipper to make his sale. If the sales are not made, there is not freight to carry. The proper answer to the question therefore is, that while theoretically a conference enables the lines to establish rates, such rates cannot be arbitrary, but must be reasonable. Self-interest demands that they must enable the shipper or merchant to compete with the shipper or merchant of other manufacturing countries.

Market competition also exerts an influence over the relative ocean rates charged to or from different ports of the United States. There has usually been a general alignment of the several Atlantic and Gulf ports, but in the overseas trades these port adjustments of the steamship lines have been somewhat

[2] *Annals of the American Academy*, Sept., 1914, pp. 196, 197.

less definite than the adjustments or differentials in accordance with which railroad export and import rates or domestic railroad rates applicable to foreign trade traffic are determined. In ocean-line as well as railroad export and import rate-making three eastern seaboards—those of the North Atlantic, the South Atlantic and the Gulf—have for some years been generally recognized. Prior to the European War the outbound ocean-line rates in effect at Philadelphia, Baltimore, and Virginia ports were usually, although not always, somewhat higher than those effective at New York, and those applicable at Boston were usually the same as the outbound New York rates, or but slightly different. Ocean rates from the principal Gulf ports usually were quite generally uniform, subject to individual variations, and subject also to the general maintenance of ocean-line rates from Key West to European and Caribbean ports on a somewhat lower basis than from other Gulf ports. The record of ocean-line rates effective from the South Atlantic ports, prior to the War, is less complete, but also indicates a substantial blanketing of the principal ports located on that seaboard.

Since the War the principle of blanketing ocean-line rates within the South Atlantic and Gulf seaboards has been generally retained, and it has also been applied to the North Atlantic ports. The ports from Boston to Norfolk are now on the same general ocean-line rate basis. As most railroad rates applicable to exports moving through Philadelphia, Baltimore, and Norfolk from the Central West are fixed at differentials [3] below the rail rates in effect to New York, the present policy of generally blanketing North Atlantic ocean-line rates, gives a slight freight-rate advantage to these ports in their competition with New York and Boston.

There has, moreover, been a tendency to adjust the three eastern seaboards on a fairly definite basis with reference to ocean-line rates to foreign destinations on competitive traffic originating at interior points from which exports may move by way of the ports of any one of the several rival seaboards. As has been stated by the United States Shipping Board in its decision of January 20, 1925, with reference to ocean-line rates from the

[3] See Chapter XIX.

eastern seaboards to European ports: "Following the cessation of the War, and some time prior to April, 1920, there was evolved a system of port grouping and differentials. In April, 1920, the grouping of ports was as above indicated, and the rates to the foreign ports in question were applied on the differential principle, the amount of the differential in favor of the North Atlantic ports and against the Gulf ports generally being 15 cents per 100 pounds, or 5 cents per cubic foot, and against the South Atlantic ports 7½ cents per 100 pounds, or 2½ cents per cubic foot." On April 22 and 23, 1920, the members of the North Atlantic, South Atlantic and Gulf Steamship Conference acting through a tripartite conference formally adopted the threefold grouping of the eastern seaboards and also the differentials then in existence. As a result of complaints of unjust discrimination the Shipping Board later conducted an investigation and in 1925 pronounced the tripartite arrangement to be "unfair as between carriers and detrimental to the commerce of the United States."[4]

The Board did not, however, declare the existing ocean-rate differentials unduly prejudicial. The effect of its decision was to leave the three steamship conferences free to make their own ocean freight rates without the binding effect of an interseaboard agreement.

The interseaboard adjustments in other ocean trades are different because the length of the voyage from the southern ports to South American and Oriental ports reached via the Panama Canal, etc., is in many instances substantially less than from the North Atlantic seaboard. No fixed rate differentials appear to be in effect, but many ocean-line rates are substantially the same from the ports of the North Atlantic, South Atlantic, and Gulf seaboards.

The ports of the Pacific seaboard of the United States have also been equalized substantially as to their ocean-line rates, but the extent of this equalization is not so universal as that afforded by the export rates published by the transcontinental

[4] Port Utilities Commission of Charleston, S. C., *et al. v.* The Carolina Company *et al.*, Docket No. 23; The Norfolk Port Commission *v.* Algerian American Lines, *et al.*, Docket No. 25; Port Differential Investigation, Docket No. 26; Jan. 20, 1925.

railroads. The Pacific seaboard as a whole is on a lower ocean-rate basis than the eastern seaboards in all Pacific trades in which the steamship lines and transcontinental railroads serving them can hope to compete for export and import traffic originating at or destined to interior points within the United States. This general rate adjustment prevails until distant Oriental ports such as Singapore and Calcutta are reached.

Ocean as well as railroad carriers are concerned with the equalization of rival ports or with the establishment of equitable port adjustments and the rates of both are influenced by port rivalry. To accomplish this the railroads have made a more general attempt than have the ocean carriers in their export and import rail tariffs and their established port differentials,[5] but the ocean steamship lines have not been able to disregard the competition between rival ports and seaboards.

The rate parity maintained between competitive countries and rival ports is by no means absolute. Yet a relationship is maintained, and this is ordinarily true even when the services available to American shippers are offered under foreign flags. Flagrant discriminations, however, have occurred at times, and these, although they are exceptional, have contributed their share to the desire for a larger American deep-sea marine and for a measure of public regulation. Unfair discriminations are less likely to occur in the future, because the Shipping Board has the power to correct any rate that is unjustly discriminatory between shippers or ports or against "exporters of the United States as compared with their foreign competitors."

Although ocean-line rates are largely determined in conferences in accordance with the commercial requirements of international commerce and the limits set by direct and indirect competition, various additional rate factors are instrumental. The value of the commodities carried is considered in determining what the traffic will bear. Particularly is this the case when different rates are assigned to different commodities, or when an ocean line adopts a freight classification.

Ocean-line rates are also influenced by differences in the value of the services rendered. Slower or indirect lines are

[5] See Chapters XIX and XXV.

frequently accorded differentials because the value of their service is less than that of faster or more direct lines, and unless their rates are lower they would, in years of normal shipping, fail to obtain their proportionate share of the traffic. The value of the service likewise determines the maximum above which neither individual class and commodity rates nor ocean-line rates as a whole can be permanently maintained.

The relative supply of tonnage and cargoes, and the demand for them, influences line rates. Ocean conferences tend to prevent the constant rate fluctuations which would occur if supply and demand were the sole consideration, but the conference lines are not slow to increase their charges in case a shortage of tonnage occurs. Neither could they maintain their line rates at a high level throughout a long period of insufficient shipping and surplus tonnage. The exorbitant advance in ocean rates following the outbreak of the War in Europe was due, in large part, though not entirely, to a relative shrinkage in available ocean tonnage. The gradually increasing volume of freight as against the reduction in active merchant tonnage caused by the destruction of belligerent and neutral tonnage, the seizure of merchant ships for transport and other war purposes, the enforced idleness of much of the ocean tonnage of Germany and Austria, and the reduced merchant tonnage output of the world's shipyards during the first two years of the European War, enabled the lines as well as the ocean-going tramps to raise their rates to an unprecedented level.

It is clear that line rates are fixed primarily at what the traffic will bear, tempered in accordance with the commercial and competitive forces mentioned above; yet the cost of the services rendered by the lines is also a rate factor. Cost of service influences line rates in two general ways: First, it determines the minimum below which the general level of line rates on a given route may not long be maintained. The lines do not establish their rates by computing their total costs and adding to this an amount to yield a profit, but they resist any reduction that causes rates to be lowered to the cost of the service, and they advance their rates in case their costs rise to a higher level and commercial and competitive conditions do not

prevent. A portion of the increase in ocean rates following the outbreak of the War was traceable to the resulting increase in insurance costs, terminal charges, and running expenses, including the outlay for wages, supplies, and fuel. Should the costs of a particular line, however, differ widely from those of competitive lines or other lines performing similar services, the line may at times find itself unable to maintain its rates at a profitable level. Unfavorable costs have not enabled American steamship lines at all times since 1920 to maintain their rates at a profitable level.

The cost of service also influences line rates on particular commodities. Particular rates are seldom based upon the total cost of service chargeable to an individual commodity on a cost-accounting basis. Should special expenses of any kind, however, arise in connection with a particular article or should its nature be such as to incur special risks, or its bulk be unfavorable to compact stowage, it may be obliged to pay a higher rate than other commodities, provided always that commercial conditions do not prevent such action. In case transshipment costs are incurred, moreover, or special expenses arise in handling a consignment in port, special amounts are, in many instances, added to the line rates in the freight bill that is submitted for payment. The extent to which particular rates are influenced by the cost of service depends in a large measure upon whether the commodity in question is relatively free from or subject to competition.

Although distance or the length of an ocean voyage and steaming time affect the cost of service, they do not control ocean rates. The rates on commodities, the movement of which is not controlled by active commercial competition or competition between ocean carriers, vary generally, although not precisely, in accordance with distance. Thus the rates on articles such as grain, flour, and provisions shipped from the United States to Europe vary as regards ports of destination. On the other hand, the rates on traffic that is more subject to commercial or market competition are frequently blanketed over many ports regardless of relative distances. Differences in the volume of inbound and outbound traffic, or in the relative

ability of different trades to bear a higher or lower rate, may cause distance discrepancies involving many hundreds of miles.

Ocean Charter Rates

The units upon which time and charter rates are based were mentioned in Chapter XLVIII, and it was also noted that time charters and some kinds of voyage charters require the charterer to assume certain expenses or perform specified services. Charter rates, therefore, vary according to the amount of service and the costs or charges imposed upon the owner and charterer, respectively. To this extent cost of service is a consideration in determining the rates agreed upon when different types of charters are signed.

The influences determining ocean charter rates differ from those mentioned in connection with line rates chiefly, however, in that charter rates are more competitive and fluctuate freely with the supply of tramp tonnage and demand for such tonnage. No prices could be more competitive than charter rates; they fluctuate with every slight change in the ratio of traffic to shipping. There is a world-wide competition among vessel owners to secure desirable cargo shipments—a competition that is made possible by means of ship brokers who are to be found in all large ports, and who are, by means of the network of telegraph and cable lines that bind together all commercial centers, kept in touch with each other and with the shippers having cargoes for transportation. When there is bidding for cargoes of grain, case oil, or other bulky commodities that are acceptable to lines either as berth or general cargoes, the competition between tramps, moreover, is supplemented by active line competition. Charter rates may change many times in the course of a single day at any large port. Those on grain cargoes may fluctuate as freely as the price of grain.

As was stated in Chapter XLV ocean conferences in the chartered service are relatively unimportant. The business organization for making charter rates is consequently very different from that prevailing in the line service. In the overseas trade, charter rates are not made coöperatively by a limited number of conference committees. Except when under direct govern-

ment control, as was the case during the War, they are usually the result of bidding or bargaining between vessel owners or agents and shippers or other charterers. The bargaining may be conducted directly or more commonly through ship brokers, and it may also be facilitated by organized grain, produce, or maritime exchanges, but it is usually essentially competitive in character.

General Movement of Ocean Freight Rates

There is no definite rule of rate-making in accordance with which the general level of ocean rates is advanced or reduced by public authority so as to assure, if practicable, a fair rate of return on the value of the transportation properties of all carriers as a whole or of groups of carriers operating within defined territories, such as there is in Section 15a of the Interstate Commerce Act applicable to railroad rates. There is, however, a general level of ocean freight rates, for at times all ocean freights move upward or downward together. A general rate movement may begin at a somewhat earlier date in some trades than in others, but in the long run a general movement of ocean rates is clearly perceptible.

It is difficult to show accurately the detailed fluctuations in ocean freights throughout the maritime world, because of the large number of ocean routes and diverse rate bases; yet there are sufficient historical indices to show whether the general level of rates has advanced or receded and approximately how much. The rates to and from Great Britain, for example, ordinarily afford an index, because of the foremost position of that country in the shipping business and of the world-wide interdependence of ocean rates. Outward and homeward freights have been systematically compiled by Messrs. Angier Brothers, and their rate tables, together with the returns that have been published by the British Board of Trade from time to time, have enabled *Fairplay* to publish statistics showing mean or average annual freights.

Compilations of statistics of mean annual rates applicable to particular commodities shipped from American ports to overseas destinations are likewise available for long periods of years.

From the date available it is evident that prior to the War in Europe the record year of high ocean freights was 1889. Subsequent pre-War fluctuations are clearly described in the following statement published in *Fairplay*[6] in connection with its diagrams of average freights:

From 1889 to 1895 freights fell to the extent of 40 per cent. The engineers' strike in 1897, by stopping the production of new shipping, together with the Spanish-American War in 1898, sent outward and homeward freights up to 91.35 per cent of the 1900 standard, and it was solely due to the demand of the British Government for transports for South Africa that freights went up still higher in 1900, when as much as 35 shillings per ton gross per month was paid for the hiring of some of the large mail and passenger steamers for the transport of troops. These high figures for passenger steamers are, however, not taken into account in the table for obvious reasons. It should be borne in mind that since 1885 the size of steamers engaged in the cargo-carrying trade has increased considerably, and that vessels, owing to their increased size and better dispatch, can now carry cargo at a much lower rate to leave a profit than vessels could do thirty years ago.

The high freights for carrying cargo that were paid in 1900, however, were not the result of an increase in trade generally, but were of a fictitious character, with the result when the transports, etc., were released by the Government, and had to seek freights in their regular trades, the result was disastrous, freights falling 26 per cent in the following year, and remaining at an unremunerative level until September, 1911, when, shipowners having for some years refrained from building to any large extent owing to the impossibility of profitably employing tonnage, the increased trade caused the demand for steamers to more than equal the supply, with the natural consequence that freights were forced up to a paying basis. At that time it was fully anticipated by shipowners generally that they were in for a year or two of good freights, although nothing of an extra, abnormal character was anticipated. The strike in the Plate caused a large number of vessels to be tied up there, which were consequently taken off the market. The coal strike in this country (Great Britain) also caused a further large amount of tonnage to be laid idle, while the transport workers' strike in the middle of the year further delayed vessels. When the disputes were over there was a glut of goods to be shifted at different parts of the world, with the result that in order to secure vessels the different markets had to increase the rates, and freights reached a point which no owner in his wildest moment had anticipated. For instance, in order to induce vessels to go to the Plate in ballast, as much as 31 shillings had to be paid, which was directly attributable

[6] Issue of Dec. 21, 1916.

to the strike on this side tying tonnage up. The threatened closing of the Dardanelles was the final spurt, as much as 27 shillings being paid to induce owners to take the risk of loading in the Black Sea.

In 1913 began another reaction which continued until the second half of 1914. Then, however, much of the merchant tonnage of Italy and Spain was withdrawn because of labor strikes, and still later the War caused not only a withdrawal of many merchant vessels from commercial channels by blockade, destruction, and retention for military and naval uses, but a large increase in running and capital expenses, insurance costs, and terminal charges. Ocean freight rates the world over advanced to a war level and soared to unprecedented heights. In 1915 and the early part of 1916 the rates on many commodities exported from the United States to Europe were more than five times the rates prevailing immediately before the War; and those on shipments to non-European neutral countries located far away from the war zones advanced 300 to 400 per cent. Many considered this to be the maximum that the traffic could bear. Later in 1916, however, it appeared that war traffic could seemingly bear an almost limitless burden. In 1917 the general index number was 785.3 as compared with 69.6 in 1914 and 100 in 1900.

After 1920 the general movement of ocean freight rates was rapidly downward. The general index number declined from 394.7 in 1920 to 142.6 in 1921, 109.8 in 1922, 98.7 in 1923 and 102.1 in 1924.

The demand for ocean tonnage, both line and tramp, declined sharply because a world-wide depression in international commerce occurred beginning in 1921. At the same time, moreover, the available ocean tonnage of the maritime world was gradually increasing. Under such conditions ocean shipping, which since the beginning of the War had been largely noncompetitive, promptly returned to a competitive basis. Available traffic could not continue to bear the high general level of freight rates and ocean carriers competing actively for cargoes reduced their charges. Ocean conferences, for the time being, largely lost control over line freights. Commerce had suffered as a result of a shortage of tonnage, but now the ship-

ping industry became burdened with large fleets of idle vessels.

The general level of ocean freight rates fluctuates with variations in supply and demand. Charter rates are usually the result of free bidding. Line rates are normally more stable because of the activities of ocean conferences, but in the long run they too conform to the supply of and the demand for ocean tonnage, and when great changes in the relation between supply and demand occur or are forecast, especially when the conferences fail to control their members, the general level of line rates may fluctuate violently. Normally, the maximum below which the general level of ocean rates will not remain for any considerable period of time is the cost of service, and line conferences bear in mind the costs of all their members. When, however, supply and demand conditions such as those occurring after 1920 become general, the minimum cost of service, or operating expenses, covered by the rates may be the costs incurred by the lines that are most favorably situated.

As the relation between supply and demand in ocean shipping is influenced greatly by general business conditions, and most directly by the volume of international commerce, it is not surprising that general cyclical movements in ocean shipping are traceable. A recent study [7] of fluctuations in ocean freight rates, volumes of cargo and tonnage, vessel entrances and clearances, shipping profits, vessel prices, and shipbuilding activity indicated that four general cyclical movements in ocean shipping have occurred since the early eighties, their peaks being reached in 1887-9, 1898-1900, 1905-7, 1912-13, and 1918-20. The first of these cycles occupies a complete decade, but each of the remaining three completes itself within six years. Following regularly at an interval of about four years are the peaks of intermediate cycles.

The general shipping cycle is described as follows:

> Starting with a period of depression such as that existing at the present time the first indications of a revival come with an increase in ocean traffic as demonstrated by an increase in the tonnage entered at or cleared from the important shipping ports. Freights increase

[7] Frank Cyril James, *Cyclical Fluctuations in the Shipping and Shipbuilding Industries.*

rapidly after a lag of from three to six months, and with them the price of vessels ready for immediate service also tends to increase. For a while the shipbuilding industry is not affected, but as the available tonnage becomes fully employed the shipyards receive orders for new vessels and very rapidly enter upon a period of prosperity. The net profits of shipping companies tend to increase about a year before the rise in freights, and during the whole of this period of revival they are rising rapidly.

The first indication of the end of the period of prosperity is found in the shipbuilding industry, where no new orders are received when the immediate demand has been met. Tonnage under construction and tonnage launched both decline rapidly although the figure of total tonnage in operation tends to increase owing to the fact that shipowners are keeping their older vessels in service during the boom in order to reap as much advantage as possible from the high freights. Freights continue to advance for another 12 or 18 months and the price of new vessels ready for immediate service may still rule high, but the net profits of shipping companies show a tendency to decline (or at best are increasing at a rapidly diminishing rate) on account of the increased cost of operation.

Meanwhile there has come upon the market a good deal of new tonnage to swell the supply and when after a while the physical volume of traffic ceases to increase, or begins to decrease on account of a commercial crisis, the supply of shipping tonnage exceeds the demand at the existing level of freights. Freights drop rapidly on account of the fierce competition among tramp vessels and profits fall correspondingly. Vessels begin to be laid up, or if they are already obsolete, to be scrapped—and shipowners that have vessels under construction will in all probability order work to be suspended for the time being. The whole industry falls very rapidly into a depression.

After a while, however, the shipyards will enter upon a period of increasing activity (although this may not mean increasing prosperity). Work will be resumed on the tonnage already under construction, and liner companies planning for future development may also place new orders. At the same time the physical volume of traffic will tend to increase on account of the increase in the physical volume of business which invariably comes very soon after the crisis. Freights may rise somewhat, as will the price of new vessels ready for immediate service. But the peak of the intermediate cycle is very soon reached. The slight increase in freights has led to the reconditioning of some of the laid-up tonnage, and the increased activity of shipyards has further increased the available supply of tonnage. Freights fall rapidly to an even lower level than before and both shipbuilding and shipping enter upon a period of deep depression from which they will only be aroused by a general revival in trade.[8]

[8] *Ibid.*, pp. 67-70.

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CHAPTER LII

OCEAN FREIGHT FORWARDING AND FREIGHT BROKERAGE[1]

EARLIER chapters have pointed out the relations of ocean carriers and shippers with ocean freight brokers and forwarders. Ocean freight forwarding refers to the actual forwarding and handling of shipments by forwarders acting as agents for ocean shippers, while ocean freight brokerage refers to the booking of cargoes or the engaging of freight by freight brokers; but in practice the two services are frequently performed by the same concern. Although there are many freight brokers who do not perform forwarding services, the many ocean freight forwarders found at all large ocean ports and at some interior points perform a forwarding and also a freight brokerage business.

Nature of Services Performed

As freight brokers the ocean freight forwarders assist the steamship companies in securing freight. Sometimes ocean carriers, when there is no difficulty in obtaining cargoes, prefer to book cargoes without the medium of brokers, and to save the usual brokerage charge, but in normal times, when cargoes are not readily at hand, many steamship lines find the services of freight brokers helpful. The economic value of the ocean freight brokerage business does not, however, end with the securing of freight for the steamship lines. Many manufacturers and shippers, particularly those located in the interior, depend upon ocean freight forwarders and brokers to keep them fully posted on ocean freights and services and to engage their cargo space for them. The difficulty of obtaining current ocean freight rates, subject as they are to sudden fluctuations, and of engaging space was considered of sufficient value by many shippers during the World War conditions to induce them to pay the

[1] The first three sections are reproduced from G. G. Huebner, *Ocean Steamship Traffic Management*, Chap. vi, with revisions and additions.

brokerage fee which some of the steamship lines for the time being refused to pay, or would pay only to such forwarders as agreed to become members of a specified freight brokers' association. Importers also find ocean freight forwarders and brokers a convenient source of information regarding ocean freights on imported cargoes.

When acting as ocean freight forwarders these concerns, serving as agents of shippers who prefer not to handle their export shipments at the ports of export and beyond, take entire charge of an export shipment either from point of origin to final destination or throughout any part of the voyage or trip. In doing so they act as port representatives who receive the shipments consigned to them, make the necessary arrangements with rail and ocean carriers, have the shipment carted or lightered, see that it gets aboard the vessel, attend to the preparation of the shipping documents described in Chapter XLIX and to any trade formalities that may arise at the ports, pay freight and insurance premiums if so instructed, clear cargoes through the customhouse, and generally attend to the transportation and shipping services incident to an export or import transaction. Whenever it becomes necessary to store freight after arrival at the port they make arrangements for storage. They frequently not only act as representatives or agents at the port of export, but also provide a through freight service including delivery at inland destinations in foreign countries.

Ocean freight forwarders also perform a service to the shipper when they quote through freight rates to a foreign destination. They stand ready to quote a freight charge that will carry the export shipment through to interior destinations in foreign countries. Interior destinations to which they will not quote through rates are exceptional.

Forwarders are, moreover, in a position to offer reduced rates on small packages which if shipped directly by the shipper in the ocean freight service might have to pay the relatively high minimum freight charge provided for in the bills of lading of many steamship companies. By combining the small packages of a number of shippers, freight forwarders may quote rates on package freight that result in a saving to the individual

shippers and at the same time yield a profit to the forwarder. Ocean freight forwarders when handling package freight are performing an international express service. Several of the regular domestic express companies [2]—the American Express Company and Wells, Fargo & Company—are also engaged in the handling of express goods to points in nonadjacent foreign countries. The former conducts a general ocean freight forwarding and foreign express business, and by means of the large number of express offices maintained by the American Railway Express Company throughout the country reaches a large number of shippers with small express packages. Wells, Fargo & Company makes shipments from New York to Vera Cruz and Tampico, Mexico, via steamship. The difference between carload and less-than-carload railroad rates and the privilege of shipping carload lots of mixed freight also enables freight forwarders at times to forward export freight from interior points to the port of export at rates that are a saving to the individual shippers while yielding a profit to the forwarders. Some of the ocean freight forwarders have established offices at interior points, both to reach interior exporters more directly, and to consolidate shipments into carload lots. Interior forwarders that consolidate or bunch less-than-carload shipments for export are engaged in a railroad forwarding business as well as in the usual business of receiving shipments at the ports and forwarding them to foreign destinations.

Ocean freight forwarders render a further service to shippers who may wish freight charges to be collected from the consignee at destination, although ocean carriers insist upon prepayment of freight. An ocean freight forwarder may forward shipments on a collect basis, even though he is required to prepay the freight demanded by the steamship company, thus carrying the shipper until the foreign agent of the forwarder has collected the freight from the consignee at destination.

They also endeavor to handle to the best interests of the export shipper such goods as are refused by the consignee. When instructed by the exporter they undertake to provide the marine

[2] See American Express Co., Foreign Department, General Circular No. 101, March 1, 1920.

insurance desired by him, thereby relieving him of the trouble of obtaining insurance.

Some forwarders give financial assistance to exporters in the United States and foreign consignees abroad. Shippers may arrange with their forwarder to advance the invoice price of their shipments, the forwarder then collecting from the consignee either through his foreign agent at destination or by means of drafts handled through the regular international exchange bankers or brokers.

The financial work of the regular express companies who conduct a foreign express and forwarding business also includes the issue of travelers' checks, foreign money orders, and letters of credit; the transfer of funds by telegraph; and the operation of a "foreign postal remittance" service for the remittance of money to persons not located near a bank.

Some of the ocean freight forwarders are engaged in foreign trade, as distinct from shipping, and give trade information useful to their customers in buying or selling goods abroad. Some act as foreign purchasing or selling agents.

Business Organization of Ocean Freight Forwarders

The business organization of ocean freight forwarding concerns is subject to so many variations that it is impossible to construct a single organization chart that conveys a comprehensive view or is in all respects typical. Form No. 9 shows how many of the larger concerns are organized. The large forwarding companies vary in organization with the volume of business handled, the extent to which they specialize in shipments to particular parts of the world, the kind of services offered and the differing views of its firm members or higher officers as to how its forces can be made most effective. There are also smaller forwarding concerns with less extensive organizations than that indicated in the diagram.

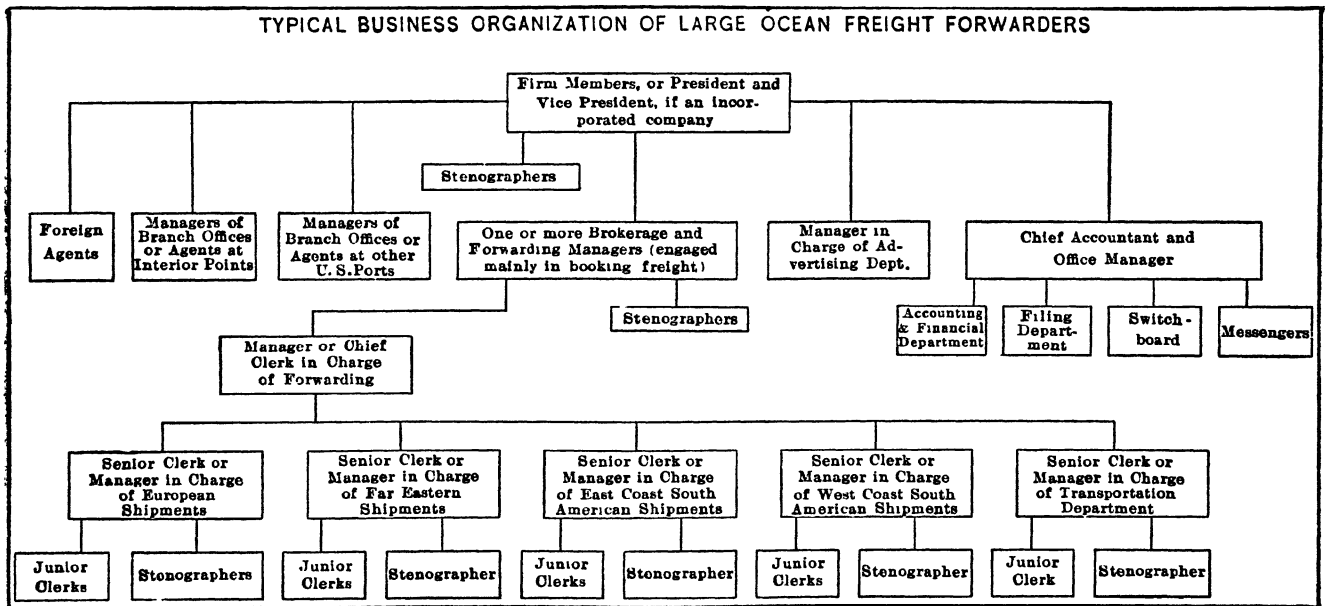
The main office of most of the ocean freight forwarders is located at a seaboard port, and the larger forwarders have agents or branch offices at other ports to facilitate the routing of inland freight through more than one port and to share in the freight originating at several ports of export. Forwarders

also have agents or branch offices at various interior points where export freight originates. This enables them to get into closer touch with interior manufacturers and exporters and to consolidate less-than-carload lots of export freight. An ocean freight forwarder located at the seaboard may have an "overland department" at Chicago or other interior points to handle overland traffic routed through the ports of the Pacific coast. Some concerns known as interior forwarders have their main office at an interior point, and agents, representatives, or branch offices at ocean ports and at interior shipping points.

American ocean freight forwarders and domestic express companies engaged in the international express or forwarding business handle most of their business abroad through foreign concerns, but some have their own branch offices or agents at a limited number of the principal foreign cities. Most American forwarders enter into agreements with foreign freight forwarders or "spediteurs" and consign to the foreign agent all freight or express matter forwarded to the territory covered by such agent, who obligates himself to handle such consignments and also to ship through the American forwarder the freight and express that he dispatches to the United States, and that is not otherwise specifically consigned by the exporter. Each transaction has its waybill which gives instructions to the foreign agent and which he returns with a statement of his charges.

The ocean freight forwarding and foreign express businesses differ from the domestic express business in that no exclusive time contract to handle all shipments is entered into with steamship companies. Forwarders, like other shippers, route their consignments via the first available steamer. Such time contracts as have been entered into by express or forwarding and steamship companies are mainly in the coastwise and Great Lakes business, where the number of available steamship lines between two points is small, but the sailings of a particular line are frequent. This approximates the conditions obtaining when domestic express matter is shipped by rail.

The main office of the typical large ocean freight forwarding organization shown in Form No. 9 is assumed to be located at


TYPICAL BUSINESS ORGANIZATION OF LARGE OCEAN FREIGHT FORWARDERS
Firm Members, or President and Vice President, if an incorporated company
Stenographers
Foreign Agents
Managers of Branch Offices or Agents at Interior Points
Managers of Branch Offices or Agents at other U. S. Ports
One or more Brokerage and Forwarding Managers (engaged mainly in booking freight)
Manager in Charge of Advertising Dept.
Chief Accountant and Office Manager
Stenographers
Accounting & Financial Department
Filing Department
Switchboard
Messengers
Manager or Chief Clerk in Charge of Forwarding
Senior Clerk or Manager in Charge of European Shipments
Senior Clerk or Manager in Charge of Far Eastern Shipments
Senior Clerk or Manager in Charge of East Coast South American Shipments
Senior Clerk or Manager in Charge of West Coast South American Shipments
Senior Clerk or Manager in Charge of Transportation Department
Junior Clerks
Stenographers
Junior Clerks
Stenographer
Junior Clerks
Stenographer
Junior Clerks
Stenographer
Junior Clerk
Stenographer

FORM 9.

the port of New York. The members of the firm, of whom there may be several, are largely occupied in keeping in touch with customers and in booking freight with steamship companies. Managers, reporting to the firm members, supervise the forwarding staff but are likewise engaged largely in booking cargoes. A freight brokerage business is carried along with the forwarding business. In some organizations freight is booked directly either by the managers or by chief clerks of departments concerned with freight to particular parts of the world.

The forwarding staff of a large company is usually in charge of a manager or chief forwarding clerk, but no definite terminology has been developed. If large volumes of shipments are forwarded to various parts of the world the work is in many instances subdivided among the staff geographically. The diagram shows that the forwarding of shipments to four sections of the world is handled by separate groups of men, each group or department in charge of a senior clerk, having from two to five junior clerks and one or two stenographers. In some organizations the work is divided among departments, each in charge of a forwarding manager. In an organization of this kind the customer's shipments are split up geographically and handled by groups of clerks who specialize on forwarding cargoes to particular sections of the world.

In a large organization there may be a transportation department to follow up cargoes and to see that delivery is made by lighter or truck on the days specified in the shipping permit obtained from the steamship companies. The department may consist of but one clerk or a senior and junior clerk to whom copies are given of the lighterage and trucking instructions issued by the men in charge of forwarding.

The staff may be organized either on geographical lines or on the basis of individual customers, all the forwarding work for a given shipper being turned over to a particular clerk. This is a convenience to the shipper in that he deals continually with the same individual clerk who becomes expert in the shipper's affairs. The plan does not, however, enable members of the staff to specialize in the varying shipping requirements of different foreign countries. Moreover, the advantages of having one

clerk deal with an individual customer may be attained at least in part in the organization geographically subdivided by assigning clerks within the various territorial groups to large customers. The cargoes of an exporter shipping to different parts of the world are not in this case handled by the same clerk, but all of those destined to Europe may be handled by a particular man in the group of clerks or department assigned to European shipments, those destined to the Far East by a clerk in the Far Eastern group or department.

An accounting staff handles the bookkeeping, auditing, and financial work in connection with the freight brokerage and forwarding operations. Besides keeping the necessary records, the department sends bills to the shippers whose freight is forwarded; handles foreign exchange drafts and pays the shipper in case the forwarder is financing his transactions; and settles the freight bills of the steamship companies, the bills of truckmen and of others with whom the forwarder has dealings.

There may also be an advertising department that sends circulars to customers and prospective customers, containing information as to forwarding services, steamship sailings, and ocean freight, and that places advertisements in shipping and trade journals and other publications read by exporters and importers.

Freight Brokerage and Forwarding Charges

The charge collected for booking cargo space is "brokerage," and is a percentage of the amount of the ocean freight bill. This is usually paid by the steamship companies because they have ordinarily depended in part upon freight brokers and forwarders to book cargoes for them. Brokerage is collected by the forwarder, whether or not the cargoes booked are actually forwarded by him.

Additional charges are collected from the shipper or party for whom freight is forwarded. There may be a flat "forwarding" or "shipping service" charge of possibly two dollars per shipment; also an additional charge of about $1.50 for issuing bills of lading; and a charge of fifty cents, more or less, for issuing the shipper's customs clearance. The practice of for-

warders in this regard is not uniform. Sometimes they also collect an additional charge known as "commission" when forwarding commodities involving unusual care or services on the part of the forwarder.

The brokerage received by forwarders acting as freight brokers in engaging freight and the additional charges collected for forwarding services are in practice closely related. If no brokerage were received the small charge for forwarding services would in many instances not be an adequate compensation. At times the forwarder may also receive revenues from other sources. Thus if the shipper arranges to have the forwarder pay the invoice price of his cargo, *i. e.*, finance his trade transactions, collection or discount fees may be charged. When marine insurance is engaged by a forwarder for a shipper the forwarder usually receives a commission from the insurance company or underwriter. Ocean freight forwarders usually act as marine insurance brokers or agents and receive compensation from the insurance company.

If the shipper requests the quotation of a through freight charge to an interior foreign destination on a consignment sufficiently large to be billed on a minimum steamship bill of lading without consolidation with other shipments, such through charge may or may not in a particular instance be somewhat higher than the actual freights paid to the carriers by the forwarder. The railroad rate to the American port of export can be definitely ascertained from available railroad tariffs and the ocean freight rate to the foreign port of entry can be obtained from the steamship company, but the actual inland freight charges beyond the port of entry to a particular inland destination are not always readily ascertainable until after delivery is made. If the through charge should prove to be higher than the actual rates paid by the forwarder, he makes a profit, but in other instances he may be a loser. Forwarders, when possible, use the actual foreign rate tariffs showing charges to interior foreign destinations or obtain advices from their foreign agents, and when such tariffs or advices are not at hand they may refuse to quote a through rate.

When forwarding consignments too small to be shipped with-

out consolidation with other consignments because of the high minimum freights per ocean bill of lading charged by many steamship lines, the main profit of the forwarder may be derived from the difference between the forwarders' and the ocean carriers' freight charges. The forwarder pays the steamship line for transporting a combined cargo including the small shipments of a number of shippers, and he in turn charges each individual shipper rates that are lower than the high minimum rate per bill of lading demanded by the steamship line, but sufficiently high to include a forwarding profit.

Through rates on small packages or express goods are in some instances quoted on the basis of printed express tariffs. The published rates for different weights, stated in the foreign tariffs of the American Express Company, for example, apply from the port of export to various foreign destinations and are charged in addition to the express rates from the interior point of origin in the United States to the port of export. Valuation charges per $100 are added to the express rates if the value of an express package exceeds $50, and if insurance is desired, the marine or marine, theft, and pilferage insurance charges stated in the tariffs are added. It should be noted, however, that these tariffs are not ironclad. They specifically state that "rates are subject to change without notice," and that "special reduced rates will be quoted on shipments of 300 lbs. and upward."

Ocean Freight Forwarding Documents

In conducting the ocean forwarding business the customary railroad and ocean-shipping papers discussed in Chapters XI and XLIX are employed to fix the contractual relations between forwarders and carriers and public authorities, but additional shipping papers and forwarder's documents are necessary to set forth the obligations of forwarders, their foreign representatives, and the shippers whose freight is forwarded. The form and content of these papers vary, uniformity not having been attained throughout the forwarding business, but certain shipping papers and documents are customarily used.

The ocean freight forwarder, acting as a freight broker may, when booking a cargo for the account of a shipper, issue a

forwarder's freight contract similar in form and content to the freight contract in which the ocean carrier confirms bookings. Then the shipper, usually shortly after his shipment is delivered to the inland carrier for transportation to the forwarder at the port of export, gives detailed instructions to the forwarder on a form customarily referred to as *forwarder's shipping instruction.* He also sends the railroad bill of lading to the forwarder, and as he has billed his shipment to the forwarder, the latter receives the usual railroad notice of arrival from the railroad making delivery at the port. The forwarder thus obtains possession of the shipment, and attends to its transfer to the ocean carrier. If a lighterage service is necessary he issues *forwarder's lighterage instructions;* and as carload lots for export are usually granted free lighterage within a prescribed free lighterage district, these instructions are frequently issued direct to the railroad. Should it be necessary to cart the shipment to the wharf the forwarder will issue *trucking instructions* to a truckman.

The relationship between the forwarder and the ocean carrier is defined in the latter's ocean bill of lading, and in case of a large shipment that does not need to be combined with other shipments by the forwarder in order to overcome the prohibitive minimum freight charge that may be stipulated in the ocean bill of lading and a shipment destined to a foreign port served by the ocean carrier, this bill of lading may be made out in the name of the shipper and be sent to him. In some instances, however, the forwarder issues his own *forwarder's bill of lading.* The liability of the ocean carrier in case of loss or damage due to his own acts is no different than the liability set forth in the usual ocean bill of lading, but a forwarder's bill of lading in one way or another usually limits the liability and defines the position of the forwarder. The forwarder's bill may for example contain a definite clause to the effect that forwarders are "only agents of shippers and are in no way responsible for the acts and defaults of the carriers to whom they entrust the goods." Bankers differ as to the use of forwarder's bills of lading for attachment to drafts, but those issued by reputable ocean freight forwarders are in many instances accepted.

Small express shipments delivered to the American Railway Express Company to be forwarded to overseas destinations via one of the express companies for whom it acts as the domestic operating company, are usually made on the basis of its regular *express receipt.* The domestic uniform receipt provides that express shipments to foreign destinations are subject to the conditions imposed in the bills of lading issued by the ocean carriers and foreign inland carriers transporting them and to the acts, ladings, laws, regulations, and customs of oversea and foreign carriers, custodians and governments; and that "the express company shall not be liable for any loss or damages or delay to said shipments over ocean routes and their foreign connections, the destination of which is in a foreign country, occurring outside the boundaries of the United States, which may be occasioned by any such acts, ladings, laws, regulations, and customs."

The ocean freight forwarder, when forwarding a shipment for the account of the shipper, issues a *forwarder's expense bill,* which sets forth all of the inland freight charges, transfer charges, ocean freight charges, insurance premiums and other charges and fees advanced by the forwarder, and also the forwarder's own charges or commissions payable by the shipper for services rendered as a forwarder.

The forwarder's current relations with his foreign representatives are adjusted by means of *forwarder's waybills*, which list all items in the shipment and contain specific instructions as to the handling of the shipment upon its arrival at the foreign port of discharge, and also a full statement of any charges that have not been prepaid by the shipper as charged to him. Space is provided in which the foreign agent is requested to enter his charges, so that the waybill when returned to the forwarder may serve as a basis for the adjustment of accounts between the forwarder and his agent.

Competition in Freight Forwarding Business

The ocean freight forwarding business has in recent years become increasingly competitive. There are a large number of forwarders who compete with each other, and a number of ocean

steamship lines and agents that also act as freight forwarders. The railroads, moreover, are issuing through or export bills of lading from interior points to foreign destinations. The act to regulate commerce as amended in 1920 requires railroad agents at many interior points to ascertain the ocean rates of American flag vessels upon the request of shippers, to obtain space reservations, and to issue through bills of lading to the point of destination. Large shippers are establishing direct agencies or branch offices at the larger ports, and many of the export commission houses or other trade agencies through whom exporters sell merchandise when not dealing directly with their foreign customers act as port representatives. Trucking concerns may be engaged to transfer shipments at the ports; insurance brokers to insure ocean cargoes; customhouse brokers to enter imports at the customhouse and even to forward import cargoes to interior destinations. The foreign package or express business, moreover, is affected by the international parcels post service which has been established to many countries by the Post Office Department through parcels post agreements; and somewhat also by the issue of parcels receipts by a number of steamship companies.

Ocean freight forwarders, however, continue to do a large brokerage and forwarding business, their services being distinct. It is significant that many large interior shippers, instead of shipping on through railroad export bills of lading, choose to consign their export cargoes to an ocean freight forwarder so as to take advantage of favorable ocean-rate fluctuations and share a possible saving in port transfer expenses, to obtain the promptest possible sailing, or to obtain some special service which the forwarder stands ready to perform.

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CHAPTER LIII

OCEAN PASSENGER AND MAIL SERVICES AND CHARGES

THE ocean passenger service receives more attention and current discussion than the freight service does, not only because every one is more concerned about the personal comfort and safety of himself and his friends than he is about the conditions affecting the transportation of his property, but also because the passenger service is conducted in vessels whose size, speed and equipment are much advertised by steamship companies. Ocean travel, moreover, is a favored theme with the popular magazines and their contributors. For these reasons the main facts regarding the ocean passenger service are rather widely known, and an extended statement will not be necessary in this treatise.

Though the ocean passenger service is of less importance than the freight service in the economy of society, the service of carrying passengers and the mails has had a greater influence than the freight business upon marine engineering and upon the introduction of technical improvements in ships. The great desideratum in the freight service is economy and safety; in the transportation of passengers, speed, comfort, and safety; and as between economy and speed, it is to the latter that inventors for many years gave greater study.

Increased Speed, Comfort, and Safety

Invention has accomplished great results in increasing the speed of ocean steamers, and in enhancing the comforts and safety of ocean travel. During the past 50 years the time of passage across the North Atlantic has been reduced by more than one-half, and nearly as great a reduction has been made on the other important ocean routes. The *Mauretania,* in 1910, made the voyage between New York and Queenstown in 4 days, 10 hours and 41 minutes and in 1924 this vessel made the trip

from New York to Plymouth in 4 days, 21 hours and 57 minutes, while in 1856 the *Persia* made the voyage between New York and Queenstown in 9 days, 1 hour and 45 minutes, a record which was not bettered until a decade later. Speed has such an important bearing upon traffic and upon the number of trips made by a vessel that a proposal has recently been made for the construction of a fleet of fast passenger steamers which will cross the North Atlantic in four days.

The comforts and conveniences now obtainable aboard the best steamers are incomparably superior to those provided a generation ago. Every year sees some new feature added to the equipment of the ocean passenger liner, despite the fact that electricity, elevators, ice machines, cold storage, improved ventilation, luxurious dining, reading, smoking, and reception rooms, swimming tanks, daily newspapers, cabin telephones, gymnasiums, children's play rooms, restaurants and cafés, barber and hairdressing shops, and numerous other auxiliaries have already made the ocean vessel a great floating hotel.

Ocean travel still has its dangers because certain "risks of the sea" are inherent in ocean navigation, and because the popular craving for excessive speed has at times nullified the efforts to promote safety; but the dangers of sea voyages have assuredly been greatly reduced. The mammoth North Atlantic liners of the United States, White Star, and Cunard Lines have a gross tonnage ranging from 20,000 to 59,957 tons, and are from 500 to 915 feet, 5 inches long and from 65 to 100 feet, 3 inches wide. Many other lines plying between the United States and Mediterranean, as well as British and west European ports, operate large passenger-carrying vessels, although their tonnage and dimensions are smaller than those of the *Majestic, Leviathan, Berengaria, Olympic,* and *Aquitania* type. The passenger vessels operating over ocean routes other than the North Atlantic, likewise, are smaller, because the volume of their passenger traffic has been limited and the draft of those using the Suez Canal has been restricted by the depth of the canal, but much progress has been made. While most of them are not in excess of 10,000 tons gross register, several vessels of over 20,000 tons gross are now operating in the Pacific trades.

Ocean passenger steamers, small as well as large, are built and equipped with a view to increasing their safety. Steel hulls, transverse and longitudinal water-tight bulkheads, steel double bottoms, two-, three-, and even four-screw propellers, lifeboats, rafts, and other life-saving appliances in adequate number, improved appliances for lowering lifeboats, wireless telegraph plants, fire-fighting arrangements, trained crews for fire fighting and manning lifeboats, recognized "rules of the road" and other safety features have greatly increased the safety of ocean travel. Some have been adopted voluntarily by the navigation companies, while others are partly the result of government regulation. Vessels, hulls, boilers, engines, etc., moreover, are subject to government inspection, and many ships are inspected by the surveyors of Lloyds or other vessel classification societies. The United States Government also charts ocean and coastwise routes, destroys derelicts, operates lighthouse and life-saving services, regulates wireless telegraphy on shore as well as at sea, flies storm signals and otherwise aids and regulates navigation so as to reduce the element of danger.[1]

Volume of Passenger Traffic

The relative extent to which passenger liners carry passengers and freight depends largely upon the total volume of traffic available. Some of the fastest transatlantic vessels serving the port of New York have exceedingly small cargo holds and depend very largely upon their passenger business. A greater number, including the largest and most recently constructed North Atlantic liners, also are mainly passenger carriers, but in addition have cargo holds of considerable capacity. Still others, particularly the passenger lines operating from ports other than New York and to non-European destinations from any of the ports of the United States, depend mainly upon their freight cargoes. Some passenger vessels have accommodations for only a small number of passengers.

Since 1880 the annual number of Americans taking cabin passage abroad has more than quadrupled, and the number of immigrants entering the United States increased rapidly until

[1] For discussion of government regulation see Chapter LVI.

the effects of the European War and later the restrictions imposed by Congress greatly reduced the flow of immigration. In 1914 the cabin passengers departing from the seaports of the United States numbered 482,482, the number of passengers "other than cabin" was 520,120, making a total of 1,002,602. The arriving cabin passengers numbered 471,187, and the immigrants 1,218,480, making a total of 1,689,667 arrivals. The total passengers inbound and outbound in 1914 numbered 2,692,269. It was this heavy passenger traffic, over 90 per cent of which usually centered at the North Atlantic ports, that made possible the operation of the world's greatest ocean liners. As was stated by a committee of New York steamship lines:[2]

> The combined passenger and cargo type of steamer employed by most of our transatlantic lines is superior in size and speed to any other type of steamship. The creation of this type of ship is the result of the development of the combined passenger and freight traffic between this country and Europe. The increasing passenger traffic not only of Americans visiting Europe but of Europeans coming to this country has enabled these most costly instruments of modern transportation to ply the Atlantic throughout the year. The steadily increasing immigration, together with the patronage of those who wish to revisit their homes abroad, furnishes a steady steerage traffic which demands and receives the most painstaking attention of the lines. It is the very lifeblood of the business, so far as these superior boats are concerned, without which their existence and further operation would become impossible.

The volume of passenger traffic is at present less than in 1913 or 1914 because of drastic immigration restrictions enforced by the United States Government. The first serious restrictions were imposed in an act of 1917 and this act was made more stringent in a supplementary immigration law enacted in 1921. The Act of 1921, however, was made effective only until June, 1924. The present governing statute is the immigration law of 1917 as amended and enlarged in a new immigration act of 1924. Not only do the provisions of these laws exclude numerous defined classes of immigrants, but they provide for the enforcement of an illiteracy test, and they limit the number of

[2] House Committee on the Merchant Marine and Fisheries, Proceedings in the Investigation of Shipping Combinations. II, 1358.

immigrants that are permitted to enter from many countries on the basis of a system of quotas. The new immigration law lowered the quota for each quota country from 3 per cent per annum based on the number of persons born in that country who were residents of continental United States as shown by the census of 1910, to 2 per cent of the number shown by the census of 1890.[3] As immigration from southern and eastern European countries did not become heavy until after 1890 it is readily seen that the act of 1924 is particularly effective in limiting immigration from those sections of Europe.

The total number of alien immigrants admitted since 1917 has fluctuated from 110,618 in 1918 to 805,228 in 1921, and under the new act of 1924 it declined from 706,896 in 1924 to 335,175 in 1927. The entire number of persons admitted in 1927, under the act of 1924 including nonimmigrants, non-quota immigrants and quota immigrants aggregated 538,001.[4]

Classification of Passenger Services and Traffic

It has been the custom of ocean lines to divide passengers into three well-defined classes—first class, second class and steerage. In this regard the ocean passenger business has followed the practice of the European railway passenger service rather than the service on the American railroads. Although classification is carried out to some extent in railroad passenger traffic in the United States, travelers do not divide themselves into such distinct classes as they do in Europe. In the United States the great majority of people travel by what is called first class, which in reality corresponds to the second class in Europe, where

[3] These quotas apply until June 30, 1928. Thereafter the annual quota for each country shall be a number which bears the same ratio to 150,000 as the number of inhabitants in continental United States in 1920 having that national origin bears to the number of inhabitants in continental United States in 1920, subject to a minimum quota of 100.

[4] Nonimmigrants include government officials, their families, etc.; temporary visitors; travelers in continuous transit through the United States; and persons admitted to carry on trade under existing treaty. Non-quota immigrants include wives and children of United States citizens; residents of the United States returning from a temporary visit from abroad; and natives of Canada, Newfoundland, Mexico, Cuba, Haiti, Dominican Republic, Canal Zone, or an independent country of Central or South America; ministers and their families; professors and their families, and students. Quota immigrants include all other immigrants and in 1927 numbered 158,070.

most people patronize the third class. Some of the North Atlantic lines before the War subdivided the steerage service into two classes, one class being for the immigrants, and a higher class being for steerage passengers who are not immigrants. More recently many ocean vessels offer four classes of service, first class, second class, tourist-third class and third class. The fare of the tourist-third class is somewhat higher than the regular third-class fare. Some of the smaller ocean vessels in the North Atlantic passenger service, moreover, vary the usual classification of their cabin passengers. Instead of having separate first- and second-class passengers, they combine the two into a single class known as "cabin" passengers. Many lines are giving special attention to the development of their third-class tourist service.

The passenger traffic statistics set forth in the accompanying table, show the volume of the passenger traffic across the North Atlantic during the years 1912 to 1926. The table is especially significant because the North Atlantic route is the only one of the great ocean highways over which the volume of traffic is exceptionally heavy. In 1913, when the volume of traffic reached its highest level, 75.7 per cent of the westbound, 65.8 per cent of the eastbound, and 72.9 per cent of the total North Atlantic travel was third class or steerage. The table also shows that in 1913, 8.4 per cent of the total passengers traveled first class, and 18.7 per cent second class. In the past the practice had been to carry more first- than second-class passengers, but when many of the lines undertook the improvement of the second-class service a large number of travelers availed themselves of the cheaper fares.

The relative number of passengers traveling over the North Atlantic route in the several classes necessarily changed after foreign immigration was restricted by the Government. In 1926, it will be noted, 47 per cent of all westbound passengers traveled third class, 5.7 per cent tourist-third class, 32.8 per cent second class and one-cabin and 14.4 per cent first class.

The relative importance of the several classes also underwent wide changes in the eastbound business of the North Atlantic lines. In 1926, 21.5 per cent of their eastbound passengers

traveled first class, 33.1 per cent second class and one-cabin, 10.1 per cent tourist-third class and 35.3 per cent third class.

The volume of steerage business of steamship lines operating over the North Pacific route is necessarily small because of the exclusion of Chinese, Japanese, and other yellow races, the immigration quotas being available only for persons who are eligible to citizenship in the United States. The total number of steerage passengers arriving at Seattle, San Francisco, and Los Angeles from foreign ports in 1926 numbered 18,336 and the total number of cabin passengers numbered 11,613.[5] The aggregate passenger traffic of these ports reported under the Passenger Act of 1882 in 1926, including departures and arrivals, numbered 55,273 cabin and steerage passengers. This does not include passengers carried by vessels plying to and from Canadian and Mexican ports.

NUMBER OF PASSENGERS CROSSING NORTH ATLANTIC OCEAN, 1912-1926 *

Eastbound

Year	First Class	Cabin [1]	Second Class	Third Class Tourist	Third Class	Total
1912....	101,771	.....	126,684	.....	477,667	706,122
1913....	104,396	.....	141,196	.....	472,781	718,373
1914....	83,261	.....	121,085	.....	479,232	683,578
1915....	18,702	.....	47,715	.....	241,911	308,328
1916....	21,077	.....	41,953	.....	122,191	185,121
1917....	10,500	.....	14,537	.....	29,645	54,682
1918....	17,757	.....	14,689	.....	16,565	49,011
1919....	42,615	.....	103,708	.....	249,287	440,610
1920....	66,692	.....	130,198	.....	362,946	561,836
1921....	68,851	.....	120,838	.....	357,178	546,867
1922....	77,431	.....	137,978	.....	182,584	397,993
1923....	74,186	.....	123,540	.....	115,167	312,893
1924....	85,870	80,300	67,600	.....	169,370	403,140
1925....	94,700	80,650	68,750	19,650	166,350	430,100
1926....	92,500	74,600	68,200	43,700	152,000	431,000

* Figures from 1912-1915 from E. R. Johnson and G. G. Huebner, *Principles of Ocean Transportation;* figures from 1916-1926 from Sidney E. Morse, Secretary of the North Atlantic Passenger Conference.

[1] Included in second class prior to 1924.

[5] U. S. Bureau of Navigation, Merchant Marine Statistics, 1926, p. 73, Passenger Traffic of Vessels Examined under Passenger Act of 1882.

NUMBER OF PASSENGERS CROSSING NORTH ATLANTIC OCEAN, 1912-1926 (*Continued*) *

Westbound

Year	First Class	Cabin [1]	Second Class	Third Class Tourist	Third Class	Total
1912..	106,361	.....	295,321	.....	1,071,816	1,473,498
1913..	111,978	.....	341,378	.....	1,413,845	1,866,301
1914..	90,840	.....	233,347	.....	631,862	956,049
1915..	20,850	.....	68,548	.....	120,164	209,562
1916..	20,203	.....	63,176	.....	165,813	249,192
1917..	9,526	.....	22,248	.....	50,231	82,005
1918..	12,261	.....	16,577	.....	17,577	46,415
1919..	50,394	.....	79,566	.....	120,704	250,644
1920..	74,416	.....	192,926	.....	614,715	882,077
1921..	73,889	.....	196,282	.....	467,655	737,826
1922..	80,855	.....	204,631	.....	284,691	570,177
1923..	83,684	.....	276,353	.....	475,342	835,389
1924..	89,200	101,700	107,000	.....	234,700	532,600
1925..	92,150	111,500	115,700	12,160	248,560	580,070
1926 .	95,300	99,900	118,000	37,600	312,100	662,900

* Figures from 1912-1915 from E. R. Johnson and G. G. Huebner, *Principles of Ocean Transportation;* figures from 1916-1926 from Sidney E. Morse, Secretary of the North Atlantic Passenger Conference.

[1] Included in second class prior to 1924.

The steerage business is important to many steamship lines not only because of its volume, but also because it is profitable. The steerage passenger pays a low rate of about one-third the average fare charged the first and second class, but his accommodations occupy little space, and the company spends relatively little on his table and his stateroom. The large passenger steamer can readily carry four or five steerage passengers for each person in the cabins, and the steerage expenses will be much less than the cabin expenses. The steerage traffic is so profitable that the steamship lines between Europe and the United States, although at times parties to pooling and conference arrangements, compete for this business, and the low fares and comparatively comfortable accommodations given the third class induce great numbers of poor people to migrate, that would prefer to remain in their native land if the dangers and discomforts of travel were greater.

The United States Government regulates the accommodations of the third-class or steerage passengers. The so-called Passen-

ger Act of 1882, as amended to date, regulates the maximum number of steerage passengers that may be carried on American vessels and tends to safeguard reasonable accommodations by prescribing the minimum space per passenger on the various steerage decks. It regulates light and air, provisions, medical attention and cleanliness, the privacy of passengers, the carriage of cargo and stores on steerage decks, the keeping of a passage list, and the payment of fees to the collector of customs in case of the death of steerage passengers. It also provides for an inspection, under the direction of the United States customs collectors, of all vessels carrying steerage passengers with a view to administering effectively the provisions of the Passenger Act. The United States Government also supervises the arrangements that the ocean-and-rail carriers have made at New York for the through transportation of immigrants to interior destinations.

The Handling of Immigrant Traffic

The steerage traffic is greatly facilitated by the improved methods that have been adopted by the steamship lines and railroads at the port of New York for the through transportation of immigrants to interior destinations in the United States. Instead of purchasing transportation to the port only, with the consequent danger of being relieved of their savings by hotel and boarding-house keepers or others, as has frequently occurred in the past, immigrants may purchase through passage to interior destinations. To the steamship ticket which they purchase is attached a steamship order entitling the immigrant to a railroad ticket, which he receives at Ellis Island from agents representing, respectively, the eastern and western trunk line railroads. If the immigrant inspectors of the United States permit the immigrant to enter, he is transferred to a special train or car which takes him to his destination, at special immigrant fares. These fares which are granted only to bona fide immigrants are exceptionally low, because immigrants are unable to pay the regular first-class railroad fares. The railroads are able to grant these low fares because their immigrant service is inferior to their first-class service, and because it is

efficiently organized. The eastern trunk lines through the Immigrant Clearing House of the Trunk Line Association, and the western trunk lines through a special agent of the Western Passenger Association, divide the total through immigrant traffic among themselves equitably, so that the service provided by each may be effectively utilized.[6]

For handling passenger traffic at the ports, separate arrangements are necessarily provided for cabin and steerage passengers. For sanitary and other reasons, the Government inspects steerage passengers more rigidly than those who take cabin passage, the laws regarding immigrants entering the United States being particularly comprehensive and exacting. Under the act of 1924 undesirable or ineligible aliens are largely weeded out before they emigrate, but further precautions are taken after the vessel arrives. On arriving at New York, a passenger steamer stops first in the lower bay and is boarded by the state health officers. If the report of the ship's physician regarding the passengers is satisfactory, and if the inspection of the crew reveals no contagious or infectious disease, the ship proceeds to its company's pier and discharges its cabin passengers and the mails, if it is a mail steamer, after which the immigrants are taken on a tender to the station on Ellis Island, where all steerage passengers must land. Each immigrant is there inspected by officers of the United States Bureau of Immigration. If the immigrant meets all the requirements of the law he is allowed to land and proceed to his destination. If the immigrant is denied entry into the United States the steamship company that brought him to our shores must return him without cost to the port from which he sailed.

The ocean passenger traffic through the port of New York exceeds that of any other port of the world; but the arrangements provided for cabin passengers are not so convenient as those found in numerous other ports, such as Southampton, England, where one may pass directly from steamer to train, and from train to steamer; or such as Liverpool, where all

[6] For a detailed account of railroad immigrant services and fares see E. R. Johnson and G. G. Huebner, *Railroad Traffic and Rates*, Vol. II, Chap. xxx.

passenger steamers ship and discharge their passengers at a common "landing stage" centrally located.

Vessels engaged in the passenger traffic are required to issue or carry all of the various ship's papers mentioned in Chapter XLIX except those which appertain exclusively to freight cargoes; and if passenger ships carry freight as well as passengers, as they usually do, they are also required to have cargo manifests, and the shippers patronizing them are required to issue or obtain the customary shipping papers. The distinctively passenger document required of passenger vessels is the so-called passenger list which the ship's master must deliver to the collector of the port upon arrival. This list or manifest states the names and sex of all passengers taken on board, whether they are married or single, whether or not they are citizens of the United States, the number of pieces of baggage of each, the age of children eight years or less of age, the date and cause of any deaths occurring en route and the location of the compartment or space occupied by each steerage passenger during the voyage. A similar document is required by foreign governments when vessels arrive at foreign ports.

Ocean Passenger Fares

The principles governing the making of ocean passenger fares are generally the same as those stated in connection with ocean freight rates, subject to certain inherent differences between the nature of passenger and freight traffic. Over a given route they are fixed at different amounts per passenger subject to a fourfold variation: (1) They are different via the several lines or steamers depending upon their relative speed, and accommodations or the character of their services. On the North Atlantic route, where the steerage traffic has at times been pooled by the passenger lines, the steerage fares via given lines have, moreover, at times been advanced relative to those via others with a view to directing the volume of steerage traffic so as to maintain the percentages allotted to each line. (2) They vary according to the class of passage selected by the traveler, *i e.*, according to the passenger service classification previously referred to. (3) On a given steamer the cabin fares within a class vary

for different cabins or staterooms according to their location, reservation for individual passengers, or other special considerations. (4) The first-class fares of many ocean carriers are subdivided on a seasonal basis. In this case the lowest fares are effective during the winter when traffic reaches its lowest level, and highest during the summer when the volume of traffic is heaviest. Some lines also define an "intermediate" period, during which their fares are maintained at a level somewhere between the levels of their summer and winter fares. This fourfold gradation of fares is due partly to considerations of what the traffic will bear and the relative value of the service rendered, and partly to cost differences.

Though ocean fares are usually fixed primarily at what the traffic will bear, the competitive forces affecting them differ somewhat from those influencing line freight rates. The force of international commercial competition and port rivalry, although by no means entirely absent, is not so prevalent as in freight transportation. Ocean fares, moreover, are not subject to tramp competition. Direct competition is limited to the lines themselves, and in the future will probably again be subject to control by conferences.

Prior to the war in Europe there were at least twelve North Atlantic passenger agreements through which the heavy steerage traffic moving between the United States and Europe was pooled and its fares established in conference, and through which minimum first- and second-class cabin fares were agreed upon. Few passenger conferences or agreements have at any time existed outside of the United States-European traffic, but the competition in the passenger business between the lines operating elsewhere has sometimes been controlled indirectly through their freight agreements. Except on the North Atlantic route the long-distance ocean passenger traffic is secondary to the freight traffic of the passenger-carrying lines. Any agreement concerning division of territory or ports, the number of their sailings, vessel tonnage, or number of steamers influences passenger as well as freight competition.

Ocean fares have fluctuated less, and have, on the whole, been maintained at a higher level than freights, both because

of the difference in competitive conditions mentioned above and because of the higher capital, operating and maintenance costs of the passenger service. While the economies resulting from increased size of the vessels and efficiency of marine engineering were accompanied by lower freight rates, similar economies in passenger steamers were largely offset by the additional costs occasioned by increased speed, comfort, luxury, and betterments of the passenger service. There are times, of course, when ocean freights temporarily soar to levels which passenger fares cannot approach. The War in Europe, for example, although stimulating an acute demand for freight tonnage, caused a pronounced shrinkage in the volume of the North Atlantic passenger traffic.

The Ocean Mail Service

Passenger steamship lines are of importance not only because of the passenger, freight, and express[7] services provided by them, but also because most of the rapidly growing ocean mail traffic is carried in passenger vessels. The ocean mail service in several ways bears a direct relationship to the conduct of the foreign trade. The United States Government has entered into parcel-post agreements with so many foreign countries that the international parcel-post service has become an additional means by which exporters may forward small packages of merchandise. The usual agreement provides for sending through the foreign mails parcels weighing not over 11 pounds, and having a maximum length not exceeding 3 feet 6 inches, and a combined length and girth not exceeding 7 feet, but the agreements with several countries provide for different weights, and dimensions and other regulations governing the mailing of parcels also vary.[8] The domestic parcel-post service, moreover, has, subject to certain restrictions, been extended to the outlying possessions of the United States, including the Panama Canal Zone and American naval vessels stationed abroad, and to Canada, Mexico, Cuba, and the Republic of Panama.

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[7] See Chapter LII.

[8] Detailed information is readily obtainable from printed instructions issued by the United States Post Office Department.

The international mail service also takes care of the great volume of letters and other mail matter that is essential to international commerce and to the maintenance of relations between different countries and peoples. Except where special arrangements have been made, the governing rules and charges are those administered through the Universal Postal Union the central office or International Bureau of which is located at Berne, Switzerland. The Universal Postal Congress, composed of delegates from Postal Union countries, has provided a general international mail service including letters, post cards, "reply-coupons," "commercial papers" such as bills of lading, invoices, marine insurance certificates, etc., newspapers and other printed matter, and small packages of samples of merchandise. Standard rules and postage charges are provided for each of these classes of international mail. Special postal rates, less than those of the Universal Postal Union, have been adopted by the United States Post Office to a number of foreign countries and outlying possessions. The Post Office also provides a foreign money-order service.

The United States pays the steamship companies that carry the ocean mails in one of two ways: (1) by a special contract, and (2) by a payment based upon the amount of postage received by the United States from the mail carried.

The contract service was until recently based upon the law passed by Congress, March 3, 1891, which empowered the Postmaster General to make contracts running from five to ten years for the carriage of the mails upon steamers of American register, officered by Americans, and manned by a crew at least one-half of whom, after the first five years of the contract were composed of American citizens. Ships were divided into four classes according to their size, speed and structure. Ships of the first class received for carrying the mails, $4 a mile, "by the shortest practicable route, for each outward voyage." Ships of the second class received $2 a mile for the outward voyage; ships of the third class, $1 a mile; and of the fourth class, two-thirds of a dollar "for the actual number of miles required by the Post Office Department to be traveled on each outward-bound voyage." The payment did not depend upon the weight

of mail carried, but upon distance and speed. For some years, from five to seven contracts authorizing a combined yearly payment of about one million dollars were in effect.[9]

Payments under this mail contract act were discontinued after the enactment of the Merchant Marine Act of 1920, although there has recently been some indication that the payment plan provided in the mail contract act may possibly be revived.[9] Section 7 of the Merchant Marine Act directs the Shipping Board to determine what American steamship services should from time to time be established for the purpose of promoting commerce and an adequate postal service, and authorizes the Postmaster General, notwithstanding the act of 1891, "to contract for the carrying of the mails over such lines at such price as may be agreed upon by the Board and the Postmaster General."[9] Section 24 of this Act directs the Board and the Postmaster General to determine just and reasonable rates of compensation for American-built vessels documented under the laws of the United States, and authorizes the Postmaster General to enter into mail contracts with such vessels. Both sections, however, are contingent upon congressional appropriations and mail payments of this kind are at present made to but six ocean lines.[9]

When an American vessel carries the foreign mails of the United States without a special contract its compensation is limited to the full postage on the mails conveyed, at present at the rate of 80 cents a pound for letters and post cards and 8 cents a pound for other articles. In the case of a steamer transporting the mails under a foreign flag, compensation for the service is made in accordance with the amount currently fixed by the International Postal Union, and this amount is less than that paid to American vessels.

Various additional expenses are incurred by the Post Office Department for the transportation of the foreign mails. These include the cost of carrying mails of American origin across the Isthmus of Panama by rail; the cost of steamboat transfer services at several American ports, the cost of maintaining sea

[9] For mail contract payments provided for in the new Merchant Marine Act of 1928 see Appendix, sections 408, 409 and 414.

post offices on a number of fast passenger liners, and miscellaneous expenses such as those incurred in connection with the International Bureau at Berne, the maintenance of navy mail services, the operation of supplemental airplane routes and the salary of the postal official in charge of the Division of Foreign Mails.

The sea post offices maintained on 41 ocean steamers greatly expedite the delivery of the incoming mails, and reduce the amount of sorting at the ports. During the trip across the ocean the clerks in charge of the sea post offices sort the mail and sack it with reference to the main distributing centers in the United States. When the ocean steamer reaches the quarantine station in lower New York Bay, it is sometimes met by a special mail steamer of the transfer service, "which receives the mails and conveys them as rapidly as possible to the various wharves, whence the mails for the city of New York are immediately sent to the post office in that city, and those for inland destinations are forwarded by the first outgoing trains."

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CHAPTER LIV

GOVERNMENT REGULATION OF OCEAN CARRIERS.

In discussing ocean steamship services, practices, and charges, frequent mention was necessarily made of public regulation. The purpose of this chapter is to coördinate the entire subject of public regulation of ocean carriers in the United States, to discuss the more important regulatory provisions, and to make briefer mention of less important laws. Government action to aid ocean shipping will be discussed in Chapter LVI, but certain regulatory provisions embodying government aid as well as regulation will be included.

Public regulation as a whole may be conveniently subdivided as follows: (1) general navigation laws, (2) Federal regulation of ocean rates and services, (3) Federal regulation of carriers' interrelations, and (4) regulation by states and municipalities.

General Navigation Laws

The general navigation laws of the United States are many and cover a wide range of subjects. They may, however, be divided into a limited number of important classes.

One group of laws requires American vessels, excepting harbor craft and inland vessels not propelled by sails or motive power of their own, to be documented under the flag of the United States. Vessels engaged in the foreign trade, in the whale fisheries and in the trade with the Philippine Islands, Guam and Tutuila are registered with the United States Commissioner of Navigation; those of 20 tons gross or upward engaged in the coasting and inland trades or fisheries are enrolled; and those of 5 tons but less than 20 tons gross engaged in the coastwise, inland, and fishing trades are licensed.

Aside from the special arrangements temporarily provided for in an act of October 6, 1917, foreign-built vessels have, since 1817, been barred from the coastwise trade. Section 22 of the

Merchant Marine Act of 1920 in repealing the act of 1917, again restricted the coastwise trade to American-built vessels, subject to the proviso that "foreign-built vessels admitted to American registry, owned on February 1, 1920, by persons citizens of the United States, and all foreign-built vessels owned by the United States at the time of the enactment of this Act when sold and owned by persons, citizens of the United States, may engage in the coastwise trade so long as they continue in such ownership, subject to the rules and regulations of such trade."

A special provision contained in Section 18 of the Merchant Marine Act, provides that vessels purchased, chartered, or leased from the Shipping Board may be operated only under American registry, enrollment, or license, unless otherwise authorized by the Board, and that it is unlawful to "sell, transfer or mortgage, or, except under regulations prescribed by the Board, to charter any vessel purchased from the Board or documented under the laws of the United States to any person not a citizen of the United States, or to put the same under a foreign registry or flag, without first obtaining the Board's approval."

The Panama Canal Act of August 24, 1912, applied the policy of free shipping in the foreign trade, excluding, however, all foreign-built vessels over five years old and any not wholly owned by citizens of the United States or by domestic corporations, the president or managing directors of which are American citizens. This policy of permitting foreign-built but American-owned vessels to register under the flag of the United States in the foreign trade was further extended in the Emergency Registry Act of August 18, 1914, which removed the former limitation concerning the age of foreign-built vessels, and empowered the President of the United States, in his discretion, to "suspend by order so far and for such length of time as he may deem desirable the provision of law prescribing that all watch officers of vessels of the United States, registered for foreign trade shall be citizens of the United States," and likewise to suspend the Federal requirements concerning survey, inspection, and measurement of foreign-built vessels admitted to American registry.

Closely allied to the statutes regarding documenting of vessels is another class of laws, requiring the official measurement of documented craft. All registered, enrolled, and licensed vessels must be measured in accordance with the statutes and rules of the United States as interpreted and enforced by the Commissioner of Navigation. The actual work of measurement is conducted by the admeasurers or surveyors of the United States Customs Service who are located at the principal ports throughout the country. All vessels navigating the Panama Canal, moreover, are required to be measured in accordance with the measurement rules for the Panama Canal that were promulgated by the President, November 21, 1913.

A third class of statutes includes the tonnage tax laws of the United States. Upon entering an American port from any port in North or Central America, the Bahamas, the Bermudas or West Indies, the Caribbean countries, or the north coast of South America, all vessels, whether American or foreign, are required to pay a Federal tonnage tax of 2 cents per net-registered ton, not exceeding a total of 10 cents per ton annually. All vessels entering from other foreign countries are required to pay a tonnage tax of 6 cents per net ton, not exceeding 30 cents per ton annually. Vessels engaged in the coastwise trade have, for many years, been exempted from the payment of tonnage taxes, and vessels entering a port of the United States, otherwise than by sea (*i.e.*, from Canada), from a foreign port at which no tonnage taxes or equivalent dues are imposed upon American vessels are similarly exempted.

A fourth important group of navigation laws regulates the seaworthiness and provides for the inspection of vessels. Among these statutes are those that declare it to be illegal for an American vessel knowingly to leave a port of the United States in an unseaworthy condition; those that prescribe water-tight bulkheads for seagoing and Great Lakes steamers and designate the materials of which the bulkheads are to be constructed; and those which require the inspection of the hulls of American steamers and of American sailing vessels of more than 700 tons gross that carry passengers, and of other American vessels of over 100 tons gross carrying passengers, by the inspectors

of the United States Steamboat Inspection Service at least once annually. The boilers and boiler apparatus of American steamers are also inspected and tested. Some of the requirements regarding inspection apply to foreign steamers, but if the inspection laws of their home country approximate those of the United States, they are exempted, except in so far as American inspectors may satisfy themselves that the condition of the foreign vessels is as stated in the certificates they hold.

The Federal laws concerning the seaworthiness and inspection of vessels, moreover, include many statutes that define the life-saving appliances, fire-fighting apparatus, and other safety appliances required on board American vessels and those that regulate the transportation of inflammable and explosive cargoes. Life-saving equipment and requirements are regulated in great detail in the Seamen's Act of March 4, 1915. In this statute Congress enacted into law substantially the requirements recommended by the International Conference that met at London, November 12, 1913, to January 20, 1914. In 1910 and 1912, moreover, Congress enacted statutes prohibiting American as well as foreign passenger vessels carrying more than 50 persons from clearing without prescribed wireless telegraph apparatus and a required number of wireless operators. Congress likewise subjected the commercial and private use of radio communication on land as well as on sea to a code of needed regulations. Safety at sea is further promoted by the "international rules of the road" for the prevention of collisions and similar marine disasters, the principal features of which are embodied in the navigation laws of the United States.

The laws mentioned above are concerned chiefly with the regulation of vessels. There are also many statutes that primarily affect the officers and crews of vessels. The present requirement concerning the nationality of officers on American vessels is that all so-called watch officers, including the chief engineer and each assistant engineer in charge of a watch on steam vessels, must be citizens of the United States, subject only to the exemption arising from the Emergency Registry Act of August 18, 1914, as applied to foreign-built vessels admitted to American registry. There are no similar requirements con-

cerning the nationality of the crew on board American vessels other than those operating under the Mail Contract Act of 1891, which became practically obsolete with the enactment of the Merchant Marine Act of 1920.[1] One-fourth of the crews of vessels during the first two years of operation under the mail contracts provided for in the old act of 1891 were required to be citizens of the United States; during the next three years this proportion increased to one-third; and during the remainder of the life of their contracts at least one-half of their crew consisted of American citizens.

The number of officers required on board American vessels is determined by inspectors of the United States Steamboat Inspection Service, the controlling consideration being safety of navigation. The number of licensed mates on vessels of 1,000 tons gross or over propelled by machinery may not, however, be less than three unless the vessel is engaged in a voyage of less than 400 miles, in which case a minimum of two licensed mates is required. Small engine-propelled vessels of 100, but less than 200 tons gross, are required to have two licensed mates on voyages of over 42 hours' duration, whereas on shorter voyages but one licensed mate is required.

The minimum number of crew on board American vessels is likewise determined by the local inspectors of the Steamboat-Inspection Service. Prior to the enactment of the Seamen's Act the number of seamen depended upon the type of the vessel, the character of the trade in which it was engaged, the kind of motive power employed, the route of the vessel and the seasons of the year. Since this statute became effective, the inspectors are obliged also to take into account the statutory requirements that officers or able seamen shall be in charge of every lifeboat, or of every pontoon life raft accommodating more than 15 persons, and that there shall be a certified lifeboat man on every lifeboat or raft accommodating less than 25 persons, and additional lifeboat men for lifeboats or rafts of larger size. The Seamen's Act, moreover, provides that during the first year following its passage all seagoing or Great Lakes vessels of

[1] For requirements of the newly enacted Merchant Marine Act of 1928, as to nationality of crew, see Appendix, sec. 405(c).

100 tons gross and over shall have deck crews, at least 40 per cent of whom have a rating of able seamen; that in the second year this proportion shall rise to 45 per cent; in the third year to 50 per cent; in the fourth year to 55 per cent; and thereafter shall be at least 65 per cent.

Further requirements are contained in the statutes governing the licensing of officers and in the qualifications necessary for obtaining a license as prescribed by the Steamboat Inspection Service. The Seamen's Act, moreover, introduced certain requirements concerning the qualifications of the crew. In order to obtain the rating of able seamen, certain requirements as regards physical condition, ability and experience are imposed, and those members of the crew that hold certificates as lifeboat men are required to fulfill certain qualifications as to their training and knowledge concerning the handling of lifeboats as well as their ability to understand orders relative to lifeboat service.

The provision of the Seamen's Act that has called forth most complaint from vessel owners, particularly on the Pacific coast, is the section providing that not less than 75 per cent of the crew of vessels subject to the Act must be "able to understand any order given by an officer of such vessel." This is the language requirement which makes it difficult for American vessels, officered by men who are citizens of the United States, to employ the relatively inexpensive crews that are commonly employed on vessels navigating the Pacific Ocean. Although this provision applies to foreign as well as to American vessels, its effect upon Japanese vessels is relatively slight, for the officers of Japanese steamships are able to issue orders to Oriental crews in a language that they are able to understand.

Still other navigation laws are those that regulate the wages of seamen on board American vessels. The frequency and time of wage payments are regulated; the payment of wages to seamen in advance and the deduction from seamen's wages to pay persons for the shipping of seamen is prohibited; and the allotment of wages of seamen during their absence is regulated.

Detailed requirements regarding shipping agreements are contained in the navigation laws of the United States. The crews of vessels bound from American to foreign ports are, with

certain exceptions, shipped before United States Shipping Commissioners of the Department of Commerce, and in accordance with the terms of shipping agreements that not only specify the number and description of the crew and their respective employments, but also stipulate the nature and probable duration of the intended voyage, the port, or country in which the voyage is to terminate, the time at which each seaman is to be on board the vessel to begin work, the amount of wages which he is to receive, any regulations concerning the conduct on board the vessel, as to fines or other punishments for misconduct, any stipulations regarding the allotment of wages, and the scale of provisions that are to be furnished to each seaman. When a seaman is engaged by a master of an American vessel in a foreign port in which an American consul or consular agent is located the master is obliged to obtain his sanction and to hire the seaman in the presence of such officer. The procuring or detention of crews by the aid of force, threats, misrepresentations, drugs, or intoxicating liquors is prohibited and heavily penalized.

The provisions and water provided for the crew of American vessels engaged in deep-sea navigation are specified in shipping agreements in accordance with the provisions of the statute stating the quantities of water and the kinds of food that must be supplied. The size and equipment of quarters for the crew on board American vessels, except yachts, pilot boats, or vessels of less than 100 tons gross register, are fully regulated by law.

The Seamen's Act regulates the hours of labor on seagoing and Great Lakes vessels by providing that seamen while at sea shall be divided into at least 2 watches, and firemen, oilers, and water tenders into at least 3 watches. Seamen, moreover, may not be required to work alternately in the fireroom and on deck. When an American vessel is in port, a day's work for seamen legally consists of 9 hours, exclusive of the anchor watch, and no unnecessary work may be required on Sundays and various designated holidays.

An act of March 3, 1913, regulates the hours of officers by providing that no officer may take charge of a deck watch when leaving port unless he has had at least 6 hours off duty

within the 12 hours immediately prior to the time of sailing. When at sea no licensed officer may be required to remain on duty longer than 12 hours out of 24 except in case of emergency, and when in port a licensed officer may not be required to remain on duty longer than 9 hours in any 24-hour period.

The laws governing the desertion of seamen have gradually been made less and less strict. Under the Seamen's Act desertion is punishable only by forfeiture of all or any part of the effects that the deserted seaman leaves on board, and all or any part of his wages that he has earned. The navigation laws contain many provisions defining, limiting, and regulating the ill treatment of crews by officers, death from negligence or misconduct, permissible and prohibited punishments, mutiny and other acts of officers and crews.

Besides the navigation laws that primarily concern the vessel or the officers and crews, there are numerous miscellaneous statutes, many of which affect the shipping and traveling public as well as the vessel and its officers and crews. Such, for example, are the numerous statutory provisions regulating the entry and clearance of vessels and cargoes at American ports, those that govern the public health by requiring vessels coming from abroad to carry bills of health issued by American consuls or other approved officers, and by providing for the quarantining of vessels, the detention of crews and passengers at quarantine hospitals, and the suspension of commerce with ports where there is a contagious disease. The statutes also provide for the enforcement of operating rules on rivers, canals, or in harbors and harbor approaches; they prohibit the deposit of undesirable substances in navigable waters; they limit the speed of vessels and their maximum draft; prescribe anchorage grounds at specified points, and fix the official pierhead lines beyond which wharves or other harbor structures may not be erected. Other miscellaneous statutes define and punish offenses against neutrality, and criminal acts such as murder, arson, forgery of ship's papers, barratry and piracy.

There are also Federal statutes that empower and direct the Bureau of Animal Industry in the Department of Agriculture to inspect vessels carrying livestock as to ventilation of the

vessels, equipment, adequacy of space and facilities for food and water, and similarly to inspect the livestock and meat products that are exported to foreign countries or imported from abroad. The pure food laws, moreover, as jointly applied by the Treasury Department and the Bureau of Chemistry in the Department of Agriculture, are of special importance to merchants who import foods and drugs.

Federal Regulation of Ocean Services and Charges

Some of the general navigation laws of the United States regulate the service of ocean carriers but most of them are primarily concerned with the safety of navigation, the public health, and the methods of steamship operations. Rates, services, traffic, and the relations between carriers are regulated by the provisions of the passenger and immigration laws, the Interstate Commerce Act, as amended, the Shipping Act, the Merchant Marine Act, and the Bills-of-Lading Act. The Passenger Act of 1882 and the immigration laws, which are particularly of importance in the regulation of the steerage business of ocean carriers, were discussed in Chapter LIII.

The principal Federal statute applicable to the charges and services of carriers by water prior to the passage of the Shipping Act was the Interstate Commerce Act of 1887 as amended to date. This statute is still applicable to the same extent that it applied before the enactment of the Shipping Act, for the latter statute (Section 33) expressly provides that "This Act shall not be construed to affect the power or jurisdiction of the Interstate Commerce Commission, nor to confer upon the board concurrent power or jurisdiction over any matter within the power or jurisdiction of such commission; nor shall this Act be construed to apply to intrastate commerce."

The Interstate Commerce Act does not apply to the port-to-port business of carriers by water, but it does apply to interstate traffic when handled partly by rail and partly by water under "a common control, management or arrangement for a continuous carriage or shipment." As amended by Section 11 of the Panama Canal Act of 1912, moreover, the scope of the Interstate Commerce Act and the jurisidiction of the Interstate

Commerce Commission are with respect to certain matters extended so as to include any interstate traffic that is handled partly by rail and partly by water. In the foreign trade the Interstate Commerce Commission has no jurisdiction either over the port-to-port business of ocean carriers or over such business as they conduct in connection with American railroads.

The limited jurisdiction of the Interstate Commerce Commission over carriers by water is of importance, because much interstate traffic is handled over rail-and-water routes. The principal powers of the Commission in this regard may be summarized as follows: The Commission has authority to establish through routes and joint rates even though certain through rail-water routes have already been established voluntarily; it may establish maximum joint rates and determine "all the terms and conditions under which such lines shall be operated in the handling of the traffic embraced"; it may establish proportional rates actual, or maximum, or minimum, or maximum and minimum to and from ports to which such traffic is brought or from which it is taken by the coastwise water carriers; it may order the establishment of physical connections between railroads and carriers by water; it may determine the rate division between rail and water carriers that operate over a through rail-water route; it may order the issuance of through bills of lading in domestic interstate rail-water traffic. The Commission, moreover, has the power to regulate water terminal facilities operated in connection with interstate shipments made partly by rail and partly by water, and all ferries operated in connection with interstate rail-water traffic.

In the foreign trade the Commission has regulated ocean carriers only indirectly by regulating the railroads that make connections with the ocean carriers, the ocean terminal facilities that are used by the railroads, and their terminal charges, rules, and practices. Certain specific provisions particularly intended to influence ocean shipping, through the medium of the railroads, are those contained in the Panama Canal amendment of 1912 and the Transportation Act of 1920. The former added a clause to the effect that when a railroad subject to the Interstate Commerce Act enters into arrangements with an ocean

carrier operating from a port in the United States to a foreign port for the handling of through business originating at interior points, the Commission "may require such railway to enter into similar arrangements with any or all other lines of steamships operating from said port to the same foreign country." The amendment added in the Transportation Act, previously referred to,[2] is applicable only to shipments made in connection with vessels registered under the flag of the United States. It requires railroad agents, upon requests of shippers, to obtain rate quotations from such ocean carriers, and also separate cargo port charges, and, when such ocean-rate quotations are accepted, to make firm space reservations in such vessels for the shipper. When the shipper delivers a shipment at any point designated by the Commission for shipment in a vessel in which space has in this way been reserved, the railroad is required to issue a through bill of lading to the point of destination.

The form and contract provisions of the uniform through export bills of lading issued by American railroads were prescribed by the Commission in 1921, the uniform [3] bill becoming effective in July, 1922. In prescribing this railroad export bill of lading the Commission was governed by the provisions of the Interstate Commerce Act and the Bills-of-Lading Act.[4] The latter Act which became effective January 1, 1917, also applies to bills of lading issued by ocean carriers in both the coastwise and export trades of the United States.

Direct regulation of the port-to-port services, practices, and charges of ocean carriers is provided for in the Shipping Act of 1916 and the Merchant Marine Act of 1920. These acts also distinguish between vessels operating in coastwise and Great Lakes commerce and those operating in foreign trade. Certain of their provisions apply to both, while others are made more stringent and comprehensive for coastwise than for overseas traffic.

Common carriers by water operating either in foreign commerce or in interstate commerce on the high seas or the Great

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[2] See Chapter XXVII.
[3] See Chapter XLIX and Part II, Chapter XI.
[4] See Part II, Chapter XI.

Lakes "on regular routes from port to port" are not permitted to make any unfair or unjustly discriminatory contract with any shipper based on the volume of freight offered, or to treat unfairly or to discriminate unjustly against any shipper in the matter of (*a*) cargo space accommodations or other facilities, due regard being had for the proper loading of the vessel and the available tonnage, (*b*) the loading and landing of freight in proper condition, (*c*) the adjustment and settlement of claims; nor may they pay deferred rebates to a shipper as a consideration for the giving of all or a portion of his shipment to particular lines or for other purposes, use fighting ships either separately or in conjunction with other carriers, or retaliate against a shipper by refusing or threatening to refuse available space accommodations or by resorting to other discriminating or unfair methods, because he has patronized other lines, or has filed complaint charging unfair treatment or for any other reason.

It is unlawful both in the foreign and the coastwise or Great Lakes trades for any common carrier by water to give in any way an undue or unreasonable preference or charge to particular persons, localities, or kinds of traffic, to pay rebates to any person either directly or by means of false billing, classification, weighing, or by any other unjust devices, or to in any way influence marine insurance companies or underwriters to discriminate between competing vessels or cargoes in the rate of insurance charged. It is unlawful both in the foreign trade and in interstate commerce for any carrier or person subject to the Shipping Act to disclose any information detrimental to any shipper or consignee unless consent has been obtained, or unless in response to a legal process issued under proper authority.

All such common carriers by water may, moreover, be obliged to file with the United States Shipping Board periodical or special reports, accounts, records, rates, charges, or memoranda of any facts and transactions. All are obliged to establish and observe "just and reasonable regulations and practices relating to or connected with the receiving, handling, storing, or delivering of property," and when the Board finds that any such regulation or practice is unjust or unreasonable, it may substitute

for it such regulation or practice as it regards just and reasonable.

Certain provisions of the Shipping Act as amended in the Merchant Marine Act apply only to common carriers by water in interstate commerce.[5] Such are the provisions that require domestic carriers by water to file with the Shipping Board and keep open to public inspection all their maximum fares, rates and charges, local as well as those established jointly with other carriers by water. Such also is the provision which prohibits an increase in the maximum charges of domestic carriers by water except with the approval of the Board and after 10 days' public notice; and the provision that prohibits the increase of competitive charges that had been reduced below a fair remunerative basis with the intent of driving out or injuring a competitive carrier by water, unless the Shipping Board finds that the proposed increase is justified by change in conditions other than the elimination of competition.

The Shipping Board, moreover, has power to prescribe the form of tariffs and the time within which they shall be filed; it may, for good cause, waive the 10 days' notice mentioned above; and whenever it "finds that any rate, fare, charge, classification, tariff, regulation, or practice demanded, charged, collected or observed by such carrier is unjust or unreasonable, it may determine, prescribe, and order enforced a just and reasonable maximum rate, fare, or charge, or a just and reasonable classification, tariff, regulation, or practice."

Carriers by water in the foreign trade are not required to publish tariffs, nor are they obliged to obtain the approval of the Board before increasing their charges, and increases in rates are not contingent upon a 10 days' public notice. They are, however, prohibited from unjustly discriminating between shippers or ports, and from collecting any charges that are "unjustly prejudicial to exporters of the United States as compared with their foreign competitors." When any such unjust charge

[5] The term "common carrier by water in interstate commerce" means "a common carrier engaged in the transportation by water of passengers or property on the *high seas* or the *Great Lakes* on regular routes from port to port between one state, territory, district, or possession of the United States and any other state, territory, district or possession of the United States, or between places in the same territory, district, or possession."

is demanded or collected, the Shipping Board may "alter the same to the extent necessary to correct such unjust discrimination or prejudice and make an order that the carrier shall discontinue demanding, charging, or collecting any such unjustly discriminatory or prejudicial rate, fare, or charge." The Board may not, however, reduce a rate in the foreign trade unless it involves unjust discrimination or is prejudicial to American exporters as compared with those of foreign countries. None of the provisions affecting the foreign trade is applicable to tramp vessels, for Section 1 of the Act expressly excludes such vessels from the term "common carrier by water in foreign commerce."

Most of the regulatory provisions relative to ocean services, practices and charges of the Merchant Marine Act constitute amendments to the Shipping Act but the Act also contains several additional regulatory provisions. Section 19 authorizes the Shipping Board to make all necessary rules and regulations to carry out the provisions of the Merchant Marine Act, to "make rules and regulations affecting shipping in the foreign trade not in conflict with law in order to adjust or meet general or special conditions unfavorable to shipping in the foreign trade," and to request any government agency, other than the Public Health Service, the Consular Service and the Steamboat Inspection Service, subject to review by the President, to suspend, modify, or annul any of its regulations affecting shipping in foreign trade or to make new rules.

Section 30, which may be cited as the Ship Mortgage Act of 1920, contains regulations requiring and governing the recording of sales, conveyances, and mortgages of American vessels; it defines the conditions applicable to preferred mortgages; it imposes penalties, defines preferred liens and extends to preferred mortgages a "priority over all claims against the vessel, except (1) preferred maritime liens, and (2) expenses and fees allowed and costs taxed, by the court" in which proceedings for the enforcement of a preferred mortgage lien are instituted.

The United States Shipping Board that administers the Shipping and Merchant Marine Acts[6]—*i. e.*, the provisions that affect the charges and services of carriers by water, those that

[6] Ship Mortgage Act is supervised by the Secretary of Commerce.

regulate conferences, agreements, and pools of ocean carriers, and those concerning the development of the United States Merchant Marine—consists of 7 commissioners appointed by the President with the consent of the Senate. The original commissioners were appointed for terms ranging from 2 to 6 years, but thereafter the term of office was to be 6 years. The Merchant Marine Act requires 2 commissioners to be selected from Pacific Coast states, 2 from Atlantic Coast states, and one each from the Gulf states, from the states bordering on the Great Lakes, and from the states of the interior. Their salaries are fixed at $12,000 per annum.

Complaints may be filed with the Shipping Board by any person, and as in case of the Interstate Commerce Commission, the Board may also institute investigations upon its own motion; it may, by subpœna, compel the attendance of witnesses and the production of books, papers, documents, and other evidence from any place in the United States, and it may, after due hearings, issue orders which, with the exception of orders involving the payment of money, may be enforced by obtaining a writ of injunction or other proper process, mandatory or otherwise, from a Federal district court. Reparation awards and orders for the payment of money may be enforced by filing petitions or suits in a Federal district court, or in any court of general jurisdiction of a state, territory, district, or possession of the United States having jurisdiction of the parties concerned. Judgment may be entered in favor of any plaintiff against a defendant who refuses to pay money awarded by the Board.

Numerous penalties against violation of the provisions of the act are provided in connection with specific sections, and a general penalty not exceeding $5,000 is provided in case of violations applicable to all provisions in connection with which a different penalty is not provided. The last section of the Shipping Act, moreover, authorizes the Secretary of the Treasury to refuse clearance to any vessel engaged either in the foreign or coastwise trade whenever he has satisfactory reason to believe that the owner or master of the vessel—although space accommodations are available, and although the cargo is offered in good condition and the proper freight transportation charges

are tendered—refuses or declines to accept cargoes destined to ports that are regularly served by the vessel.

The orders of the Shipping Board are subject to review by the Federal courts in the same manner that orders of the Interstate Commerce Commission may be reviewed.

Since the Interstate Commerce Act under certain conditions applies to water transportation as it did before the passage of the Shipping and Merchant Marine Acts, it follows that many carriers by water are now subject to control by two distinct administrative bodies. Although the Interstate Commerce Commission may not regulate the port-to-port charges of coastwise or ocean carriers, it is obvious that port-to-port charges and the charges via rail-water routes are interrelated. It is also well established that the port-to-port rates of carriers by water and the all-rail rates of railroad companies are, in many instances, closely interdependent. The former, however, are subject to control by the Shipping Board, while the latter are exclusively regulated as to interstate commerce by the Interstate Commerce Commission. Nor is it at all times clear whether a particular shipment constitutes purely port-to-port traffic or traffic that is handled partly by rail and partly by water. Concerns that conduct a business of forwarding, or furnishing wharfage, dock, warehouse, or other terminal facilities in connection with a common carrier by water are subject to the provisions of the Shipping Act; yet concerns of this kind when handling interstate traffic moving partly by rail and partly by water may also be subject to the provisions of the Interstate Commerce Act. A conflict of jurisdiction as between the Shipping Board and the Interstate Commerce Commission may arise unless the two administrative bodies work in close and friendly coöperation.

The extent to which the Shipping Board is authorized to regulate privately operated carriers by water in foreign and interstate commerce is to be distinguished from the powers it possesses with respect to the charges and services of government-owned merchant vessels. The consolidated agreement, under which most government-owned merchant vessels are operated by agents, specifies that "the agent shall be subject to the orders of the owner and its authorized representatives as to voyage,

charters, rates of freight and other charges and as to all other matters connected with the agency."

Federal Regulation of Relations of Carriers

In addition to the navigation laws of the United States and the various statutory provisions regulating the services and charges of carriers by water, there are a number of important statutes that regulate the relations between ocean carriers and between ocean-and-rail carriers. The Shipping and Merchant Marine Acts just referred to in connection with the regulation of services and charges are also of principal importance in connection with conferences, agreements, pools, and other arrangements between ocean carriers. Having discovered that such relations between ocean carriers are general throughout the greater part of the maritime world, Congress wisely decided that the Sherman Antitrust law should not apply in the future.

Section 15 of the Shipping Act expressly provides that all agreements, modifications, or cancellations approved or ordered by the United States Shipping Board shall be excepted from the provisions of the Sherman Antitrust Act and the antitrust provisions contained in the tariff law of 1894. The section provides that all copies of agreements, pools, understandings, or other conference arrangements of ocean carriers subject to the Act, shall be filed with the Shipping Board, and it empowers the Board to disapprove, cancel, or modify any such agreements or arrangements.[7] It stipulates that "agreements existing at the time of the organization of the Board shall be lawful until disapproved by the Board," and "that it shall be unlawful to carry out any agreement or any portion thereof disapproved by the board."

Section 14 of the Act, however, explicitly prohibits certain objectionable features of ocean conference arrangements. It prohibits the payment of deferred rebates, the use of fighting ships, and retaliation by reducing, or threatening to reduce, space accommodations, or by resorting to other discriminating

[7] In the opinion of the Shipping Board, ocean carriers are required to file copies of the minutes of each meeting as well as copies of their basic working agreements. The question at issue has not been finally decided.

or unfair methods against shippers who patronize other carriers or who file complaints with the Shipping Board. This section also declares unlawful any unfair or unjustly discriminatory contracts with shippers based upon the volume of freight offered,[8] and any unfair treatment or discrimination against shippers in the matter of cargo space, loading and discharging of freight in proper condition, or in the matter of adjusting and settling claims. Any violations of Section 14, which prohibits the objectionable practices referred to, are punishable by a fine not exceeding $25,000 for each offense.

The Merchant Marine Act of 1920, moreover, added a section (14a) which specifically authorizes the Shipping Board to determine whether "any person, not a citizen of the United States and engaged in transportation by water of passengers or property, has violated any provision of Section 14, or is party to any combination, agreement, or understanding, express or implied, that involves in respect to transportation of passengers or property *between foreign ports*, deferred rebates or any unfair practice designated in Section 14, and that excludes from admission upon equal terms with all other parties thereto, a common carrier by water which is a citizen of the United States and which has applied for such admission." In case the Board determines that a foreign ocean carrier has violated the provisions of Section 14 or is party to such an agreement or understanding, the Secretary of Commerce is directed to refuse it the right of entry for any vessel owned, operated, or directly or indirectly controlled by it, into any port of the United States, until the violation has ceased or the agreement or understanding has been terminated.

Consolidation of ocean carriers by stock ownership, merger, outright purchase, or otherwise than by means of agreements, pools, understandings, and other conference arrangements, are not specifically included within the Shipping Act. It is therefore probable that the Federal antitrust laws are applicable to any such consolidations as result in unreasonable restraint of trade. Section 11 of the Panama Canal Act of 1912, moreover,

[8] In proceedings now before the Shipping Board, the question of what constitutes unlawful discrimination in case of time contracts is at issue.

contains a special provision which prohibits any vessel that is owned, chartered, operated, or controlled by any concern that is doing business in violation of the Federal antitrust laws from navigating the Panama Canal.

The conditions under which the antitrust laws are applicable to ocean steamship consolidations have not thus far been defined by the United States Supreme Court. There is reason to believe, however, that the application of these statutes is not dependent upon the place of incorporation of the consolidated companies nor upon the foreign or interstate character of the traffic in which they are engaged. The United States Supreme Court [9] ruled that "while the United States may not control foreign citizens operating in foreign territory, it may control them when operating in the United States in the same manner as it may control citizens of this country." [10]

The relations between ocean carriers and the railroads are governed principally by the provisions of the Panama Canal Act of 1912. Section 11 of that statute which amends the Interstate Commerce law, affects the relations between carriers by water and rail carriers in two principal respects in addition to the requirements relative to through bills of lading, terminal connections and other traffic and operating arrangements previously referred to: (1) It prohibits any railroad-owned or controlled carrier by water that is or may be competitive with its owner from passing through the Panama Canal. (2) It prohibits the railroad ownership or control, anywhere in the coastwise, Great Lakes, or other interstate commerce of the United States, of a carrier by water that competes or may compete for traffic against its railroad owner unless it may be shown that such railroad-owned carrier by water is "operated in the interest of the public and is of advantage to the convenience and commerce of the people," and also that the future railroad ownership or control will "neither exclude, prevent, nor reduce competition on the route by water under consideration." The Interstate Commerce Commission is authorized to determine

[9] U. S. *v.* Pacific and Arctic Ry. and Nav. Co., *et al.*, 228 U. S. 87, April 7, 1913.

[10] See also U. S. *v.* Great Lakes Towing Co., *et al.*, 208 Fed. Rept. 733, Feb. 11, 1913.

questions of fact as to the actual existence or possibility of competition. The Commission is also authorized to determine whether in its opinion the railroad-owned or controlled carriers by water are operated in the interest of the public, whether they are of advantage to the convenience and commerce of the people and whether or not the fact of railroad ownership or control excludes, prevents, or reduces competition.

Regulation by States and Municipalities

The power to regulate commerce with foreign nations and among the states is vested in the National Government by the Constitution, which also provides that "no state shall, without the consent of the Congress, lay any imposts or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws," and also that "no state shall, without the consent of Congress, lay any duty on tonnage."

The clauses seem very clear and definite, but a long line of decisions of the Supreme Court has been necessary to define the limits of Federal and state authority over commerce.[11] At the time of the adoption of the Constitution each state in its own way was aiding and regulating commerce; and instead of immediately ceasing to exercise authority over interstate commerce, the states have abandoned commercial regulation gradually as the Federal Government has assumed the powers it possesses. Slowly it was established that the Federal power is plenary, that vessels enrolled by the United States for the coastwise trade cannot be burdened or restricted by state laws regarding registration, licenses, fees, or tonnage taxes. The state may tax ships as property, it may tax navigation companies on their capitalization, franchises, and income, or in accordance with other taxes levied on corporations, it may also tax terminal properties, but it may not levy tonnage taxes as such and it may not tax commerce except to the extent that it "may be absolutely necessary for executing its inspection laws."

[11] Some of the more important decisions are Gibbons *v.* Ogden (9 Wheaton); Brown *v.* Maryland (12 Wheaton 419); Sinnot *v.* Davenport (22 Howard 227); Cox *v.* The Collector (12 Wallace 204); Steamship Co. *v.* Port Wardens (6 Wall 31); Moran *v.* New Orleans (112 U. S. 69); Gilman *v.* Philadelphia (3 Wallace 713). See also decisions relative to railroad regulation in Part IV, Chapter XXVI.

The states and also municipalities acting as agents of the states, continue to perform certain specific regulatory functions in connection with foreign and coastwise shipping. Control over pilots and pilotage is exercised both by the states and the Federal Government, the control by the states, however, being by permission of Congress. The several states had detailed pilotage laws in 1789, and Congress confirmed those laws by providing that "until further provision is made by Congress all pilots in bays, inlets, rivers, harbors, and ports shall continue to be regulated by the laws of the states wherein such pilots may be, or with such laws as the states may respectively enact for the purpose."

Congress has been obliged to supplement the state pilotage laws to prevent interstate friction. A vessel entering a river or port forming the boundary between two states is required to take the first pilot offering his services; the pilots of one state may not be preferred over those of another. Congress has also prohibited a state from discriminating against interstate commerce by making the pilotage charges less for a vessel when its trip is between ports of the state than when it is sailing between ports in different states. The navigation laws of the United States require that the captain and mates of all steamers enrolled for the coastwise service shall qualify as pilots and be licensed by the United States, and the states are prohibited from requiring the pilots of steam vessels to secure a state license in addition to the one granted by the United States. A coastwise steamer may enter a port without taking a pilot; but a sailing vessel cannot do so even though the sailing vessel is towed into port by a steam tug on which there is a licensed pilot. This seems an unnecessary discrimination against the sailing vessel maintained apparently to give added employment to pilots.

Subject to requirements and restrictions contained in Federal statutes, state laws regulate the licensing of pilots and fix the pilotage charges in effect at the ports, and the states also create the agency to administer pilotage.[12]

In the enforcement of health and quarantine regulations, also, both the state and Federal governments participate. Each has

[12] See Chapter XLIV.

the power of taking such measures as may be necessary to protect the health of its citizens. Congress has power to subject interstate and international travel and traffic to such rules and regulations as the welfare of the country may require, and while each state is giving increasing attention to the prevention of diseases and epidemics within its borders, the tendency is to look more and more to the United States Bureau of Public Health to prevent the outbreak and spread of diseases. The National Government can adopt measures to be observed in all parts of the United States and in the insular possessions. It can also coöperate with foreign governments in the work of checking disease.

As the protection of the health of their citizens is one of the police powers reserved by the states, the National Government has been obliged, in the main, to work through the state authorities in its measures regarding public health. There is no question as to the power of the National Government to place quarantine restrictions upon interstate and foreign commerce, but, as the states also have the power, the tendency has been for the United States Bureau of Public Health to rely upon the states.

The quarantine service at New York City illustrates the activity of a typical state of the United States at a port of first rank. Under a Supervisory Board there is a Health Officer of the Port of New York, who is the active and responsible official for the enforcement of the state quarantine laws. All vessels entering the port of New York must stop at the entrance to the bay opposite the quarantine station on Staten Island. One or more of the state health officers board the ship, and the bill of health from the port of departure must be shown by the master of the vessel, and he or the ship's physician must report all sickness, accidents, deaths, and births that have occurred on the voyage. If the vessel has come from an infected port, or if a contagious or infectious disease is found to exist among the passengers or crew, the ship may be fumigated and detained until the health officer thinks the vessel may discharge its passengers and cargo without endangering the public health. The state quarantine charges imposed at New York are in accord with maximum charges fixed by state law, and vary with the gross

tonnage of the vessel and the nature and extent of the inspection, fumigation, disinfection, vaccination, hospital, or other service performed.

After passing the state quarantine inspectors at Staten Island, the vessel may proceed to her pier; but if she has steerage passengers aboard, they must be landed at the United States Immigrant Station on Ellis Island, where each immigrant is given a medical inspection by the United States Bureau of Public Health. The would-be immigrants that are found to have a disease that bars them from entering the United States must be taken back by the company that brought them to the port from which they came; and if it shall appear that the alien had the disease when he started on the voyage, and that the disease might have been detected by inspection, the steamship company is liable to statutory penalties.

In the regulation of piers, wharves, docks, elevators, and other facilities for handling traffic, the dual authority of the Federal Government and the states or municipalities is again to be noted. It will be recalled that the Interstate Commerce Commission and the Shipping Board have been granted important regulatory powers applicable at ocean ports and terminals,[13] and that the Federal Government has complete control over the navigable channels and fixes the lines beyond which shore structures may not extend into the channel. Between the pier line and the shore, the states and the municipalities exercise many regulatory powers. The various methods of port administration by the states and municipalities or by semi-independent public trusts were considered in Chapter XLIV.

The municipal government, moreover, exercises police supervision over the port under its jurisdiction, and in case of a great harbor and port like New York, this is a task of some magnitude. The policing of the portion of the harbor under the jurisdiction of the City and State of New York is directed by the local commissioner of police. The police department conducts the actual harbor patrol work through a "harbor squad" equipped with a number of patrol boats. Although the police supervision of

[13] See Section of "Federal Regulation of Ocean Services and Charges" contained in this chapter.

American ports is principally vested in the state and municipal government, it is, nevertheless, dual in a limited degree. At New York, for example, the Federal Government through the United States Supervisor of the Harbor and his deputies exercises police control in so far as it relates to the enforcing of the Federal laws against the dumping of material in navigable waters.

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CHAPTER LV

MERCHANT MARINE POLICIES OF FOREIGN COUNTRIES

A STUDY of foreign merchant marine policies is of importance both because of their bearing upon the competition between American and foreign shipping, and because the experience of other maritime countries should not be disregarded in the formulation of a merchant marine policy in the United States. The most direct effect of government aid to foreign shipping occurs when foreign governments subsidize vessels operating to and from American ports in competition with vessels of the United States. This direct relationship is at present limited because much the larger part of foreign subsidy funds are being granted to vessels operating in the colonial trades of the European powers and in the trade with foreign countries other than the United States. A number of foreign lines operating at American ports, however, are receiving subsidies and also indirect assistance of various kinds, and the indirect effect of colonial and other foreign subsidies granted to foreign steamship lines operating at other ports is by no means negligible. American lines have been established in the trade of the United States with many European colonies and with the foreign countries of the Far East, Latin America and elsewhere, and much of this trade is necessarily conducted by American foreign trading firms in competition with foreign rivals. This international commercial competition, which was emphasized in the discussion of ocean freight rates and services, frequently brings American vessels operating from American ports into indirect competition with foreign vessels operating from the ports of Europe and Japan.

In adopting a merchant marine policy in the United States foreign experience should not necessarily be controlling. Shipping conditions and requirements, and political and economic

conditions differ in each country, and there are consequent variations in the merchant marine policies of foreign countries. Foreign experience nevertheless should be studied. Various plans of government aid have been tried by maritime countries. Such of them as experience has shown to be effective may possibly be adaptable to American conditions and requirements.

The World War necessarily created new conditions and brought about changes in the shipping policies of many foreign nations. During the War a number of foreign governments built and bought merchant tonnage and placed private shipping under strict government control. When the War ended it was necessary for these governments to decide what to do with their vessels, and what aid to give private shipping. The War had weakened the financial condition of many countries; it had reduced the merchant fleets of some and increased those of others; it had transferred colonial possessions from one nation to another, changed coast lines, influenced shipbuilding industries favorably or unfavorably, and in the case of the German Government, had necessitated the recasting of its merchant marine policy in conformity with restrictions imposed by the treaty of peace.

British Aid to Shipping

The experience of Great Britain is significant because British merchant shipping has for many years exceeded that of any other country. The gross-register tonnage of the United Kingdom and Ireland, excluding vessels of less than 100 tons, aggregated 19,256,766 tons in 1914 before the outbreak of hostilities;[1] it had increased 45 per cent since 1900 and 88 per cent since 1890. As a direct result of the War, it then fluctuated widely and reached a minimum of 18,330,424 tons gross in 1919, but by 1927, it had again advanced to 19,309,022 tons. The growth of British tonnage had been due to economic advantages arising from favorable construction and operating costs, the availability of capital and labor, an immense foreign and colonial trade providing outbound and inbound cargoes, and the national importance of ocean shipping caused by the insular

[1] As reported in *Lloyd's Register.*

position of the country. The Government, however, deemed it desirable to supplement these favorable economic conditions with some direct aid to shipping. Its mercantile marine policy has been liberal.

Before the War the British Government gave direct aid principally in the form of subventions to selected British steamship lines. Most payments were made on the basis of mail contracts, but there were also instances of admiralty, colonial, and trade subventions. A government loan was made to the Cunard Line, and appropriations were granted for the support of the royal naval reserves. The support given the naval reserves was intended primarily to provide a supply of merchant seamen upon whom the navy could draw in the manning of war vessels, but merchant vessels have thereby been able to secure seamen more readily. The total appropriations of the British Government before the World War, exclusive of general mail payments not limited to British vessels, amounted to about $4,700,000 annually. Over $700,000 each year was added to this by British colonies, some of the specific subventions received by British lines being paid jointly by the home and Colonial Governments. Some of the British Colonies—Canada, Australia, and South Africa—paid substantial subventions to steamship lines, quite aside from their contributions to the lines subsidized by the home Government. A compilation made by the United States Commissioner of Navigation in 1909 showed a combined total per annum of $9,689,000 for the British Empire as a whole.

British shipping was also aided indirectly by the privilege of importing free of duty all materials for constructing, repairing or equipping vessels, by the free shipping policy which, since 1849, had granted the privilege of British registry to foreign-built vessels, by awarding extensive naval orders to private shipyards, and especially by liberal navigation laws. The British Parliament has always adhered to the policy of subjecting British shipping to only a moderate degree of regulation; indeed, it has on various occasions refused to accept the somewhat more stringent recommendations of the British Board of Trade, which is the administrative body charged with the enforcement of the navigation laws of Great Britain.

As a result of the World War the British Government acquired a tonnage, some of dead weight and some of gross register, of 3,930,000 tons, consisting partly of newly constructed vessels and partly of ex-German ships. The plan adopted was to sell the government tonnage promptly and adhere to the pre-War policy of private ownership and operation. The vessels that had been constructed on government account were sold in 1919 and 1920, when freights and vessel prices were still at a high level, at an average of 25 pounds sterling per dead-weight ton. The net loss suffered by the Government is estimated at less than $100,000,000.[2] The German vessels acquired by the Government were sold during the period 1920 to 1922, sales beginning after freights and prices had begun to decline. Many of these vessels, moreover, were no longer new, and the total amount received for a tonnage consisting of 490,000 gross tons of passenger vessels and 1,900,000 dead-weight tons of cargo vessels was 20,076,000 pounds sterling. Private ownership has again become the policy of British shipping.

The direct subventions now paid to selected British lines differ only in detail from those granted before the World War The ocean mail contract system has been retained as the principal method of direct aid. There has been some change in the selection of lines, particular attention being given to the maintenance of adequate line services to the Colonies, but the total amount paid is somewhat larger than before the War.[3] The twenty-year admiralty subvention contract of the Cunard Line did not expire until 1927, but the annual amount was reduced because of the loss of the *Lusitania*. The policy of joint contributions by the British Government and by certain colonies has also been continued.

The British Government has also continued its policy of making payments for the purpose of providing a reserve force of naval officers and men who will be available in time of war. Three major reserves are maintained—the royal fleet reserve, the royal naval reserve, and the royal naval volunteer reserve—

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[2] Bureau of Foreign and Domestic Shipping, Government Aid to Merchant Shipping (1925), p. 302.

[3] Mail contracts in 1914-1915, £638,501; in 1922-1923, £672,000.

and the total expenditure for all reserve forces was increased from £476,000 in 1913-14 to £572,800 in 1923-24. The guaranteeing of loans to private steamship companies has during the past few years been a part of British policy. To provide employment in the United Kingdom, an Act of 1921 authorized the Government to guarantee the principal or interest or both of loans negotiated for ship construction.

Several of the Colonies contribute to a number of the mail contracts of the British Government, and in some instances have entered into contracts on their own account. These mail payments are in accordance with the British policy of selecting particular lines and requiring them to perform specified services. The mail payments of Canada and Australia, however, have been reduced below the pre-War level. In both of these self-governing commonwealths the governments operate ships of their own, and this may have a bearing upon the reduction of subventions to private lines. In the case of Australia there has been direct competition between government and private lines, and in both dominions, the governments, after the decline of ocean freight rates became general in interterritorial commerce, suffered operating losses. It is probable also that some of the colonial subventions formerly paid were authorized in part for military and naval reasons, this necessity having changed as a result of the defeat of Germany.

Canada and Australia did not adopt the British policy of promptly selling to private steamship concerns all merchant vessels acquired as a result of the War. Canada has sold a portion of its fleet, but others are being operated through the medium of a government corporation.

Aid to Shipping in France

Although economic conditions have not been so favorable to ocean shipping in France as in Great Britain, the French nation nevertheless has for many years insisted upon maintaining a French merchant marine for the promotion of commerce, for the maintenance of shipping connections with French colonies, and probably also for military and naval reasons. Before the War the French merchant marine advanced from 1,038,000 tons

gross in 1900 to 2,319,000 in 1914; and in 1927 *Lloyd's Register* reported a total of 3,469,980 tons.

Before the World War, France had a comprehensive and liberal system of government aid to shipbuilding and ocean navigation. Over $13,000,000 was paid annually in subventions and general subsidies. An outstanding feature of French shipping policy for some years was the payment of general subsidies as distinct from specific subventions limited to selected steamship lines. Shipbuilding or construction bounties were paid from 1881 on, and although the plan was changed in later acts, $3,442,000 was expended in 1913 in aid of the shipbuilding industry. In 1881 general navigation subsidies were also provided for. The payments made to sailing vessels for a while exceeded those for steamers, but the Act of 1881 was amended in 1893, and further legislation was enacted in 1902, 1906, and 1912. The basic general subsidy laws of 1906 authorized the payment of general equipment bounties (*compensation d'arment*) to all foreign-built as well as French-built vessels conforming to set qualifications as to age, size, and, in case of foreign-built vessels, registration under the French flag within two years after construction. The equipment bounties varied with the tonnage of the vessel, the number of days in commission, the character of its propelling power, its speed, quantity of cargo and average daily run. Certain payments also continued to be made under the acts of 1893 and 1902. The latter act distinguished between general equipment bounties for foreign-built vessels registered under the French flag, and general navigation bounties for French-built vessels. The entire amount paid in the form of equipment and navigation bounties in 1912 aggregated $3,861,000.

In addition to the general subsidies, France paid over $5,300,000 annually as mail subventions to selected steamship lines, and a general change of policy from general subsidies to mail subventions was becoming evident before the War. The mail contract subventions paid by the French Government were more effective than its general navigation subsidies, and the experience of France is an instructive lesson in subsidy methods rather than a proof that all direct aid to shipping is inadvisable.

Other pre-War government aids in France included the payment of fishing bounties and the reimbursement of Suez Canal tolls to one steamship line. Indirect aid included the reserving of the coastwise trade to French vessels, and unless certain contingencies arose, also the trade between France and Algeria. Certain French lines were also aided somewhat by slightly reduced railroad rates on freight moving in their vessels, but as this rate concession carried with it various conditions that were not acceptable to all ocean carriers or shippers, its acceptance did not become general.

Shortly after the World War began the Government found it necessary to provide war risk insurance, and in 1917 it adopted a policy of construction loans. Later the entire French merchant marine was requisitioned; the Government assumed financial responsibility for its operation, and also purchased and constructed vessels on its own account.

After the War France decided to sell the government vessels to private shipowners. Sale was begun in 1920 but decisive steps were not taken until 1921. The law that was then enacted directed that the entire fleet of 1,250,000 dead-weight tons then owned by the Government be sold within two years. It is estimated that the Government assumed a loss of about two billion francs. Several vessels, the construction of which was not completed until 1922 and 1923 were chartered to French lines, pending final arrangements for their sale.[4]

The policy of direct aid to private shipping adopted after the War was influenced largely by existing financial requirements and the desire to economize in an attempt to balance the French budget. Construction bounties were discontinued and no further payments of this kind are being made. The payment of general equipment and navigation bounties was also abandoned as a future policy, only such diminishing amounts being paid as are required to meet obligations incurred before the War. Bounty payments designed to encourage the fisheries and fisheries fleet have been greatly reduced.

The policy of paying mail subventions to selected French

[4] Bureau of Foreign and Domestic Commerce, Government Aid to Merchant Shipping (1925), p. 336.

lines under definite contract has on the contrary been retained. Mail contract payments to the Companie Generale Transatlantique for its service to New York became less after the War because its contract was made in 1912 under pre-War conditions. The pre-War contracts of several lines were revised upward, to compensate for vessels lost during the War, increased construction and operation costs, and the depreciation of the franc. Special attention has been given to the maintenance of steamship services to the Colonies and to protecting the freight rates from France to the Colonies. Fully two-thirds of the mail contracts of France now provide for the payment of colonial mail subventions. The mail subventions authorized in 1923—colonial and foreign—aggregated an equivalent of about $4,709,000; all other forms of direct aid amounted to but $398,000.[5]

Mention should perhaps be made of the relation between the mail subventions authorized by France and its policy of subsidizing aërial navigation. Mails between France and her possessions and protectorates in Africa are already being carried in part by subsidized airplanes.

The German Merchant Marine Policy

The merchant tonnage of Germany in 1914 just prior to the outbreak of the War in Europe was 5,459,000 tons gross. It had increased 106 per cent since 1900 and 247 per cent since 1890. This rapid growth was due mainly to favorable economic conditions and to indirect government assistance. German shipping was favored by low operating costs, cheap iron and steel and low ship construction costs, extensive coöperation between steamship lines, a rapidly growing foreign commerce, and a heavy flow of emigrants through German ports. Russian emigrants were effectively directed by the Hamburg-American and the North German Lloyd Lines at 10 central control stations on the Russian border.[6]

These advantages were furthered by a limited amount of direct government aid to shipping and by various indirect means. Specific subventions were paid chiefly to two lines operating

[5] *Ibid.*, p. 338.
[6] *Fairplay*, March 30, 1916.

under mail contracts, the North German Lloyd Company and the German East Africa Line. Several other lines received small subventions, and vessels not operated under mail contracts received pay for the mail services rendered, but the entire direct aid rendered by the German Government before the subvention to the North German Lloyd was reduced in 1914 did not exceed $2,400,000 annually.

The German government policy was one of indirect aid supplemented by well-directed subventions. One of the most effective indirect plans was that of preferential railroad rates on German exports. These rates were of two kinds: (1) The state railroads granted general export rates on nearly all export commodities shipped on through bills of lading, thereby encouraging the export trade. (2) They also granted unusually low special export rates on shipments destined to the Levant or to East Africa via the German Levant Line and the German East Africa Line, respectively, on through bills of lading. The lower export rates in general encouraged German exports and shipping as a whole and directed it toward Hamburg and Bremen, and the special rail rates on traffic to the Levant and East Africa specifically directed cargoes to selected German steamship lines.

German shipping was also aided indirectly by the policy of free importation of ships except in the case of vessels operating under subventions; by exempting foreign shipbuilding materials from the payment of duties; by granting preferential railroad rates on shipbuilding materials transported by the state railroads from the Rhine iron and steel centers to the shipyards of Bremerhaven and Hamburg; and by granting profitable naval contracts to promote shipbuilding. As in the case of Great Britain the navigation laws of Germany were liberal. In 1895, for example, after lengthy negotiations with the British Board of Trade in the hope that the ship measurement rules of Great Britain would be changed so as to give a net tonnage approximating real net capacity, the German Government abandoned its own measurement rules and adopted substantially those of Great Britain, thereby putting German and British ships on a competitive basis with reference to tonnage charges. Similar action was not taken in the United States until 1915.

The German merchant marine was virtually ruined by the War. The Treaty of Versailles provided that the German Government should cede to the Allied and Associated Governments all merchant vessels of 1,600 tons gross and upwards and stipulated proportions of the tonnage of smaller merchant vessels, steam trawlers and other fishing boats.[7]

German merchant tonnage as reported by *Lloyd's Register* declined from 5,459,000 tons gross in 1914 to 672,600 tons in 1920. The immediate problems of Germany were to rehabilitate the merchant marine and to provide the shipping needed in German commerce. It was at first necessary to depend largely upon foreign shipping but the larger German steamship lines promptly made efforts to provide services. The Hamburg-American Line entered into an operating agreement with the United American Lines, and the North German Lloyd Line with the United States Lines, for although the German lines had no vessels they still possessed terminal properties and a business organization. Soon, however, seagoing vessels were acquired by these as well as other German steamship lines. In 1927, the merchant tonnage of Germany amounted to 3,363,046 gross-register tons.

The principal post-War aid rendered to German shipping by the Government has thus far been the partial indemnification of private shipowners for the loss of vessels that had been lost or delivered to the Allies as reparations. Steps had in fact been taken as early as July 11, 1917, for the appropriation of government funds to enable shipowners to replace vessels lost or seriously damaged during the War and to meet expenses incurred in connection with the enforced holding of vessels in foreign or colonial ports. Later, however, when private vessels were included in reparation payments a more comprehensive plan was adopted. Under the construction bounty agreement of 1921, German shipowners agreed to purchase or construct a tonnage of 2,500,000 dead-weight tons within ten years, and the Government agreed to finance this tonnage through the medium of a shipowners' bank or trust. The shipowners agreed that 90

[7] Further requirement concerning construction of new vessels for the Allies was waived by mutual consent.

per cent of this tonnage was to be constructed in German shipyards, for the purpose of the Government was to bring about the recovery of shipbuilding as well as shipping. Although the payments made constitute a construction bounty, the plan is not believed to indicate that Germany has reverted to general bounties or subsidies as a permanent policy. The adoption of the plan was brought about by an extraordinary emergency during which practically the entire effective, privately owned seagoing tonnage of the nation was lost or delivered to the Allies by the German Government.

The pre-War merchant marine policy of Germany has had to be modified and for the most part abandoned as a direct result of the War. The loss of the German colonies necessarily brought the payment of colonial subventions to an end. To what extent mail subventions may be paid to German lines in the future has not thus far been determined. The use of special export railroad rates as a method of aiding German steamship lines was prohibited in the Treaty of Versailles and the control of the through immigrant traffic was also specifically prohibited. The former policy of free shipping was modified to the extent that 90 per cent of the vessels financed by the Government under the construction bounty agreement of 1921 are required to be built in German yards.

Government Aid in Japan

Japan is another foreign country whose maritime policy merits consideration both because of the importance of Japan in world shipping and of the extent to which the Government has been instrumental in promoting the Japanese merchant marine. Under pre-War conditions the gross tonnage of Japan advanced from 143,700 tons gross in 1890 to 1,708,000 tons in 1914, and since then it has advanced to 4,033,304 in 1927. Some of the increase before 1914 was due to the forced acquisition of vessels for use as transports during the wars with China and Russia, and reparations added 6 steamers[8] to the Japanese merchant fleet following the European War; but the great increase in tonnage that has occurred was due to the efforts of the shipping

[8] This tonnage was more than exceeded by submarine losses.

and shipbuilding interests of Japan and to those of the Government.

Although Japanese shipping was favored by low operating costs, by the insular position of the nation and by a nation-wide desire to develop Japanese industries and commerce, the Government for many years granted direct aid to shipping and shipbuilding. During the period immediately preceding the European War the Government paid over $6,800,000 annually in direct subsidies and subventions, or more in proportion to total merchant tonnage than was paid by any other Government. A general policy of granting construction bounties and also general navigation bounties was begun in 1896, both forms of general subsidy, however, being reduced in 1910. Construction bounties were reduced from a maximum of $799,000 in 1908 to less than $600,000 following the act of 1910. General navigation bounties reached a maximum of $1,992,600 in 1899. In 1910 the general navigation bounty plan was abandoned in the European, Australian, and North and South American trades. Vessels operating to those continents and receiving bounties under the old act were permitted to continue receiving them until the expiration of their contracts in 1914, but in that case they were barred from subsequently benefiting under the act of 1910. The general navigation bounties paid in Japan in 1910 after the new law became effective amounted to less than $900,000 annually.

The original act of 1896 also specified 15 subsidied routes over which subventions were paid and in 1899 a policy of depending more largely upon special subventions was adopted. The amounts paid in particular trades gradually advanced from $269,000 in 1898 to $4,219,700 in 1909. The new subsidy act of 1910, which reduced general navigation bounties, further increased the subventions to lines operating over special routes to nearly 6,000,000 dollars annually. These payments are also made under the navigation bounty act of 1910, but they are to be distinguished from general navigation bounties in that they are paid to lines operating in particular trades.

Further direct aid was granted in the form of small payments as bounties for training seamen, as lifeboat bounties, and as

fishing bounties. Indirect aid was provided by excluding foreign vessels from the Japanese coasting trade. The registration of foreign-built vessels was permitted, but such vessels were subjected to import duties. The free shipping policy was restricted in the tariff laws because the Government desired to promote the shipbuilding industries. It did not, however, exempt foreign shipbuilding materials from the payment of import duties for the promotion of the steel industry also constituted a part of its general program.

The European War affected Japanese shipbuilding and shipping favorably and brought about important changes in the Government's policy of direct aid. "Within two years submarine warfare developed Japanese shipbuilding and Japanese shipping at sevenfold the rate of its increase in twenty years under a carefully devised bounty project. The purpose of the shipbuilding bounty law of 1896 was being accomplished by other causes, and in 1918 the Japanese Government suspended its operation; so far as can be ascertained, Japan has no intention of putting it back into effect in the near future."[9] In order to further the Japanese steel industry and also to make more certain an adequate supply of shipbuilding materials the Government in 1917 began a policy of exempting the steel industry from various taxes and also to provide bounties for a number of domestic steel products. In 1921 these steel bounties were limited to steel products used in the construction or repair of naval and merchant vessels.

The navigation bounty policy of Japan was also changed. The shift from general bounties, available to all vessels conforming to the conditions prescribed in the law, to more definite payments to qualified vessels operating in particular trades had been largely accomplished before the War. In 1920-21 the Japanese Diet adopted the even more specific policy of authorizing a system of postal subventions. Payments continue to be made under the general navigation bounty act to qualified vessels operating in particular trades, but under this new act a system of specific mail subventions was applied to the lines operating to Europe,

[9] Bureau of Foreign and Domestic Commerce, Government Aid to Merchant Shipping (1925), p. 413.

Australia, and Seattle. The bearing of this upon future policy has not been fully established, but "the purpose seems to be to eliminate oversea navigation bounties and to substitute a system of mail payments, similar in some respects to the appropriation for foreign mails by the United States but confined to Japanese ships. . . ."[10] Permanent direct aid to steamship lines is provided for partly by the general navigation act and partly by the postal subvention act, and the total amounts expended, except in 1921 when they were greater, are substantially as they were in 1914. In addition, however, an extraordinary budgetary amount has been placed to the Government's credit to be used as navigation bounties when necessary for the maintenance of shipping services during the period of transition from navigation bounties to postal subventions.

Italian Merchant Marine Policy

The growth of Italian shipping since the War has been rapid. Before the War it grew but slowly, but in 1927, it amounted to 3,483,383 tons gross and ranked fourth in world shipping.

The Italian Government prior to 1914 in addition to various indirect aids, was expending each year about $6,645,000 in specific subventions, and in general shipping and shipbuilding bounties. As in France a tendency to change from general shipping subsidies to specific subventions for selected steamship lines had become noticeable. In 1914 the postal and trade subventions accounted for $4,995,000. Twelve Italian companies were receiving special payments for maintaining 76 different line services. Several Italian lines, before the War, were also receiving subsidies from the Government of Brazil for the maintenance of services to that country.

Italy did not adopt the War policy of government ship construction. Instead, it increased its payments to subsidized lines for a time, and, when in 1918 most lines gave up their subventions, the Government chartered their vessels and operated them on its own account. This chartering plan was in effect a shipbuilding bounty for it provided that Italian-built vessels registered between January 1, 1920, and June 30, 1921, and

[10] *Ibid.*, p. 416.

foreign-built vessels registered before December 31, 1920, should be entitled to a government charter for two years, and that their excess war cost would be amortized by the Government. The decree of 1918 also included a tax exemption policy, and admitted most shipbuilding materials free of duty. War losses were more than balanced by new construction in Italian shipyards, by purchases abroad, and by the acquisition of enemy tonnage.

After the signing of the Armistice, a decree of 1919 continued the tax exemption and free duty policies, but it announced a plan designed to end the bounty system within two years. A modified system of government payments to compensate shipowners for excess war construction cost was to be substituted. A later decree of 1921, however, authorized the renewal of a modified construction bounty plan. Some of the enemy vessels seized during the War and those awarded to Italy as reparations had been sold previously, and the decree of 1921 authorized the Government to sell the remainder either on private terms or at auction. During the following year it was announced that in the future expenditures were to be reduced. The budget for 1922-3 provided an amount to be used for the purpose of satisfying the obligations that had been assumed under the chartering plan, another to be used for the maintenance of the lines that had before the War been subsidized by the Austro-Hungarian Government, and a third to be applied to voyages, by special requisition, of steamers subsidized by the Italian Government.

When the Mussolini administration took charge of Italian affairs in October, 1922, this budget was displaced and a general policy was announced for the future. A fourfold plan became effective in 1923: (1) An appropriation was authorized for expenditure on shipbuilding bounties and other forms of relief until the end of 1926, when the entire construction and navigation bounty system was to terminate. The amount authorized to accomplish this purpose was but half of that proposed by former administrations. (2) Tax exemptions were continued for several years, shipbuilding materials were exempted from customs duties, a bounty was allowed for the materials produced in Italy; and after 1926, marine engines and machinery were ad-

mitted free of import duties. (3) Arrangements were made for the transfer to private ownership of the several local steamship lines which the Government had for some years owned and operated in connection with its government railroad system. (4) The pre-War policy of specific subventions to selected Italian lines was retained as the mainstay of Italy's policy of direct aid to shipping. The subvention plan, however, was reorganized by the consolidation of services and revision of contracts. Under the plan made effective in 1923 certain voyages to Shanghai, Hongkong, Singapore, Calcutta, Bombay, Zanzibar, and ports in Italian Somaliland and Eritrea are subsidized, but the subvention system as a whole has been confined mainly to the Mediterranean world. At current rates of exchange total payments authorized under 19 consolidated subvention contracts are reported to be about $6,625,000 annually.[11]

The merchant marine policies of other foreign countries, before and following the War, have been described by the United States Department of Commerce in its revised report on "Government Aid to Merchant Shipping." No one of them confines its forms of government aid to a single plan or method. Varying conditions and requirements and varying opinions as to shipping and shipbuilding policy, induce each Government to grant such direct and indirect aid as it believes necessary to attain whatever national ambitions it may have with respect to shipbuilding and a merchant marine. American conditions and requirements should similarly determine the merchant marine policy of the United States, but it would be shortsighted in the extreme to disregard the lessons that may be learned from the experience of other maritime nations.

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CHAPTER LVI

THE AMERICAN MERCHANT MARINE AND SHIPPING POLICY

A DISCUSSION of shipping policy may well begin with a brief review of the facts regarding the past and present status of the merchant marine. The present unsatisfactory condition of American shipping in the foreign trade was occasioned by the post-War depression of international commerce that began in 1921, and although there has been a substantial revival of international commerce, American shipping has not been relieved of its difficulties.

The American Merchant Marine

The tonnage registered under the American flag in the foreign trade increased for many years before the beginning of the Civil War. In 1861 it reached a maximum of 2,496,894 tons gross register and it carried 65.2 per cent of the value of the foreign trade of the United States. During earlier years the proportion of foreign trade carried in American vessels frequently had been from 80 to over 90 per cent of the total value of imports and exports.[1] At the close of the Civil War the registered tonnage was nearly 1,000,000 tons less than at the opening of that great struggle. Until 1880 the figures averaged about 1,500,000 tons; but a decline then began that continued with but occasional interruption until 1898, when a minimum of only 726,213 tons was reached. The Spanish-American War of that year, and the demands of our increased commerce, brought the figures above 800,000, and the subsequent increase raised the total to 943,750 in 1905. The increase, however, proved to be but temporary; by 1910 the registered tonnage had again fallen to 782,517. Another advance then occurred; 1,066,288 tons be-

[1] See U. S. Bureau of Navigation, Merchant Marine Statistics (1926), p. 68.

ing registered under the United States flag in the foreign trade on June 30, 1914. Nevertheless, at the outbreak of the War in Europe the registered merchant tonnage of the United States engaged in the foreign trade was but two-fifths what it had been 54 years earlier, and it carried but 9.7 per cent of the value of the combined imports and exports.

Meanwhile the enrolled and licensed gross tonnage of the United States engaged in the coastwise trades[2] steadily increased, and after 1831, exceeded the registered tonnage engaged in the foreign trade. This was the result of the Government's policy of excluding foreign vessels from coastwise shipping.

The causes of the decline of American shipping in foreign commerce may be summarized as follows:

1. The change from wood to iron and steel in hull construction, and from sailing vessels to steamers, which became extensive after 1850, resulted in lower construction costs in British than in American shipyards. Until 1912 and 1914, as an aid to American shipbuilders, foreign-built vessels were excluded from American registry. While the purpose of this policy was to promote the shipbuilding industry, its actual effect was to raise the capital costs of shipowners operating American vessels in the foreign trade to a level substantially above the capital costs of their foreign competitors. The law against American registry of foreign-built ships burdened American shipping and did not aid American shipbuilding.

2. While foreign governments were to an increasing extent aiding vessels of their nationals, the United States in 1858 withdrew the subsidies which it had been granting since 1845. Three short-lived subsidies to shipping were granted after the close of the Civil War. The next legislation was the Mail Contract Act of 1891.

Congress burdened American shipping in various ways after the Civil War. Vessels that had been transferred to foreign flags during the war were refused readmission to American registry; the heavy war revenue taxes on shipping were not

[2] The term "coastwise trade" also includes the domestic trade of the Great Lakes.

withdrawn until 1868; shipbuilding materials imported to be used in constructing and equipping wooden vessels for the foreign trade were not exempted from import duties until 1872; and it was not until 1890 that Congress exempted from duty materials to be used in constructing iron and steel vessels for use in international commerce. The neglect of the American navy for twenty years after the Civil War, moreover, deprived the shipbuilding and maritime interests of the aid resulting from naval construction. Government aid was for many years limited largely to indirect aid to shipping as a whole—foreign as well as American.

3. The effect of the Civil War upon the American deep-sea merchant marine was disastrous, because the shock of the war came at a critical epoch in the evolution of shipping interests, at a time when American shipbuilders and shipowners needed support and assistance in tiding over the period of transition from sail to steam and wood to iron and steel. Instead of receiving aid to enable it to meet foreign competition, American shipping was for the 4 years from 1861 to 1865 heavily taxed, and was either idle for want of traffic to carry, or subject to capture by Confederate cruisers.

4. Had the policy of free admission of foreign-built ships prevailed there would have been no assurance that the registered merchant marine would have been increased or even maintained after the Civil War. Shipping under the American flag in the foreign trade has been handicapped by operating costs substantially higher than those of foreign vessels, and this continues to be true at the present time. The largest operating handicap has been the cost of labor. The watch officers of American vessels were required by law to be American citizens, and they demanded and usually received higher pay than did the officers of foreign vessels. The crews of American vessels likewise receive higher wages than are paid men on foreign vessels, even though the seamen on American ships are not required to be American citizens. From 43 to 50 per cent of the crews of American merchant vessels are citizens of the United States, including both native born and naturalized, and they set the scale of wages paid on American vessels. Foreign vessels have

the advantage of lower wages even in the labor markets that supply both American and foreign vessels.

The labor cost incurred in the operation of a vessel depends not only upon the rate of wages, but also upon the number of officers and men on board. The number of men in the case of American vessels is regulated in part by statute, and in part by the United States Steamboat Inspection Service,[3] and the requirements are somewhat stricter than those of Great Britain. The cost of food and supplies for the crew is a large factor in the labor cost, and it is higher for American than for most foreign vessels. The legal requirements are only partly responsible for the higher subsistence costs incurred on American vessels; larger quantities of food than are legally required are frequently provided as a means of attracting and holding competent crews. A higher standard of living is maintained on American than on foreign vessels.

The handicap of higher labor costs particularly on Pacific routes is increased unnecessarily by the provisions of the Seamen's Act of March 4, 1915, concerning the percentage of the crew who shall be "able seamen," and the provision that 75 per cent of the crew shall understand the language in which the orders are given makes it difficult for American to compete with Japanese vessels.

Operating costs are not, however, to be judged solely by the outlay for wages and subsistence. Until 1915, American vessels were handicapped somewhat by the measurement rules of the United States in accordance with which gross- and net-register tonnage was ascertained. The inspection requirements of the United States Steamboat Inspection Service also are stricter than those of Great Britain and sometimes make necessary expensive alteration costs not incurred abroad.

Until 1890 steaming coal was cheaper in Great Britain than in the United States; but since then the price of bunker coal has shifted in favor of the United States and the increasing use of fuel oil has had a favorable effect upon both fuel and labor costs. There are many important operating costs that are not any higher on American than on foreign vessels navigating the

[3] See Chapter LIV.

same routes, and it is erroneous to judge operating costs as a whole by the wide differences in wage and subsistence costs commonly referred to. Outlays for coal, fuel oil, tonnage dues, pilotage, port services of various kinds, stevedore services, towage, etc., are no higher for American than for foreign vessels, and on particular voyages some of these costs may at times be in favor of American vessels.

The total operating costs under the American flag during the years preceding the outbreak of the European War probably exceeded those of comparable foreign vessels by 5 to 15 per cent. This unfavorable operating differential was, however, one of the basic reasons for the decline of our deep-sea merchant marine.

5. Economic conditions in the United States were unfavorable to shipping in the foreign trade. During the latter half of the nineteenth century the energy of the American people and their available capital found highly profitable employment in settling the West, in developing agricultural and forest resources, in opening mines, and in providing the wide territory of the United States with transportation facilities. These problems of internal development took the young men of the eastern states toward the West and away from the sea; while the rapidly growing manufacturing industries in the East gave both native Americans and the immigrants from abroad increasing opportunity to secure remunerative employment.

In a young and rapidly growing country, such as the United States was during that half century, capital as well as labor was scarce, and the domestic industries and trade readily absorbed all the capital the people of the United States could command. The handicaps of the American merchant marine mentioned above were only partly responsible for the flow of capital away from international shipping. If the financial returns of the American registered marine were too small to attract American capital, this was also true—although in a lesser degree—of the financial returns of merchant vessels operating under foreign flags. It was not until the close of the last century that any considerable amount of American capital was invested in foreign vessels.

The European War promptly increased the registered ton-

nage of the United States. Not only did the shortage in world tonnage and exorbitant ocean freights induce coastwise vessels to transfer to the foreign trade, but it became desirable to purchase foreign vessels and to transfer much American-owned foreign tonnage to the neutral flag of the United States. When the United States entered the War, the Government undertook a large construction program. The registered merchant fleet increased to 2,185,008 in 1916, and later when the construction program was completed the tonnage became large. A maximum of 11,077,398 tons gross register was reached in 1921. This tonnage was largely for war purposes, and there was a decline to 7,309,146 tons in 1927. Some American vessels have been sold to foreign concerns and transferred to foreign flags, more have been transferred to the coastwise trade. During the War the enrolled tonnage declined temporarily, and from 1919 to 1922 it was smaller than the registered tonnage operating in foreign commerce, but since 1920 it has increased from 6,357,706 tons gross to 9,432,869 in 1927. Declining freight rates and severe foreign competition after 1920 caused many steamship lines to avail themselves of the protection granted by law to coastwise shipping.

The tonnage now registered under the American flag, although large, is declining both relatively to the tonnage of other countries and in actual amount. The value of United States imports and exports carried in American vessels declined from 42.7 per cent in 1920 to 34.1 per cent in 1927; and the entrances and clearances of American vessels at American ports in the foreign trade during this period declined from 51 to 37 per cent of the total of all vessels. Much American registered tonnage is idle because of a lack of sufficient cargoes and of the low general level of ocean freight rates. On June 30, 1926, 1,082 seagoing vessels of the United States, having a gross-register tonnage of 3,922,394 tons were inactive.[4] A large share of these idle vessels, constructed during the World War, are not well adapted to present trade.

The condition of the American merchant marine in the foreign trade should improve when international commerce fur-

[4] U. S. Commissioner of Navigation, Annual Report (1926), p. 3.

ther recovers and when ocean freights begin to advance, but its future status will also depend upon the nation's shipping policy. Capital costs in the future should not be unfavorable because the free shipping policy now prevails, and general economic and investment conditions are less adverse to American shipping than in the past, but an unfavorable operating differential continues to be a handicap. The greater use of internal combustion marine engines and of oil instead of coal as fuel for steamers, the improvement of freight-handling methods, the making of more efficient port arrangements abroad, and greater attention to efficient management and operating economies may reduce, but can hardly overcome, this differential in the near future. A constructive national shipping policy is necessary.

General Aid to Shipping

Public aid to ocean shipping in the United States is of two general types: (1) aid to navigation and shipping as a whole, foreign as well as American, and (2) assistance to the national merchant marine. General aid to all shipping will be discussed first.

Legislative and administrative aid to shipping has long been granted. Since 1802, when the first small Federal appropriation for public piers on the Delaware River was made, over one billion dollars has been appropriated for the improvement of rivers and harbors. The construction of breakwaters, the excavation of channels, the dredging of harbors, the establishment of lines marking the limit beyond which piers and wharves may not be extended from the shore into harbors, and all other necessary engineering work connected with laying out, improving, and maintaining ports come under the Secretary of War and the United States Engineers. The Corps of Engineers also makes investigations, surveys, and recommendations to Congress concerning proposed river and harbor improvements. Federal aid has in some instances been made contingent upon the construction of public terminal and other permanent improvements by states and municipalities.

The improvement of harbors assists ocean navigation and trade by increasing the safety of navigation and the profits

of the service. Safety is also promoted in many other ways. The Department of Commerce, through the Bureau of Lighthouses, constructs, inspects and operates lighthouses, light vessels, beacons, buoys, sea marks, and other installations designed to aid and protect navigation, and tests apparatus and marks channels leading to the harbors on the seaboard and the Great Lakes. Through the Coast and Geodetic Survey, the Department prepares charts and maps of the seacoast of the United States and its dependencies, and of the coasts of some foreign countries. The Bureau of Lighthouses and the Coast and Geodetic Survey jointly issue an important weekly publication known as *Notices to Mariners*. The Steamboat Inspection Service, by inspecting vessels, boilers and equipment, and the Bureau of Navigation of the Department of Commerce by administering the navigation laws, also promote the safety of navigation, but their work from the standpoint of the vessel owner is mainly regulatory.

The United States Coast Guard of the Treasury Department has charge of both the revenue cutter and the life-saving services of the Government. The work of the former is regulatory in part, but the Revenue Cutter Service is also concerned with safety of navigation. Revenue Cutters are called upon to assist vessels in distress, to remove derelicts and other obstructions to navigation, save life and property at sea and take part in the international ice patrol off the Grand Banks, and the officers of the Service assist the life-saving corps by instructing, drilling, and inspecting crews and by constructing stations. The life-saving service through its many stations maintains strict watch and patrols the coasts at night or during storms, warns vessels of impending peril, saves lives and property, recovers missing buoys and relights extinguished beacons.

The dangers to which shipping is exposed from storms have also been largely reduced by forecasts and storm warnings issued by the Weather Bureau of the Department of Agriculture. The Hydrographic Office of the Navy Department increases safety of navigation both for vessels of the navy and of the merchant marine by providing accurate nautical charts, sailing directions, and manuals of instruction. It broadcasts by

radio important information to mariners and publishes frequent charts and bulletins which locate fixed and temporary dangers, indicate the usual path followed by storms, the relative amount of fog that may be met, the direction and force of winds, the direction of ocean currents, the variation of the magnetic needle and the safe courses to be followed during the different seasons of the year. The United States Naval Observatory publishes the *American Ephemeris* and *Nautical Almanac* containing astronomical data that are useful in navigation; it tests the accuracy of navigation instruments, and establishes standard time and differences of longitude.

The United States Government also aids ocean shipping by reducing steamship expenses and promoting foreign commerce. To whatever extent it succeeds in accomplishing the latter, it provides additional cargoes and enhances the profits of ocean shipping. Besides improving rivers and harbors and promoting safety of navigation the Government assists commerce in many other ways:

1. It has constructed and now operates the Panama Canal to serve the commerce of the United States and of the world.[5]

2. The Department of Commerce, through the Bureau of Foreign and Domestic Commerce, issues statistical reports and publications containing information as to trading conditions, trade opportunities, foreign import duties and tariff regulations, packing requirements and practices, ports and terminals, navigation laws, foreign steamship subsidies, directories and indices of foreign and American trading firms and other matters of value to vessel operators and to importers and exporters. The Department maintains district representatives at various cities in the United States, it coöperates with American business men and commercial organizations, it sends commercial attachés and other representatives abroad to promote foreign trade, and it aids commerce and shipping indirectly through the Bureau of Standards, the Census Office, the Bureau of Fisheries, the Bureau of Mines, and the Patent Office. The Ship Mortgage Act of 1920 is administered by the Secretary of Commerce.

3. The Department of Agriculture also aids foreign trade

[5] See Chapter XLIII.

through the activities of some of its bureaus. The Bureau of Animal Industry supervises the exportation of meat products and livestock, a function that is chiefly regulatory; but by creating confidence, it widens the market in foreign countries. The Bureau of Chemistry jointly with the Treasury Department supervises imported foods and drugs, primarily for purposes of regulation, but by so doing aids legitimate trade. The Bureau of Agricultural Economics publishes crop and market information and thereby helps the marketing of agricultural products. The Office of Coöperative Extension Work, Office of Experimental Stations, Bureau of Public Roads, Bureau of Soils, Forest Service, Bureau of Plant Industry, and Bureau of Dairying, each contributes directly to the prosperity of the agricultural or forest industries and indirectly to the cargoes carried by vessels in domestic and foreign commerce.

4. The Department of State aids trade through the Consular and Diplomatic Services, now coördinated in the Division of Foreign Service Administration under a Foreign Service Personnel Board. The Consuls regulate and also assist shipping abroad by certifying to statements covering American wares entered abroad in bond or returned to the United States; by receiving ship's papers when American vessels are in port; issuing bills of health to vessels clearing for the United States; making reports of health conditions; supervising the shipping and discharge of American seamen abroad; providing relief and transportation to destitute seamen; settling disputes between officers and seamen; and taking charge of wrecked vessels and cargoes. The Consuls prepare trade reports that are edited and published by the Bureau of Foreign and Domestic Commerce of the Department of Commerce; they render assistance to American exporters and importers; they protect American citizens and property abroad, and in countries where the United States has extraterritorial rights they perform judicial functions. The diplomatic representatives of the State Department also protect citizens and property abroad, especially during times of war, but are especially important in the general promotion of commerce because of their services in the negotiation and administration of commercial treaties and in safeguarding

the general political and commercial welfare of the nation in all of its relations with foreign governments. In the State Department at Washington there are divisions dealing separately with Far Eastern, Latin-American, Mexican, Near Eastern, Eastern European, and Western European affairs. There are also an Economic Advisor and a Division of Passport Control.

5. The Treasury Department both aids and regulates commerce through the Bureau of Public Health. The Department issues circulars stating the value of foreign money, and jointly with the Federal Reserve Board, supervises the banks that finance much of the country's foreign commerce.

6. The Post Office Department provides the international mail services and makes mail payments to ocean carriers either on the basis of the amount of mail carried or in accordance with special mail contracts.

7. The Department of Labor promotes trade and shipping indirectly through its studies of wages, prices and costs of living in foreign countries.

8. The War Department, in addition to the previously mentioned activities of the Corps of Engineers and of the Inland Waterways Corporation, which operates barges on the Mississippi and Warrior Rivers, performs commercial functions in connection with the insular possessions of the United States. The Bureau of Insular Affairs publishes statistics of the imports, exports, shipping, and immigration of the Philippine Islands and Porto Rico. Congress and the Philippine Legislature legislate concerning commercial matters; and under a Governor-General, who reports to the Secretary of War, there are various executive bureaus of the Philippine Government concerned with the development of the commerce and shipping of the Islands. The trade of Porto Rico is similarly furthered by the Governor of Porto Rico, who reports to the Secretary of War.

9. The Department of Interior supervises the general commercial affairs of Alaska and the Hawaiian Islands, and the construction and operation of the government railway system in Alaska. It also contains the Geological Survey, the services of which have commercial value in connection with the production and commerce of mineral products.

10. Several government commissions and agencies are concerned with commerce. The Federal Trade Commission through its Export Division administers the Webb-Pomerene Act. The Tariff Commission is charged with the important duty of providing the information needed in applying the administrative trade provisions of the tariff act. The Pan-American Union, which is an international organization maintained jointly by the United States and other American republics, has done much to promote friendly relations and commerce between the republics of the Western Hemisphere. The National Museum maintains commercial and industrial exhibits similar to those of a commercial museum. The Interstate Commerce Commission, although chiefly regulatory in character, has on numerous occasions aided ocean shipping through its activities in connection with import and export railroad rates, port differentials, through export bills of lading, ocean terminal charges, facilities, rules and practices, the business relations between rail and ocean carriers, and in other ways that were mentioned in discussing the regulation of rail and ocean carriers. The Shipping Board administers the Shipping and Merchant Marine Acts and the Board is expressly directed by Congress to "keep always in view this purpose and object [the promotion of the merchant marine] as the primary end to be attained."[6]

That the present attitude of Congress with respect to foreign trade and ocean shipping is more favorable than it has been in the past is shown by recent legislation. Tariff legislation since 1909 has aimed to promote foreign as well as domestic commerce, although the methods embodied in the several tariff laws[7] have differed. The present general tariff act, that of 1922, conferred important administrative powers upon the President with respect to discriminations by foreign governments. The Webb-Pomerene Act of 1918 was expressly intended to promote the export trade by authorizing competitive American exporters to organize joint export associations or companies for the coöperative exportation of their wares to foreign markets. The Edge Act of 1919 similarly aims to promote foreign trade

[6] Merchant Marine Act of 1920, enacting clause.
[7] Tariff Acts of 1909, 1913, 1921 and 1922.

by making possible the creation of additional financial machinery for the extension of foreign credits and for the current financing of foreign transactions.

Government Promotion of the American Merchant Marine

The policy of the United States Government with respect to the promotion of the American merchant marine is less definite than its policy of aiding ocean shipping in general. There are wide differences of opinion concerning the amount and the kind of aid that should be granted to American ocean carriers. The more favorable attitude toward foreign trade and ocean shipping is gradually creating support for a policy of government aid for the American merchant marine but as yet the opposition to direct government aid has prevented the adoption of a constructive policy.

Some indirect aid is now given American shipping in the foreign trade, and as these measures have been considered in discussing shipping regulation they need be only briefly referred to.[8] In 1912 and 1914 the registry laws of the United States were so changed that American citizens or corporations may now purchase vessels abroad and register them under the American flag for use in the overseas trades. The general navigation laws relative to the welfare of crews on board American vessels, although they are primarily regulatory, are also regarded as an aid in the sense that they make employment more attractive and to that extent may make easier the manning of a large fleet of American vessels. The national measurement rules were revised in 1915 and brought more nearly into line with those of competitive foreign countries.[9] The tonnage tax rates of the United States, although uniform, favor American vessels. The general rate is 6 cents per net-register ton, but vessels entering from Caribbean ports are required to pay but 2 cents per ton[10]; and

[8] See Chapter LIV.

[9] See Chapter XLII.

[10] Maximum limit in both cases is fixed in proviso that the tax is not levied on more than five entries at the same rate during any one year. No tax is collected from vessels arriving otherwise than by sea from foreign ports at which equivalent taxes or dues are not imposed on American vessels.

the larger share of the trade between the United States and these ports is carried in American vessels.

Some provisions of the Shipping Act and the Merchant Marine Act have been helpful to American shipping, others have not. Ocean conferences, agreements, and understandings are made lawful and the use of deferred rebates, fighting ships, and other unfair competitive methods are prohibited. The Shipping Board has power to make regulations not in conflict with law, "to adjust or meet general or special conditions unfavorable to shipping in the foreign trade, whether in any particular trade or upon any particular route or in commerce generally and which arise out of, or result from foreign laws, rules, or regulations or from competitive methods or practices employed by owners, operators, agents or masters of vessels of a foreign country." Owners of American vessels registered for the foreign trade are, subject to certain conditions, granted special treatment in the payment of war profits, excess profits, and income taxes.[11] By Section 26 of the Merchant Marine Act, American cargo vessels are authorized to carry not to exceed 16 passengers without being treated as passenger vessels under the inspection laws and regulations of the Government, this privilege being granted to cargo vessels of foreign nations only in case like treatment is extended to American cargo vessels. Section 18 prohibits the sale, transfer, or mortgaging or chartering of vessels purchased from the Shipping Board or documented under the laws of the United States to foreigners or the registering of such vessels under foreign flags, without prior approval of the Board, but the value of this provision is doubtful. The preferred mortgage act contained in Section 30 is intended to afford financial assistance to American vessels as well as to regulate their mortgages and liens.

Sections 28 and 34 of the Merchant Marine Act provide for two forms of indirect aid to American shipping for which much was claimed at the time of its enactment, but neither section is operative. Section 28 was intended to limit the application of railroad export and import freight rates to freight moving from or to the United States in American vessels. The enforce-

[11] Section 23 of Merchant Marine Act.

ment of the provision is contingent upon certification by the Shipping Board to the Interstate Commerce Commission that adequate shipping facilities are afforded by American vessels. The section has not been enforced, and it is doubtful whether its enforcement would in fact benefit the American merchant marine. But few special export rail rates and no special import rail rates of importance are in effect at Baltimore, Philadelphia, and New York, and if Section 28 were enforced many foreign vessels might shift to these ports, with the result that comparatively less through export and import traffic would move by way of the ports that under the present domestic railroad rate structure are granted export and import rates. A further possibility is that some strong and well-established foreign lines might compete violently at the ports where special export and import rail rates are in effect, going so far perhaps as to cut their rates so as to absorb the railroad rate differential. If existing rate structures were changed by also applying export and import rates at the basic rate ports of the North Atlantic seaboard, the foreign lines would still benefit by competing principally at these ports, for there the rate differential would necessarily be less than at other ports, the very purpose of the lower rail import and export rates being to favor the use of the South Atlantic, Gulf, and Pacific ports. Foreign governments would doubtless easily find a way to discriminate against American shipping and commerce to offset the discrimination against their ships. Section 28, moreover, is opposed to the spirit of the Tariff Act of 1922, which seeks to minimize trade discriminations.

By Section 34 of the Merchant Marine Act Congress provided for the possible return to the policy of lower import duties on goods carried in American flag vessels that had been applied during the early years of our national history, but had from 1815 to 1828 been displaced by a policy of shipping reciprocity. The Tariff Act of 1913 contained a clause providing that a discount of 5 per cent on all import duties shall be allowed on products imported in American vessels. A proviso to the effect that this clause was not in any way to impair existing commercial treaties, however, rendered it inoperative because our

treaties with most maritime countries prohibited discriminating import duties. Indeed, the Supreme Court held the provision to be invalid. In 1920 Congress, in Section 34 of the Merchant Marine Act, directed the President to give notice to all Governments parties to such treaties of the termination of so much thereof as imposes such restrictions on the United States. The right of the United States to impose discriminating import duties on imports arriving in foreign vessels and discriminating tonnage duties on foreign vessels was not to be restricted. Three successive Presidents, however, have held that Section 34 is invalid. It is fortunate that such is the case. The enforcement of the section would probably lead to foreign retaliation against American vessels, and as the export trade of the United States exceeds the import trade, the American merchant marine in the event of retaliation, would lose more than it would gain by discriminating duties. The excess of exports is particularly heavy in our trade with Europe.

Aid that is substantial and direct is embodied in the various provisions of the Shipping and Merchant Marine Act governing the sale of Shipping Board vessels and other properties. The ultimate sale of Shipping Board vessels to private American citizens is intended by the Merchant Marine Act and is the policy of the Board. Congress directed the Board in disposing of its vessels, to "take into consideration the prevailing domestic and foreign market price of, and the available supply of and the demand for vessels, existing freight rates and prospects of their maintenance, the cost of constructing vessels of similar types under prevailing conditions, as well as the cost of construction or purchase price of the vessels to be sold, and any other facts or conditions that would influence a prudent, solvent business man in the sale of similar vessels or property which he is not forced to sell." Sales of Shipping Board vessels to aliens is limited to such vessels as the Board deems "unnecessary to the promotion and maintenance of an efficient American merchant marine," and such sales may be made only in case the unnecessary vessels cannot be sold to American citizens. Further restrictions concerning sales to foreigners include the requirement of an affirmative vote of not less than 5 of the 7 members of the

Board and the recording of a full statement of its reasons for making such sales. The Board sells vessels at a low price.

Section 7 of the Merchant Marine Act directs the Shipping Board to determine what steamship lines should be established in the interest of the promotion of foreign and domestic commerce and of an adequate postal service, and then to sell or charter vessels to private American citizens for use in establishing and maintaining such lines; but it also stipulates that if sales or charters cannot be arranged on satisfactory terms the Board may operate lines until such sales or charters can be arranged or until it should appear that particular government lines cannot be made self-sustaining. Section 12 authorizes the Board to maintain and recondition government vessels, and until sold, to manage and operate them; and it provides that the Emergency Fleet Corporation of the Shipping Board shall continue to exist and to have authority to operate vessels. At present the Government's active vessels are operated mainly by agents in accordance with the terms of formal agreements, a smaller fleet is operated more directly through the United States Lines, and a few vessels have been chartered.

The policy of Congress, however, is to sell vessels to American steamship concerns for private operation, and steps were therefore taken to safeguard adverse effects that government operation may have upon private enterprise. Section 7 of the Act provides that government lines established in accordance with the terms of this section may not charge rates that are less than the cost of service, including an allowance for interest and depreciation. Section 18 further provides that vessels in which the Government is interested as owner or otherwise shall be subject to all laws, regulations, and liabilities governing merchant vessels; and Section 19 specifies that "no rule or regulation shall be established which in any manner gives vessels owned by the United States any preference or favor over vessels documented under the laws of the United States and owned by persons who are citizens of the United States."

During a period of five years from the enactment of the Merchant Marine Act of 1920, the Shipping Board was authorized to set aside each year out of the proceeds of sales and

operations, a sum not exceeding $25,000,000 as a "construction loan fund," and to make loans to American citizens to assist them in constructing vessels of the best and most efficient type. This provision was amended in 1924 so as to permit the making of loans for the outfit and equipment of vessels, already built, with the most modern, efficient, and economical engines, machinery, and commercial appliances.[12]

The direct aid extended to six American steamship lines by means of the mail payments provided for in the Merchant Marine Act was described in Chapter LIII and there it was also noted that general mail payments by the Post Office Department to American vessels are at a somewhat higher rate than to foreign vessels. The Merchant Marine Act provides that all mails of the United States shall, if practicable, be carried on American-built vessels documented under the laws of the United States and creates a general basis for increased mail payments. The increased use of mail payments for the promotion of the merchant marine, however, is contingent upon the appropriation of funds by Congress.[12]

Government aid is given to coastwise and inland shipping as well as to vessels registered for the foreign trade. Coastwise shipping is fully protected by the merchant marine policy of the Government: (1) Coastwise shipping is limited to vessels documented under the laws of the United States, and such vessels must with certain exceptions be American-built vessels. (2) Coastwise shipping is not subject to tonnage taxes, and the requirements of the general navigation laws are in several respects more lenient than in the foreign trade. (3) The United States Government in a special effort to provide inland shippers with river transportation, operates barge lines on the Mississippi and Warrior Rivers. (4) An effort has been made to control competition between coastwise carriers and to limit the efforts of the railroads when competing with coastwise carriers. The provisions of the Shipping Act with respect to the reduction of coastwise rates for the purpose of eliminating competitive coastwise carriers; and those of the Interstate Commerce Act with respect to railroad rates reduced for the purpose of eliminating

[12] For enlargement of loan fund and mail payments in the Merchant Marine Act, 1928, see Appendix, Titles III and IV.

water competition, with regard to the ownership of competing steamship lines by railroads, as to the making of physical connections between rail and water carriers, and concerning the stricter application of the long-and-short-haul principle in railroad rate-making have been discussed in earlier chapters.

Aid to the merchant marine is closely related to aid that is extended to marine insurance and shipbuilding.

1. Congress has taken steps to promote private marine insurance and vessel classification in the United States. The Merchant Marine Act declares that the antitrust laws will not in the future apply to associations formed for transacting marine insurance and reinsurance in the United States or abroad. No attempt is made to regulate insurance, but a marine insurance law for the District of Columbia was enacted as a suggested model for the legislatures of the states. Congress, in the Merchant Marine Act, moreover, endeavored to further the classification of vessels in the United States by providing for government representation on the executive committee of the American Bureau of Shipping and by directing government departments to recognize it as their classification agency.[13]

2. The shipbuilding industry of the United States is aided principally by limiting the coastwise trade to American-built vessels documented under the American flag, subject to certain exceptions defined in Section 22 of the Merchant Marine Act, and by the awarding of contracts to private shipyards for the construction, reconditioning, and repairing of government vessels. New government construction work is at present confined largely to vessels of the navy, but the reconditioning of Shipping Board merchant vessels is an added source of business for the shipbuilding industry. Several previously mentioned sections of the Merchant Marine Act, moreover, are designed to aid American shipbuilding as well as shipping. The provisions concerning exemption from taxes are contingent upon investments in new vessels to be constructed in American shipyards; the making of loans out of the Board's construction loan fund is limited to the construction of vessels in such shipyards; and the possible future payment of enhanced mail payments under Sec-

[13] For the government insurance fund created in 1928 since the above was written, see Appendix, Title V.

tion 24 of the Act of 1920 is restricted to American-built vessels. One former aid to the shipbuilding industry has been modified in the Tariff Act of 1922. This act permits the importation of foreign materials for shipbuilding with a refund of 99 per cent of the import duty, provided the vessels in which they are used are built for foreign owners or foreign governments; and it imposes a duty of 50 per cent upon repairs to American vessels in foreign shipyards, except such repairs as are made necessary by stress of weather or casualty, but it reversed the government's long-standing general policy of general exemption from import duties of imported materials used in constructing and repairing vessels in American shipyards.

Future Merchant Marine Policy of the United States

From the foregoing account it is readily seen that the Government's policy of regulating and aiding American shipping is the result of gradual additions and changes in legislative enactments and that it is still in a transition stage. The several parts of the combined policy are not in all instances consistent. Constant thought is being given to the future by Congress because of the growing realization that the maintenance of an efficient American merchant marine in the foreign trade is related closely to the nation's commercial and industrial prosperity.

Under normal conditions of peace the exporters of the United States are in direct competition with those of Great Britain, Germany, France, Japan, and other industrial countries, and ocean transportation facilities have an important bearing upon their relative abilities to sell and deliver their wares in the competitive markets of the world. Of hardly less vital consequence are adequate shipping facilities for the import trade of the United States. A growing share of both the export and the import trade is shifting to the non-European countries of the commercial world, and in the trade with these countries the shipping facilities of the United States have in the past been inferior to those of the principal foreign rivals. It was the realization of the vast future importance of this non-European trade that first directed the attention of the business world to

the need for a larger registered tonnage under the American flag. To depend primarily upon foreign ships in this competitive trade is shortsighted, not only because many of the concerns operating them also operate steamship lines between Europe and the identical foreign ports where markets are desired by the traders of the United States, but also because foreign vessels can hope for no direct assistance from the United States Government. They cannot provide a better service than the traffic and profits of the present moment or of the immediate future warrant. American steamship concerns on the contrary with a reasonable amount of public assistance, could provide ocean services that would assist foreign trade development as well as furnish a current means for transporting merchandise.

Except in times of emergency the trade between the United States and the principal countries of Europe can more readily depend upon foreign shipowners because it is to the advantage of these countries to maintain adequate steamship services at reasonable rates in this trade and also to maintain adequate European-American passenger services. The commercial advantages of a large American merchant marine for use in the European trade are therefore less compelling than in the competitive trades of the non-European world, but they are by no means negligible. The operation of efficient American lines across the North Atlantic Ocean will to that extent improve the freight and passenger service available to American trading firms and passengers.

There is, moreover, a relation between merchant shipping and the national defense, and this relation is particularly close in case of the larger and faster vessels operated on the North Atlantic route. There is the further fact that the freights and passenger fares paid to ocean carriers here as elsewhere by American citizens are an international financial factor of importance. The payment of large sums to European ocean carriers is, however, at present less disadvantageous than before the War. It may indeed be argued that in trades where foreign steamship services are adequate the payment of freights and passenger fares to European shipowners would be desirable because of

its advantageous effect upon exchange rates and upon the international balance sheet.

In adopting a merchant marine policy for the future the following general principles are deemed to be practicable and sound:

1. The general policy of selling the Government's merchant vessels to private American steamship concerns, provided for by the Merchant Marine Act of 1920 should be continued. Private ownership and operation of ocean carriers are preferable to government ownership as a permanent shipping policy. Should it become apparent that the more serviceable vessels of the Government cannot be sold to private American steamship concerns within a reasonable period of time at prices determined in accordance with the general limitations set in the Act, it may become desirable to revise the Act so as to authorize further price reductions.

2. The government operation of merchant vessels on routes where the export and import trade is obviously benefited by the services so afforded, until satisfactory arrangements can be made with private American steamship lines, seems unavoidable as a temporary policy. Competition between government and private American lines during the temporary period of government operation should in all trades be reduced to a minimum so as not to retard a permanent shift to private ownership and operation.

3. In trades where it has been satisfactorily demonstrated that American steamship lines are advantageous and that they are handicapped by unfavorable operating costs it is suggested that by individual contracts sufficient direct financial aid be granted to enable them to compete with foreign lines and to maintain efficient services. Such a policy is in accord with the experience of the principal foreign maritime nations and is more effective as well as more economical than a policy of paying general navigation subsidies or bounties. The general policy of enhanced mail payments to approved American steamship lines expressed in Sections 7 and 24 of the Act of 1920 should be made effective by adequate congressional appropriations. The mail payments so made should take the form of definite subventions paid

to selected lines, established and maintained for the purpose of providing adequate freight, passenger, and mail services.[14] Specific subventions should also be paid to carefully selected freight lines. Such payments are justified and indeed essential in the interest of the exporters and importers of the United States who at so many points encounter severe foreign competition. The maintenance of effective steamship line services to the competitive markets of the world is imperative. It does not follow that every line should be granted a subvention. Due attention to fuel economy, speed in operation, and prompt turn-around may have an important bearing upon the need of particular lines for direct government aid.

4. The navigation laws of the United States should be codified so as to make them less confusing, and provisions that needlessly burden American shipping should be modified or repealed. It would, for example, seem desirable to repeal Section 13 of the Seamen's Act of March 4, 1915, which needlessly burdens American shipping as regards language requirement, and which regulates the rating of able seamen, and, with unnecessary severity, restricts their employment. It would also seem desirable to recast the Federal steamboat inspection requirements so as to avoid undue delay and expense to shipowners. It by no means follows, however, that the entire excess operating costs of American vessels as compared with vessels of foreign registry can be overcome by a revision of the navigation laws. The difference is mainly due to economic reasons. Many of the requirements concerning the safety of vessels at sea, and the protection and welfare of passengers and crews may be defective in detail, but they are not likely to be repealed, for they originated in the American concepts of public welfare and standards of living. Something more than a revision of navigation laws is needed properly to maintain the registered merchant marine.

5. In order to encourage the construction of new vessels of the most efficient types, and also to assist the shipbuilding industry, it would seem desirable to increase the sums made avail-

[14] For increased mail payments and construction loans authorized in 1928, see Appendix, Titles III and IV.

able as construction loans to private American steamship companies in the Merchant Marine Act, and to make the terms of such loans somewhat more liberal.[14]

6. The merchant marine policy of the future should embody adequate regulation of the charges, services, rules, practices, and facilities of ocean carriers. The policy cannot, either in the interest of the shipping public or of the carriers themselves, be limited entirely to aid and promotion. The provisions of the Shipping and Merchant Marine Acts should be enforced, and where adequate protection to shippers and carriers is not afforded, carefully considered revisions and additions should be made. In doing so, the guiding principle of regulation of American vessels in the foreign trade should be not to handicap American shipping as compared with shipping under foreign flags.

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CHAPTER LVII

COASTWISE AND INLAND WATER TRANSPORTATION

THE nation's transportation system as a whole is interrelated, and in discussing railroads, highways, and ocean carriers, references have been made to coastwise and inland water transportation.[1] The main facts regarding transportation by water are briefly set forth in the pages that follow.

The volume of all the water-borne commerce of the United States for the year 1925, eliminating all known duplications, was estimated to have totaled 483,400,000 short tons of cargo, and of this, the overseas exports and imports comprised but 92,043,000 tons.[2] Although duplications may not have been fully eliminated it is clear that the net volume of coastwise and inland freight shipments by water is about fourfold the volume of our overseas foreign trade.

The importance of coastwise and inland transportation by water is not so apparent as that of rail-and-ocean transportation, and this is due to several facts: (1) The direct use of the coastwise routes, the Great Lakes and the inland waterways, is largely limited to particular regions and their ports, while railroads are to be found wherever traffic and physical conditions warrant their construction. The traffic sphere of coastwise and inland water routes is, however, extended to some extent by interchange connections with the railroad and highways. (2) Coastwise and inland waterways are utilized mainly by shippers of relatively few items of bulk traffic, the outstanding water-borne commodities being coal, iron ore, petroleum, grain, sand and gravel, lumber and logs, and stone. (3) Aside from harbor,

[1] See Part III; also Chapters XXVII, XXIX, XLI, L, LIV and LVI.

[2] Report of U. S. Chief of Engineers, Part II (1926), p. 5. Total estimated value of water-borne commerce in 1925, $23,946,000,000; value of oversea exports and imports, $8,848,236,000. Volume of Great Lakes foreign traffic, 16,504,000 tons; value, $409,738,000.

ferry, and excursion traffic of especially constructed craft, the passenger business of the coastwise and inland water routes is comparatively small and originates largely within regions adjacent to the ports.

Coastwise Transportation

Over one hundred million tons of domestic traffic move via the coastwise routes of the United States during the course of a year.[3] This total includes the intercoastal traffic moving between the eastern and western seaboards as well as the shipments between points on the same seaboard.

The tonnage between the Atlantic and Pacific seaboards of the United States has grown largely, although irregularly. From 2,500,000 tons in 1922 it suddenly advanced to 8,000,000 in 1923 and to 13,500,000 in 1924. Then, largely because of reduced oil shipments from Southern California, the tonnage receded to 9,500,000 tons in 1925 and was 10,862,000 in 1927, when it constituted 39 per cent of the entire canal traffic. In 1927, 16 regular steamship lines were engaged in the intercoastal service and were competing actively with the railroads for general cargo as well as for bulk commodities. There is an Intercoastal Conference of which most of the lines are members. The vessels employed are relatively large general cargo or combination freight and passenger vessels and are operated by companies well known in American shipping. In addition to the regular line services there are occasional sailings of tramp vessels, and in the lumber and oil trades, there are several privately operated industrial carriers.

Intercoastal freight traffic is divided very unequally, as between eastbound and westbound shipments, about 75 per cent of the cargo tonnage moving from the Pacific to the Atlantic and Gulf seaboards and but 25 per cent in the opposite direction. Two groups of commodities—petroleum and petroleum products, and lumber and lumber products—are of outstanding impor-

[3] Estimates of U. S. Board of Engineers for Rivers and Harbors (1925) —coastwise shipments and receipts, 210,180,121 tons. Total corrected for duplication of receipts and shipments, 105,090,000 tons valued at $6,252,859,000.

tance in eastbound traffic, but eastbound vessels also carry large quantities of canned goods, dried fruits, copper and manufactures of copper, wool, chemicals, hides and skins, flour, cotton textiles, and miscellaneous general cargo. The principal items of westbound intercoastal traffic are iron and steel manufactures, chemicals, and paper, but a wide range of miscellaneous commodities such as canned goods, tin plate, coal, machinery, tobacco, and textiles and other kinds of general cargo are being shipped to the Pacific seaboard through the Canal from the Eastern seaboards.[4]

Coastwise traffic as defined by law also includes the trade of the United States with Porto Rico, Alaska and the Hawaiian Islands, in which trades vessels are operated in accordance with practices prevailing in oversea services. Geographical location protects the vessels from railroad competition, and foreign ships are barred by Federal statute.

The coastwise passenger and general cargo lines plying between the larger Atlantic and Gulf ports, and between the larger ports of the Pacific seaboard carry both general cargo and bulk commodities. Bulk cargo, however, is the principal traffic on each of the three seaboards. On the Atlantic and Gulf coasts the largest item of traffic is coal, which is especially adapted to barge transportation, steam colliers having on several routes been displaced in large part by barges. Some of the main coal-carrying railroads regularly forward large quantities of coal in barges from their seaboard terminals. Lumber, shingles, railroad ties, and other timber products are shipped to the North Atlantic ports from the South in barges and steamers and to some extent in sailing vessels. Sand, stone and gravel, ashes, etc., are locally transported in barges. Oil is shipped from Texas to eastern refineries in tank steamers and barges. Other commodities of special importance in Atlantic and Gulf coastwise commerce are iron and steel manufactures, petroleum products, sugar, canned goods, phosphate rock, textiles, raw cotton, rosin, copper, coffee, chemicals of various kinds, sulphur,

[4] U. S. Shipping Board, Bureau of Research, U. S. Water Borne Intercoastal Traffic by Ports of Origin and Destination and Principal Commodities, Fiscal Year, June 30, 1926.

automobiles and machinery. This traffic is shared by line and bulk carriers, the lines also carrying much general cargo

The principal coastwise shipments on the Pacific seaboard are of timber, lumber and lumber products, petroleum products, canned goods, grain and flour, iron and steel and manufactures of iron and steel, automobiles and machinery, sugar, cement, salt, copper, fertilizers, sand and gravel, coal, ores and concentrates. The Pacific tonnage is about 25 per cent of the entire coastwise commerce. Bulk carriers and regular line vessels are operated on the Pacific coast, private industrial carriers being important in the lumber and petroleum trades. The "steam schooners" employed by the lumber interests of the Pacific are an interesting type of specialized ocean craft.

Some of the seaboard ports receive and ship goods over inland waterways; there is also local traffic other than ferry movements within the confines of the port; and intraport shipments between separate channels or parts of certain ports. Domestic traffic of this local character in 1925 was estimated to amount to 139,737,000 tons.

Traffic of the Great Lakes

Although the coastwise and other domestic commerce of the Atlantic, Gulf, and Pacific seaboards as a whole exceeds the commerce of the Great Lakes in volume and value, the Great Lakes are an important part of the nation's transportation system. The Board of Engineers for Rivers and Harbors of the War Department and the Shipping Board in a recently published report state that:

> Considered both from the standpoint of their area and the extent of their commerce, the Great Lakes with their connecting channels constitute the most important body of fresh water in the world. They afford access to regions notable for the magnitude of their natural and industrial resources. They permit the grain of the western prairies and the Canadian Provinces to reach eastern mills and ports of export at substantial savings, compared with all rail routes. They have brought into economic juxtaposition the ores of Minnesota and Wisconsin and the steel mills of the Lake Michigan, Lake Erie and Pittsburgh districts, and they have enabled the northwest to secure, at very great savings, the fuel required for the maintenance of its com-

merce, industry, and domestic life. By means of the St. Lawrence River on the one hand and the New York State Barge Canal on the other they afford a through water route to seaboard, although at present the transfer of cargo to smaller type vessels is usually involved in the utilization of both of these routes.[5]

The Great Lakes System comprises Lakes Superior, Michigan, Huron, St. Clair, Erie, and Ontario and their connecting waterways. A short canal of small dimensions to overcome the obstruction of the St. Mary's Falls and shoals between Lakes Superior and Huron were constructed on the Canadian side by the Northwest Fur Company as early as 1797-98. This connecting channel for small boats was destroyed in 1814 and from then until 1855 cargoes were transferred by land across the portage. The State of Michigan then completed a channel for vessels having a draft of 11½ feet, and this canal was taken over by the Federal Government in 1881. Its original locks were destroyed in 1880 when excavation was made for the present St. Mary's Falls (Sault Ste. Marie) Canal. The canal now has 4 locks with water depth varying from 17 to 24½ feet on the sills, and projects for further improvements are under way. The Canadian Government has also constructed a canal with a depth of 18 feet 3 inches on the lock sills at lowest known water level. The connecting channel between Lake Huron and Lake St. Clair is the St. Clair River. The Detroit River connects Lakes St. Clair and Erie. The Welland Canal constructed by the Dominion of Canada overcomes the barrier formed by Niagara Falls between Lakes Erie and Ontario for small vessels, the water depth of the locks being only about 14 feet on the sills. The Canadian Government in 1913 began the construction of a new ship canal which is to have a water depth of 30 feet over the miter sills at low water level.

There are approximately 400 harbors on the Great Lakes and connecting channels. The larger part of the lake traffic of the United States is, however, divided among eleven ports—Duluth, Superior, Buffalo, Ashtabula, Cleveland, Conneaut, Toledo, Calumet, Ashland, Escanaba, Milwaukee and Indiana Harbor. These larger ports and a number of small ones are

[5] Transportation on the Great Lakes (1926), p. 418.

equipped with facilities and have railroad connection for the handling of through as well as local commerce. Extensive and highly specialized appliances are provided at some of them for the prompt and economical handling of iron ore, coal, and grain in bulk. Many of them are also provided with general cargo and package freight wharves, and with wharves for the accommodation of passenger traffic. Bulk cargoes, however, comprise about 97 per cent of lake commerce, and the lake ports are more widely known for their improved bulk cargo-handling facilities than for those provided for the handling of general cargo.

The great preponderance of bulk cargo has also resulted in the development of vessels constructed especially for the iron ore, coal, and grain trades.[6] The largest of these vessels are from 600 to 625 feet over all in length and carry from 12,000 to 14,000 long tons. Some of them are designed for use in a particular trade, while others are shifted from one cargo service to another. Smaller vessels have been constructed to carry bulk traffic on the St. Lawrence River between Port Colbourne on Lake Erie and Montreal through the Welland Canal, and self-unloading vessels have been developed to handle coal and stone at lake ports not equipped with discharging facilities. There are also about 70 package and passenger steamers of 1,000 tons gross and upwards. The largest Great Lakes passenger steamers—the *Greater Detroit* and *Greater Buffalo*—are of the side-wheeler type, 550 feet long over all, 100 feet wide over wheel guards, with a molded depth of 23 feet 6 inches. They have accommodations for 1,200 passengers each and a speed of 21 miles per hour. About one-half of the package vessels carry freight exclusively, and some of them occasionally take full cargoes of coal or grain.

The total domestic freight traffic of the Great Lakes, after eliminating all known duplications, is estimated to exceed 100,000,000 short tons during a prosperous year. About 16,000,000 tons are also carried on the Lakes in the trade between the United States and Canada. Complete data concerning the volume of lake traffic moving between Canadian

[6] See Chapter XLI.

ports is not available. The statistical reports of the Board of Engineers for Rivers and Harbors covering the domestic traffic of the United States on the Great Lakes showed 58,947,000 tons in 1921 and 113,644,000 in 1925.

Only about 3,000,000 of this large total consist of package or miscellaneous general freight. Iron ore, coal, grain, and stone constitute the major part of bulk traffic, while lumber, other forest products, petroleum, sand and gravel make up the minor share of the commerce of the Great Lakes. A substantial volume of freight in railroad freight cars is also ferried across Lakes Michigan, Erie, and Ontario and on the St. Lawrence River and certain connecting channels.[7] The car ferry boats operated across Lake Michigan have capacities ranging from 20 to 30 cars. They also carry from 15 to 20 automobiles on the stern, and are equipped with accommodations for passengers.

Traffic of Rivers, Canals, and Connecting Channels

The coastwise and inland water transportation system includes the many inland waterways—the rivers, canals, and connecting channels other than those of the Great Lakes—on which over 100,000,000[8] short tons of freight are carried annually. The Government's estimate for all inland waterways for the year 1925 was 204,569,000 tons, but from this it is necessary to deduct 90,400,000 tons of Detroit River and St. Mary's Falls Canal traffic which is really a part of the through traffic of the Great Lakes.

The rivers of the Atlantic, Gulf, and Pacific seaboard having an annual traffic of at least one million tons of freight each include the Hudson, Delaware (Philadelphia to Trenton, New Jersey), Potomac, and Taunton Rivers on the Atlantic coast; the Black Warrior, Warrior, and Tombigbee Rivers as a combined

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[7] In 1923 the car ferry traffic on Lake Michigan, Erie, Ontario and the St. Lawrence River, but excluding the Detroit and St. Clair Rivers and the Strait of Mackinac was reported at 8,030,309 short tons. Corps of Engineers and Shipping Board, Transportation on the Great Lakes (1926), p. 411.

[8] Exclusive of ferry traffic and cargoes in transit. This figure which is based upon the reports of the Board of Engineers, moreover, does not include internal traffic between seaboard ports and tributary inland waterways amounting to 47,214,000 tons in 1925.

system on the Gulf coast, and the Columbia and Willamette, the Snohomish, the Hoquiam, and the Sacramento on the Pacific seaboard. The principal traffic avenues of the Mississippi River system are the Monongahela, Ohio, Mississippi, Allegheny, and Tennessee Rivers. The combined receipts and shipments of the entire Mississippi River system during 1925 were reported to have exceeded 67,000,000 tons.[9] The Federal Government has since 1918 made an effort to stimulate river traffic on the Mississippi and Warrior Rivers by operating barge lines. The Government's lines operate between St. Louis and New Orleans, and between St. Louis and St. Paul, on the Mississippi, and between Birmingham, Cordova, and Mobile on the Warrior.

The traffic statistics of the Board of Engineers for Rivers and Harbors indicate that about 90 per cent of the entire freight traffic of the rivers of the United States consists of bulk freight and only about 10 per cent of package freight.

Federal canals and connecting channels, other than those of the Great Lakes, have in recent years carried about 10,000,000 or 12,000,000 tons of freight, and state and private canals about 6,500,000 tons annually. Some of this canal traffic may quite properly be regarded as coastwise traffic because it moves over portions of the inland route between various ports along the Atlantic seaboard. The Federal canals and waterways of this inland route now most used are the Chesapeake and Delaware Canal which has been enlarged to a depth of 12 feet and may be expected to increase its traffic very substantially; the inland waterway from Norfolk to Pamlico Sound, North Carolina; the inland waterway from Norfolk to Beaufort Inlet, North Carolina; the traffic route within Beaufort Inlet; the waterways between Beaufort and St. Johns River, Florida; the Cape Cod Canal and the inland waterways on the coast of New Jersey. The Atlantic coast inland route also includes some private and state-owned canals such as the Delaware and Raritan Canal which extends across New Jersey from the Delaware River, the Florida East Coast and Miami Canals, and other waterways the traffic of which is small at present. Some of these waterways

[9] Gross figure reported by Board of Engineers for Rivers and Harbors, without correction for duplications.

are being enlarged by the Federal Government. Existing projects of the Atlantic coast inland route provide for depths varying from 7 to 35 feet, the larger number, however, providing for about 12 feet of water.

Various canals and connecting channels along the Gulf coast have been constructed or improved by the United States Government, those at present having most traffic being the Sabine-Neches Canal in Texas; the Harvey Canal and the intracoastal waterway connecting the Mississippi River with Bayou Teche, Louisiana; the intracoastal waterway connecting the Calcasieu River in Louisiana with the Sabine River; the channels between Mobile Bay and Mississippi Sound, Louisiana, between Brazos River and Matagorda Bay, Texas, and from Pass Cavallo to Aransas Pass, Texas; and the Narrows in Santo Rose Sound, Florida. The principal private and state-owned canals within the region of the Gulf coast are the New Basin and Navigation Canals at New Orleans.

The principal Federal waterways on the Pacific coast are the Lake Washington Ship Canal at Seattle, and the canal and locks at Willamette Falls in Oregon.

The artificially constructed waterways in the interior part of the country include (1) the many excavations and locks that have been provided to overcome river obstructions, such as those of the Ohio River; (2) lake and bay canals, such as the Sturgeon Bay and Lake Michigan Ship Canal in Wisconsin and the Keweenaw Waterway in Michigan; and (3) more extensive inland canals and waterways, some of which are in active operation, but others of which have been abandoned or are now used but slightly. Aside from the New York State Barge Canal System there are now but few extensive inland canals not intended primarily to serve coastwise or Great Lakes shipping. Several canals such as the Chicago Sanitary Drainage Canal in Illinois and the Lehigh and Delaware Division Canals in Pennsylvania are in active use, but the traffic of other inland canals, such as the Schuylkill Canal which connects Philadelphia with the eastern coal fields, is negligible. The Chesapeake and Ohio, the Delaware and Hudson, the Morris Canal and the old canals connecting the Ohio River with Lake Erie, which

were once of importance, have been abandoned or they carry but slight quantities of freight.

The New York State Barge Canal having a long extended traffic record is of foremost importance as an inland canal and its recent enlargement may have a far-reaching influence on inland canal development in the future. Construction of the original Erie Canal, which is the major link in this canal system, was begun by the state of New York in 1817 and was completed in 1825. Other canals were added to the state's system of inland waterways and their traffic for a time increased rapidly. The crest of Erie Canal traffic was reached in 1872 with 6,673,000 tons of freight. The eastern trunk line railroads then gradually supplanted the canal both in the through traffic of the West and in local commerce. In the opinion of many of the people of New York the Erie Canal was unduly handicapped by its small dimensions and towpath operation and by an absence of adequate terminal facilities, and a project to enlarge it into a barge canal was approved in 1903 when the legislature authorized a bond issue of $101,000,000. The new Erie barge canal, which extends from Troy Lock in the Hudson River to Tonawanda on the Niagara River—a distance of 340.7 miles—has 35 locks with a length of chamber from the lower gate to the breast wall of 310 feet, a width of 45 feet and a depth of 12 feet over the miter sills. The Oswego Canal, which extends from the head of Oswego River to Oswego on Lake Ontario—a distance of 23.8 miles—and the Cayuga and Seneca Canal which extends from the Erie Canal at the confluence of Seneca and Clyde Rivers to Ithaca on Cayuga Lake and Montour Falls on Seneca Lake and is 92.8 miles long, have been enlarged to the same barge canal dimensions as the Erie Canal. Lake Champlain may be reached by the Champlain Canal which extends 62.6 miles from Waterford on the Hudson River to Whitehall on Lake Champlain, and small vessels drawing 6½ feet or less may reach the St. Lawrence River, 46 miles below Montreal, by way of the Richelieu River and Champlain Canal.

The traffic of the New York barge canal system since its active operation in 1919 has been disappointing to the state. Prior to 1923 it amounted to less than 2,000,000 tons of freight

annually, and in 1926, 2,369,367 tons of canal traffic were reported. The traffic record of the Erie division in 1926 was 1,935,278 tons of cargo. The railroads continue to transport the bulk of the traffic moving between the Great Lakes and the North Atlantic seaboard of the United States even though their rates are substantially higher than the charges on the canal. In 1923, for example, it was estimated that the average boatmen's charge for conveyance was 0.45 of one cent per ton mile while the average rail charges for freight service in the eastern district, where the barge canal system is located, was 1.104 cents. As no canal tolls are charged the state pays all capital costs and the entire cost of canal operation, maintenance, and repairs.[10] In 1926 the class rates of the canal operators from New York to Buffalo, including marine insurance and also store-door delivery at Buffalo on all classes of merchandise except sixth-class, were less than all-rail rates by amounts ranging from 24 cents first-class to 4 cents sixth-class.[11]

About 75 per cent of the total freight traffic carried on the coastwise and inland waterways, exclusive of the St. Mary's Falls Canal and the Detroit River, consists of bulk cargoes and the remainder of miscellaneous package freight. In a few instances, however, such as the waterway from Charleston to Beaufort, the channel from Mobile Bay to Mississippi Sound, the Sturgeon Bay and Lake Michigan Ship Canal, Cape Cod Canal and the Navigation Canal at New Orleans, the volume of package freight exceeds that of bulk shipments.

General Traffic Considerations and Improvement Projects

Much the greater part of the water-borne traffic of the United States is carried coastwise and on the Great Lakes routes where water depths are sufficient for large barges and vessels. Inland waterways exclusive of the short connecting channels of the

[10] The Bureau of Railway Economics itemized the total cost of canal operation per ton mile for 1923 as follows: cost of capital, 2.094 cents; cost of operation, maintenance and repair, 0.937 cents; boatmen's charge for conveyance, 0.450 cents; total cost per ton mile, 3.481 cents. If the canal handled capacity traffic of 15,000,000 tons, it is estimated that these three items would be 0.299, 0.700 and 0.500 respectively; and the total cost per ton mile, 1.499 cents.

[11] Superintendent of N. Y. State Department of Public Works, Annual Report, 1926.

Great Lakes, account for but one-fourth of the total. The traffic of some inland waterways, as well as that moving coastwise and on the Great Lakes has increased during the past decade, and projects for river improvements are under way or are being considered.

On the eastern seaboard most bays are connected with canals —the Cape Cod Canal, the recently enlarged Chesapeake and Delaware Canal, and those paralleling the coast of the Carolinas, Florida, and other Gulf states. This coastwise system of waterways has been championed by the Atlantic Deeper Waterways Association for a number of years. A chain of inland coastwise waterways serviceable for large barges and coastwise steamers will doubtless increase shipments by water, and will divert some traffic from outside routes to the sheltered and shorter inland channels. Seagoing barges are largely used in the coal trade, but their use is limited by weather conditions and high insurance costs. When an inland coastwise route becomes available for the transportation of coal, lumber, building materials, and other low-grade bulk traffic in large barges it will probably be able to share such traffic with competing railroads.

The Mississippi Valley has the longest and largest rivers, but for the most part they now have but little traffic. The Mississippi has a 9-foot channel below Cairo and an 8-foot channel from Cairo to St. Louis and a 6-foot channel thence to St. Paul. The Ohio River is being provided with a 9-foot channel and some of its principal tributaries with 6-foot channels. The present Missouri River project is for a 6-foot channel to Kansas City. There has from time to time been an agitation in favor of an all-water route for barges and packet vessels from Chicago to the mouth of the Mississippi River. The cost of constructing and maintaining a ship canal that could be navigated by Great Lakes steamers, however, would be prohibitive, and construction and maintenance costs of a barge canal and waterway of such length would probably be disproportionately large in comparison with the probable volume of barge traffic.

The old canals connecting the Ohio River with Lake Erie have long been out of service, but Congress has instructed the Government's Engineers to make preliminary examination and

surveys for a canal connecting Lake Erie with the Ohio River via the old Miami and Erie Canal or some other route, the canal to have a branch to Lake Michigan. The Engineers are also to report on a possible waterway from a point at or near Erie Harbor by way of French Creek and the Allegheny River to the Ohio.

The waterway project now being urged most persistently in the central western and Great Lakes regions is a ship canal connecting the Great Lakes with the Atlantic seaboard, a canal that could be used by lake, coastwise and ocean carriers plying in foreign as well as in domestic commerce. Four general routes have been given consideration: (1) the Great Lakes-St. Lawrence ocean-ship channel route which would connect Lake Ontario with Montreal and utilize the St. Lawrence River to tidewater; (2) the Lake Ontario-Hudson River route which would carry the waterway "either by way of the Oswego-Mohawk route or via the St. Lawrence River to Lake St. Francis, thence to Lake Champlain, thence to the Hudson" and is known as the Lakes-to-the-Hudson ship canal; (3) the so-called all-American route which is "merely the Lakes-to-the-Hudson ship canal supplemented by a canal east of Niagara Falls on American territory, similar to the Welland Canal, which is located west of Niagara Falls in Canadian territory";[12] and (4) the Erie Barge Canal route enlarged to ship canal dimensions. Water depths varying from 25 to 30 feet have been suggested.

In 1900 a board of engineers reported that the most desirable of the several routes from the Lakes to the Hudson would be the Oswego-Mohawk route and that a 21-foot waterway could be constructed at an estimated cost of $206,358,000. In 1918, however, the Secretary of Commerce reported unfavorably on the traffic advantages of ship canals connecting the Lakes and the Hudson, and when Congress, in 1925, ordered another investigation the Board of Engineers for Rivers and Harbors reported during the following year that it "did not feel justified in recommending that the construction of a deeper waterway

[12] U. S. Department of Commerce, Great Lakes-to-Ocean Waterways, Domestic Series No. 4 (1927), p. 6.

from the Great Lakes to the Hudson River suitable for vessels of a draft of either 20 to 25 feet should be undertaken by the United States at the present time." Congress requested a review of this recommendation later in 1926, but the board again reported that in its opinion the construction of such a waterway by the United States would not be justified. The estimated first cost for a 25-foot waterway to the Hudson River not including an American canal from Lake Ontario to Lake Erie, was reported at $506,000,000, and it was estimated that the first cost of an all-American waterway, including a canal from Lake Ontario to Erie, would be $631,000,000.

Meanwhile the Great Lakes-St. Lawrence River project was also being investigated by various national and international boards. It was referred to an International Joint Commission in 1919 and during the following year Congress created a Special Board of Engineers to estimate the cost of this project. The reports of the Engineers and of the International Joint Commission, which were completed in 1921 and transmitted to Congress in 1922, contained a favorable recommendation. Further negotiations with Canada were proposed and in 1924 a Joint Board of Engineers was established. The Canadian Government also created a Canadian National Advisory Committee, and the President of the United States appointed a St. Lawrence Commission to give especial attention to considerations of national policy. In 1926 the Joint Board of Engineers reported the Great Lakes-St. Lawrence project to be practicable from an engineering standpoint, and published estimated construction costs varying with the water depth and the amount of hydroelectric power development provided for. In its opinion the construction costs of a 25-foot waterway with an initial power development of 1,365,000 horse power would range from $350,100,000 to $385,500,000; if provision were made for from 2,619,000 to 2,730,000 horse power the cost would increase to from $394,000,000 to $423,000,000; and if the electric power development of the project were increased to 5,000,000 horse power, the cost would be from $620,000,000 to $650,000,000. The Board was of the opinion that the navigation and hydroelectric power aspects of the waterway should be considered

jointly, for their joint development would result in favorable joint construction costs. If constructed for navigation alone the estimated cost of a 25-foot channel to Montreal will in the opinion of the Joint Board be about $167,720,000 plus the $114,000,000 that is being expended by Canada on the new Welland Canal, but if the waterway is also used to develop power the amount chargeable to navigation can be reduced materially.

The St. Lawrence Commission of the United States, in its report of December 27, 1926, estimated that the net cost of the Great Lakes–St. Lawrence waterway to the joint governments, aside from the cost of the new Welland Canal, would be between $123,000,000 and $148,000,000 "from which some further reductions should be made from further realization upon hydroelectric power." The Commission expressed the opinion that the interior states are entitled to an equalization in transportation advantages as far as possible and that benefit would inevitably flow to them if ship access to the ocean is afforded. The power aspects of the waterway are referred to as the "largest possible hydroelectric power development upon the continent," and the Commission considers the development of these power resources so inevitable that it "will eventually create a shipway on this route even if other routes were undertaken."

The greatest economic value of the proposed Great Lakes-St. Lawrence waterway lies in the hydroelectric power that would be developed and in its use by lake vessels plying to and from Montreal. The power possibilities have no doubt been estimated accurately by the reporting engineers. Several traffic estimates have also been made. A recent report of the Department of Commerce predicts from 18,600,000 to 23,600,000 tons of freight, of which from 11,600,000 to 16,600,000 tons would consist of export and import cargoes and 7,000,000 of coastwise commerce. It is estimated in the same report that the foreign trade and coastwise traffic of ship canals connecting the Great Lakes with the Hudson River would be somewhat less in volume, but that the local and intermediate traffic that would move on such routes would possibly be sufficient to equalize the estimated

traffic for the several lake-to-ocean routes. Estimates of traffic cannot be as accurate as those of power demand. It is difficult to forecast the percentage of total available foreign trade and coastwise traffic that would actually be shipped through such a waterway, and it is equally difficult to estimate the future growth or decline of available traffic. Although the aggregate movement of freight between states about the Great Lakes and the seaboard will undoubtedly grow in the future, the future of export grain, which constitutes an important part of estimated traffic, is uncertain. Instead of increasing or even being maintained at their present level, grain exports from the United States may conceivably decline. Although such decline may be accompanied by greater dependence upon domestic grain and flour markets located in the North Atlantic states, domestic shipments from the wheat-growing regions of the United States are not apt to be diverted to the Great Lakes-St. Lawrence waterway in very large quantities. Exports of Canadian grain may be expected to increase, but the use of the waterway in shipping Canadian grain to overseas markets is of little interest to the wheat growers of the United States. Obviously not all of the available export and import traffic of the interior states will move through an all-water route in vessels serving the lake ports. The North Atlantic and Gulf ports of the United States would undoubtedly have to share some of their present central western business with a Great Lakes-to-the-Atlantic waterway, but they would in all probability continue to transact a large volume of inland business. The routing of exports and imports from the Central West, particularly of general cargo, frequently depends upon the availability of regular steamship line services at particular ports, and the maintenance of such services in turn hinges upon a heavy volume of general cargo. Many of the ocean ports of the eastern seaboard, for example, are now handicapped by an inadequate number of regular line services to the several regions where foreign markets are found, even though they draw upon the foreign trade traffic of the eastern states as well as upon that of the interior. Regular ocean lines plying to and from the ports of the Great Lakes would for some years to come operate under a greater handicap

because they would be dependent largely, if not solely, upon the foreign trade of the interior of the United States and of Canada. In establishing themselves at lake ports, regular ocean lines would need to give consideration not only to the question of navigating vessels to distant inland ports, but to their ability to obtain a sufficient volume of traffic to warrant the maintenance of line services.

The transportation advantage claimed for the Great Lakes-St. Lawrence waterway is a substantial saving in freight rates. It has been estimated that wheat could be shipped from Duluth or Chicago to Liverpool for from 8 to 11.2 cents per bushel as compared with the present lowest combination of rates of 17.6 cents per bushel.[13] Much of the recent demand for a deeper waterway to the seaboard is traceable to the low level to which agricultural prices were reduced in 1921. Wheat prices have since the World War been on an export basis and the prices paid for wheat in Chicago, Minneapolis, and other interior wholesale markets have consequently been influenced largely by the export surplus shipped to Liverpool and other large European grain markets. Although reduced shipping costs would not increase prices in the Liverpool grain market, they would tend to narrow the difference between the price levels maintained in Liverpool and the United States, and the presumption is that wheat prices would be raised somewhat in the great grain markets of the Central West. As the prices received by wheat growers at their local markets are based directly upon those quoted currently at the large interior wholesale grain markets, reduced shipping costs to overseas markets would, during periods of surplus wheat production, benefit the grower. This probable price function, however, is contingent upon the actual shipment of substantial quantities of wheat by way of the proposed waterway and upon the influence it may have over the grain rates charged by rival transportation routes. If the charges of rival all-rail and like-rail routes should remain of sufficient importance to govern price differ-

[13] U. S. Department of Commerce, Great Lakes-to-Ocean Waterways, Domestic Series No. 4 (1927), p. 3. Estimated rates *via* the proposed Lake Ontario-Hudson route or the All-American routes, 9 to 12.9 cents per bushel.

ences between the primary wholesale wheat markets of the United States and Europe, it would seem that the growers of wheat will not obtain the full advantage anticipated by them.

The proposed Great Lakes-St. Lawrence River waterway has the advantage over the several routes that have been surveyed to the Hudson River in cost of construction, in probable minimum shipping costs, in volume of probable traffic, and in its power resources. If the estimated costs of construction that have been reported are substantially accurate, it would seem that the interior states are entitled to whatever advantage in shipping may result from such a waterway and that its power resources should be developed to the fullest practicable extent. The Chief of Engineers of the United States Army has expressed the opinion that "the military advantages of the proposed waterways across the State of New York are not sufficient greatly to affect the consideration of a matter involving hundreds of millions of dollars." The President's Commission, of which Secretary Hoover is Chairman, has recommended that the obstacles resulting from the international character of the Great Lakes-St. Lawrence River waterway and from the special interests of the State of New York in power developments, should be removed by negotiating an agreement or treaty with Canada. "Owing to the navigational and international character of the river, the Federal Government has an interest and must necessarily assent to and negotiate power development questions from the American side," but in its negotiations with Canada, the Commission urges that "the United States should recognize the proper relations of New York to power development in the international section."

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PART VII

AIR TRANSPORTATION

CHAPTER LVIII

THE DEVELOPMENT OF AVIATION

ALTHOUGH flying has occupied the minds and imagination of mankind since ancient times, air transportation is essentially a product of the twentieth century. For several thousand years men have speculated and experimented with different kinds of fantastic devices in their efforts to rise above the surface of the earth. Mankind from earliest times has associated the ability to fly with Deity and the legends of Dædalus and Icarus tell of the punishment of those who aspired to fly. Comments of the ancients in connection with flying reveal the fact that they observed and commented upon the fact that smoke and birds rose into the air in two different ways. Thus early was the basis laid of the lighter-than-air and the heavier-than-air schools of flying.

Little attention was paid to flying during the Middle Ages. It was considered impious, and the only noteworthy contribution was the study of Roger Bacon into the flight of birds and the prophecy that motive power for flying would come from fire. This was in 1256.

The Renaissance gave new impetus to the study of flight and among other contributions of thinkers and experimenters of this period was the Codex on the Flight of Birds of Leonardo da Vinci, a detailed study of the mechanical principles of the wing movements of birds compiled in 1505, and the experiments of Francisco Lana, an Italian Jesuit, who constructed hollow copper globes, filled them with water and drained them through pipes 34 feet long leaving vacuums within the globes—a noteworthy contribution to lighter-than-air craft progress.[1]

[1] Adrian Van Muffling, "Human Flight Through the Ages," *Annals American Academy of Political and Social Science*, May 1, 1927, discusses the early experiments in aviation.

Lighter-than-Air Craft Development

The premodern period of flying began in the eighteenth century with the balloon ascensions of the Montgolfier Brothers in France in 1763 and the inventions of the balloon net which distributed the weight of the basket to the surface bag, the safety valve and the rip cord to permit descent by the physicist Charles. An attempt to apply steam power to flying in 1842 by Sir John Cayley in England was unsuccessful because of his inability to get a light steam engine of sufficient power.

During the Civil War in America, Count Zeppelin, a young German army officer, made observation flights in an anchored balloon for the Union Armies to observe enemy position and control artillery fire. Count Zeppelin after his return to Germany worked to perfect a lighter-than-air ship of sufficient lifting power to accommodate steering apparatus and propelling machinery, and shaped to lessen wind resistance so that the balloon might be made self-propelling and directable. Santos Dumont, a Brazilian, made a number of spectacular flights in the crude dirigibles of the early years of the twentieth century, and Count Zeppelin flew across the Alps and made other flights in dirigibles to prove the practicability of lighter-than-air craft. The progress to 1914 was slow and much of it offset by failures of the dirigibles to ride out storms and demonstrate adequate lifting power, as well as by danger of fire and by mechanical difficulties.

Count Zeppelin and others interested in lighter-than-air craft during the years just preceding the World War had been experimenting with lighter metals for construction, fabrics for the gas bags, fuels, internal combustion engines to reduce the weight of the dirigibles, to increase their lifting capacity and to make them safer and more airworthy. Just before the War, Zeppelin had built a successful ship as a result of a gift of six million marks made by popular subscription in Germany to finance his experiments.

The Airplane

Meanwhile experiments were being made with heavier-than-air craft. The Wright brothers, Wilbur and Orville, constructed

a glider—an engineless airplane, and demonstrated the practicability of their system of maintaining equilibrium in the air in 1902. They and others immediately set out to develop a motor of sufficient power and speed and of small enough weight to propel the gliders. Experimenters during this period were handicapped by lack of data on aërodynamics, so that existing marine engine designs had to be adapted with the help of fragmentary data on air pressure and resistance in efforts to develop a new type of motor.

The first motor built by the Wright Brothers developed 16 horse power for a few seconds but the power dropped so rapidly that it was capable of developing only 12 horse power at the end of a minute. It weighed about 107 pounds, developing one horse power for each 14 pounds. With this meager equipment and a monorail take-off a flight of 12 seconds' duration was made by Orville Wright at Kill Devil Hill, North Carolina, December 17, 1903, after an unsuccessful attempt which kept the plane in the air only 3 seconds, on December 14, by Wilbur Wright.

These attempts, however slight the success, are of great significance. They were the first in aviation history in which a flying machine carrying a pilot had raised itself into the air by its own power and had moved forward without reduction in speed to land at a point as high as that from which it had started and not simply glided downhill.

Aëronautic developments for the next ten years or more centered around the attempts to perfect lighter, speedier, and more powerful propelling machinery. Maxim in Europe worked extensively with steam power. Langley experimented with internal-combustion gas engines. Glenn H. Curtiss developed several highly efficient engines for airplanes and won an international speed race at Rheims, France, in 1909 with an engine developing 50 horse power weighing 250 pounds. In the same year, Henri Farman flew 3 hours and 4 minutes in a plane with a 34-horse-power Gnome motor weighing 132 pounds, and Louis Bleriot flew across the English Channel in a monoplane equipped with a 25-horse-power Anzani motor. Germany, France, and England offered prizes for flights and improved engines, and the history of aviation during this period is a record

for numerous short flights and the developing of a number of types of light engines with higher horse-power ratings. Included in this list are the Mercedes, Benz, and E. N. V. engines, the latter developing as much as 80 horse power.[2]

The World War and Aëronautics

The next outstanding period in the development of both lighter-than-air and heavier-than-air craft was ushered in by the World War. The success of Count Zeppelin just before the opening of the War had resulted in the building of hangars in a number of the larger cities of Germany and the establishment of passenger routes between several cities. The rigid lighter-than-air ship was used extensively by the German Navy for observation and scouting service in locating enemy ships, mine areas at sea, and in directing the operation of mine sweepers, and in air raids upon England.

The needs of the armies and navies for aircraft stimulated airplane development in the Allied countries as well as in those of the Central Powers. Many and varied improvements were made in body and wing design, in the power and weight of engines, and in the technique of flying. One of the outstanding contributions of the United States during the World War was the development of the Liberty motor, a 12-cylinder, V-shaped, water-cooled motor of 850 pounds weight, delivering 420 horse power—two pounds for each horse power developed. This motor was extensively used in French and British as well as in American airplanes during and after the War.

When the use of airplanes and airships in the World War is examined one opens the door to a controversy of national and international proportions. Enthusiasts in air transportation are apt to ascribe to the air services most of the significant developments during the 4 years of hostilities, while those who regard the addition of the aircraft to the military forces on land and sea with alarm lest it snatch too much prestige from the other branches, are equally insistent that the airplane and airship contributed little or nothing of definite value. To those on one side of this controversy the aircraft are the eyes of the armies

[2] J. E. Horsfall, "The First Flight," *Ibid.*

and navies and the most effective fighting weapons; while to the other controversialists the air service is a flying side show to the traditional conduct of warfare.

It is not the purpose of this discussion to enter into this controversy which appears futile in its very fervor. It is doubtless too early yet to evaluate the value of the services of aircraft, of either the heavier-than-air or lighter-than-air types, in the World War. The Allies and Central Powers used airplanes extensively in scouting, map-making, bombing, and individual and fleet combat and these uses of a new military weapon attracted widespread interest throughout the world. Perhaps the most important result of the use of aircraft in the War was the great stimulus given to aircraft engineering and the stirring of the imagination of people everywhere of the possibilities in commercial air transportation opened up by the feats achieved by flyers of all of the belligerents in warfare. The stimulus accounts for the rapid strides in air transport taken since the signing of the Armistice in nearly every leading nation of the world.

Post-War developments have again brought air transportation to the front rank in public interest. Successes of outstanding importance have been accompanied by disasters which have kept public interest at a high pitch. In the lighter-than-air field notable improvements have been made in the size, lifting power, speed, cruising radius, and safety of the craft. Hydrogen, extensively used in the War and pre-War periods as the gas for inflating the bags, has been replaced by helium. Improvements in ship design and construction, which have tended to reduce the dangers of snow and ice, lightning, storms, and fire have stimulated the development of lighter-than-air craft although not all of these hazards have been eliminated, as a number of disasters attest.

In 1917 during the World War, the German Zeppelin dirigible L-59 flew a non-stop flight of 4,225 miles from Jampol, Bulgaria, to German East Africa in a little less than four days. The British ship R-24 flew, in 1922, from England to the United States and returned after refueling. The French *Dixmude* made a four-day non-stop flight over Southern Europe, the Mediterranean Sea, and Northern Africa in 1923. The *Shenandoah,*

built in the United States on plans derived mainly from German craft flew 8,000 miles on a voyage around the rim of North America in 1924, and in the same year the *Los Angeles,* a ship built in Germany for the United States as part of the reparation payments, made the 5,100-mile non-stop voyage from Germany to the United States Navy air base at Lakewood, New Jersey. Perhaps the most important voyage of a lighter-than-air craft was the flight of the semirigid *Norge* from Rome, Italy, over the North Pole to Port Barrow, Alaska, a voyage of more than 6,800 miles with stops in England, Norway, and Spitzbergen.

The disasters which have overtaken many of the world's lighter-than-air craft have been disastrous to life and property and have tended to check rapid development of this type of aircraft. The British R-38 broke in two, caught fire, and exploded over Hull, England, with a loss of 44 lives in 1921. The French craft *Dixmude,* formerly the German Zeppelin L 72 after making successful endurance flights of 54 and 118 hours, respectively, in 1923, left in December, 1923, for a flight from France to the Sahara with a crew of 53 men and never was heard of after leaving France. The dead body of her commander was picked up off Sicily ten days later and the High Commission of Inquiry reported that the loss was due to lightning. The United States airship *Roma* crashed in flames in 1922 with a toll of 34 lives. The *Shenandoah,* said to be the strongest lighter-than-air craft ever constructed, broke in two in a storm over Ohio in 1925 and was destroyed with a loss of 14 lives.

The failures and disasters of lighter-than-air craft have not caused the abandonment of plans for future developments. Great Britain is building two gigantic ships of 5,000,000 cubic feet gas capacity, each capable of carrying 100 passengers and a normal weight of apparatus and cargo, the R100 and R101. The United States has under consideration the construction of one of 10,000,000 cubic feet, the G.Z.1, and a small all-metal dirigible. France has only one large rigid airship, after the loss of the *Dixmude,* the *Mediterranée,* formerly the German-built ship, the *Nordstern.* Germany's Zeppelins were allocated to the Allied countries by the Treaty of Versailles and the possession of air-

craft by the nation is restricted by the peace treaty. However, a Zeppelin of 3,700,000 cubic feet capacity is being privately built for service between Germany and South Africa. Spain has several small semirigid ships purchased from Italy and a company has been formed to operate a line between Seville, Spain, and Buenos Aires, Argentina. Italy has one large rigid airship, the *Esperia,* formerly the German Zeppelin *Bodensee,* and several semirigid craft including the celebrated *Norge I* built in 1924 which flew over the North Pole under the Norwegian flag, with Captain Amundsen, a Norwegian, Lincoln Ellsworths, an American, and Signor Nobile, the Italian builder, in the crew. After the flight, the ship was dismantled and brought back by Italy.[8]

Developments in heavier-than-air craft have been much more spectacular and much greater progress has been made both in number of ships built and in technical improvements and in commercial use than with the lighter-than-air craft. Engines of 800 and 1,000 horse power have been developed, and with relatively small weight per power unit, lower fuel consumption, lower oil consumption, minimum frontal areas, much greater reliability and durability and lower initial cost and maintenance expense are being attained in the United States, Great Britain, Italy, and France in particular. The trend recently has been toward engines of from 200 to 500 horse power of the air-cooled type. Several engines are sometimes used on one plane. Experiments are also being made with Diesel engines, gas turbines and steam engines, to obtain greater fuel economy and greater power in relation to the weight of the engines.

Great strides have also been made in scientific research in aërodynamics and meteorology, in the structure of wings and fuselage, in scientific instruments of air navigation, and in the technical training of pilots.

In 1919 three United States Navy planes, the NC1, 3 and 4, left Far Rockaway, New York, for Plymouth, England, by way of Newfoundland, the Azores and Lisbon, Portugal. Of the three only the NC4 completed the flight. The other two craft were disabled at the Azores. The NC4 was the first plane to cross the Atlantic Ocean. In the same year Alcock and Brown, two

[8] P. W. Litchfield, "Lighter Than Air Craft," *Ibid.*

British flyers, flew in the first non-stop transatlantic flight from Newfoundland to Ireland, a distance of 1,960 miles in a little over 16 hours. In 1922, a hydroplane flight was made from Portugal to Brazil and a United States Army plane, the T2, was flown in a transcontinental flight of 2,520 miles from Mineola, Long Island, to San Diego, California, in a little less than 27 hours.

In May, 1924, a party of United States Army flyers started from Santa Monica, California, and made a round-the-world flight via Seattle, Washington; Prince Rupert, British Columbia; Sitka, Alaska; the Aleutian Islands; Japan; China; French Indo-China; Siam; Burma; India; Syria; Constantinople; Turkey; Bucharest, Roumania; Belgrade, Servia; Budapest, Hungary; Vienna, Austria; Paris, France; Croyden and Brough, England; Iceland; Greenland; Newfoundland; to Boston and then across the United States to the starting point in 175 days, making 75 flights and actual flying time of 375 hours covering more than 20,000 miles. In 1925, Commander Rogers of the United States Navy technically completed a flight from San Francisco to Hawaii although one of the planes fell 400 miles from Hawaii and the party was 9 days adrift before rescued.

The flight of Commander Byrd of the United States Navy and his associates over the North Pole in May, 1926; and the intercontinental flights of Sir Alan Cobham from England to Australia and return, and of Commander de Pinedo from Rome to Japan and back, and from Italy to Africa, South America and North America in 1927 have stimulated interest and enthusiasm in Europe and in the United States. The spectacular and daring non-stop, one-man flight of 3,610 miles made by Colonel Charles A. Lindbergh from New York to Paris, in May, 1927; the record-breaking non-stop long-distance flight of 3,905 miles by Clarence Chamberlain and Charles Levine from New York to Berlin which ended with the descent of the plane at Helfta, Germany, 110 miles short of its goal, in June, 1927; the transatlantic flight of Byrd, Balchen, Acosta, and Noville from New York to Paris which ended with the plunging of the plane into the sea off the coast of France in June, 1927; and

the successful flight of Lieutenants Hegenberger and Maitland of the United States Army from California to Hawaii in July of the same year are all of great significance and are important mileposts in the development of transportation.

Perhaps the most significant flights were those of Chamberlain and Levine, and of the Byrd party, in 1927, and that of the crew of the "Bremen" under the command of Baron Huenefeld in April, 1928. The feat of crossing the Atlantic demonstrated the great strides that have been taken in technical development and flying technique while the unfortunate endings of their flights reveals dramatically that air transportation for long distances over dangerous routes is not yet practicable.

The Future of Air Transportation

The future of air transportation is difficult to forecast. Mankind has always had a propensity to exaggerate the importance of its most recent discoveries and to be overly enthusiastic in evaluating the relationship of the new and the old. The development of air transportation since the close of the period ending with the World War has been rapid and substantial, equaling if not surpassing the progress made in the early periods of railroad, water, and automotive highway transportation. The extravagant prophecies and over-enthusiasm concerning all things aëronautic have been fulfilled to a remarkable extent. Sir Samuel Hoare, British Secretary of State for Aëronautics, sums up the remarkable development of air transportation succinctly: "Aviation has a habit of providing great surprises and I, personally, am prepared for anything."

The recent spectacular dashes across the North Pole, the nonstop crossings of the Atlantic, the crossings of the Pacific between the United States and Hawaii, the round-the-world and intercontinental globe-trotting by airplane have stimulated public interest and enthusiasm and let loose a new set of prophecies and speculations concerning future developments, many of which are over-enthusiastic.

The conditions in the aviation industry in general are healthy and conducive to steady and rapid growth in the United States. The long-term army and navy aviation programs of the United

States Government, while failing to satisfy the ardent supporters of the airplane and airship in warfare, assure a reasonable continuity of orders. The success of the Air Mail Service of the Post Office Department, referred to in Chapter LX, has demonstrated the practicability of air transportation for mail and light express matter. The enactment by Congress of legislation seeking to promote and regulate air transportation puts the industry on a sounder business basis. The growing demand for commercial air service, especially in the field of passenger and express transportation, augur well for the future. The widespread public interest, the attention given by the universities and technical schools in the United States to aëronautical engineering and to the economic problems of air transportation and the establishment of adequate foundations to promote aëronautical education and research are favorable indications.

It is doubtless too early to predict the establishment of transcontinental or transoceanic passenger and express lines within a few years on a commercial basis. These lines will undoubtedly come to fill the need for superrapid transportation service but their establishment will depend upon two factors; first, the continued development of airplane and airship propelling machinery and ship structure to increase their carrying capacities, comfort, and safety; and second, the development of a more definite public demand for air transportation service as a definite part of national transportation systems.

The engineering profession has already made great progress in aëronautical engineering. The stage of development has passed when those interested in aviation were pure scientists or inventors and the future development of aviation is in the hands of the engineer, the mathematician, the meteorologist, the transportation economist and the business man. The progress of the next ten years in engineering will doubtless be great, for aëronautical engineering appears to be on a sound basis comparable with engineering organization in other branches of the automotive industry. The development of the commercial phases of air transportation, which will doubtless accompany and follow the technical development, is in the hands of transportation economists, business men, legislators, and the public.

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CHAPTER LIX

COMMERCIAL AIR TRANSPORTATION

COMMERCIAL air transportation includes all of the branches of flying for hire as carriers of persons or merchandise and the use of airplanes or airships in business enterprises. The first commercial use of aircraft in purely commercial service was the establishment of the Delag airship line connecting several cities in Germany in 1910. This line maintained service carrying passengers and freight until the dirigibles were commandeered for military service by the German Government in 1914.

The first important commercial use of airplanes was the establishment of the United States Air Mail Service by the United States Post Office Department in conjunction with the army in 1918. From these nuclei the commercial services in Europe and the United States developed with great rapidity following the close of the World War.

The great strides taken in aëronautical engineering, the construction of larger and more airworthy planes during the last year of the War, the availability of surplus war planes, the development of plants for plane building, the great number of military pilots released from service, the availability of certain amounts of capital for enterprises of this sort, and the widespread public interest in air transportation stimulated many commercial airplane enterprises into being in the United States and other countries in the years following the close of the World War.

Commercial Air Service Abroad

Between the years 1918 and 1920 a number of air transport lines were established in Europe and the greatest commercial development up to the present time has been in Europe despite the facts of the success of the Air Mail Service in the United

States and the establishment of what is said to be the only regular common carrier air transportation service that is entirely self-supporting financially.

The early start gained by European nations in air transport is due largely to the policies of the leading nations of Europe in developing air routes for military and political reasons. Soon after the Treaty of Versailles, Great Britain, France, Germany, Italy, Belgium, Denmark, the Netherlands, and Russia sought to promote air commerce through the establishment of special government departments or bureaus to promote and regulate aviation, the enactment of laws to control and shape the development of air service, the provision of aids to air navigation corresponding to the aids given water navigation and the enactment of basic air laws to establish the legal basis for air transportation and to protect the operators of aircraft and the public. Government action has tended to place European lines in a position to operate regular service on a sound basis despite the fact that the receipts from passenger and merchandise traffic do not cover operating expenses. The amounts of the subsidies have not been great in the aggregate but they have tended to promote the development of this infant transportation industry to a position of great promise.

Governmental aids in Europe take the form of indirect and direct aids or subsidies. Indirect means of promotion include the establishment and maintenance of airways, airports, terminal and emergency landing fields, beacons to facilitate night flying, free use of radio telephone and telegraph facilities, development of technical appliances by government technicians or through assistance to private investigators, government distribution of maps, weather forecasts and meteorological data of value to aircraft operators, allocation of planes to private operators for limited periods of time, and laws tending to define and limit the liability of aircraft operators.

Direct subsidies of various kinds are given to private commercial aircraft operators by a number of European nations. These payments take the form of mail subsidies, annual or lump sum payments to lines based upon the mileage flown, and loans for comparatively long terms at low rates of interest

or without interest to air transport companies. Direct subsidies have been deemed necessary by European governments because of the post-War financial and political conditions in Europe. Specific military obligations to the governments granting the aids are assumed by operators of air lines in return for the aids. These subsidized lines justify the aids granted them through their services in connecting the home countries with their colonies on other continents, in connecting nations with other nations where political and economic ties are desired to be strengthened; in testing new types of planes, motors, and apparatus, and in experimenting with routes, air currents, and obstacles to air navigation, and in counteracting the influence of the subsidized lines of other nations.[1]

Air transportation lines in Europe connect virtually all national capitals and the largest commercial cities directly or through joint routes via several connecting air routes, and extend across the Mediterranean to northern Africa and western Asia. The most important groups of lines include those radiating from London to Ireland, France, Germany, Holland, Belgium and to Bagdad and Cairo; the lines connecting the cities of southern European nations with each other and with northern Africa; the routes connecting Germany with the Scandinavian countries and with northeastern Europe; and the French lines connecting the largest cities of France with eastern Europe, northern Africa, and western Asia.

Most of these routes are operated by private companies assisted materially by government subsidies. A few notable exceptions including the London to Bagdad and Cairo route are operated directly by the governments. The tendency has been toward the consolidation of competing and connecting lines in each country in order to prevent unduly severe competition and to conserve government subsidies. Unsuccessful routes have been abandoned and the efforts of operators and the governments have been concentrated on politically and economically important routes. The decrease in number of operating companies has been accompanied by a steady and rapid increase in

[1] Lt. J. P. Van Zandt, U.S.A., Report on Commercial Air Transportation Activities in England, France, Germany and Holland, 1924.

the number of passengers carried, in the weight of mails and express traffic carried, in the number of miles flown, in the distance traversed in regular route service, a steady decrease in the number of accidents and fatalities per unit of distance traveled and a decided increase in the regularity of the service in good weather and bad.

The service schedules of European air lines are not on a basis of regularity comparable with railroad or steamship line schedules, although the tendency in many cases is definitely in this direction. Service is quite generally suspended or modified in winter months and in bad weather. Night flying although increasing in Europe is not up to the standards of performance of the United States Air Mail Service. Airways, airport facilities, and aids to air navigation although supplied and maintained quite liberally by European governments are not yet upon such a basis as to assure the travelers and shippers of thoroughly satisfactory service.

The development of the service in Europe has been handicapped by international political considerations. Each Government has been eager to aid lines operated by its nationals and to seek protection of its lines in other nations. At the same time these nations have not been eager to assist the development of the air lines of other nations within their boundaries. The relatively small size of the countries of Europe and the length of the most important air routes make most of the routes international in character. The air lines in most cases operate over the territories of at least two nations and often over half a dozen. Restrictions and burdensome regulations are handicaps which governments are seeking to remove from the paths of their routes.

These limitations have tended to restrict the number of passengers carried, the volume of express traffic, and the extent to which aircraft are used in international mail service. Long distances, the lack of night flying and international postal complications have especially retarded the development of air mail routes in Europe.

Direct and indirect aids and subsidies by European governments have not resulted in placing air transportation on a sound

financial basis. No European air transportation line is self-supporting from its receipts from operation, although the more efficient companies are improving their operating incomes and decreasing operating expenses. The European Union of air transportation companies earned only 20 per cent of its total expenditures in 1922, while in 1925 it earned approximately 60 per cent of its expenses.[2]

The subsidy grants in many cases have been so bound about with restrictions and obligations that normal commercial developments have been restricted. Some subsidies have been so freely and indiscriminately given that uneconomical and unjustifiable services have been established that are not in the best interests of the industry or of the public. Many of the unwisely established lines have been abandoned or consolidated with other stronger ones.

The rates charged by European air transport companies are not sufficient to pay a fair share of operating expenses of the lines or to approximate the value of the service or "what the traffic will bear." Passenger fares and merchandise transportation rates are kept purposely at low levels to increase the volume of traffic. Passenger fares are as a rule not much higher than the first-class railway fares for corresponding distances. Many European railways have become interested in the development of passenger air transportation services and railroad train schedules are adjusted so as to coördinate rail and air services. Motor busses are also used by railways and independent motor lines to connect the air fields with the city centers to increase the convenience of passenger travel by air.

Insurance is a necessary part of the development of air transportation. The property of the carriers, lives of pilots, ground force, and passengers, and the property carried by aircraft must be protected by adequate life, property, and casualty insurance. The insurance companies of Great Britain have combined to handle aircraft insurance with the result that the hazards of air transportation are more adequately covered with reliable insurance at lower rates than could be offered by independent com-

[2] Joint report of the Committee on Civil Aviation in the U. S. Department of Commerce and the American Engineering Council, 1926.

panies in this new field of insurance. The French Bureau Veritas, a semipublic bureau, inspects and rates facilities for air transportation, thus materially assisting the writing of air insurance in that country. French air lines are permitted by law to accept passengers and merchandise for transportation by air without responsibility on the part of the carriers for the safety of the persons or goods if the freedom from responsibility is declared on the tickets or bills of lading issued by the companies.[3]

Air transport insurance in Germany is handled through a close pool of underwriters. Insurance rates are comparatively low in Germany as a result of the excellent safety records of German air lines and legislation favoring the air carriers through limitation of liability. Air insurance rates throughout Europe are decreasing steadily.

The operation of air transportation service in Europe in passenger, merchandise, and mail service despite certain handicaps and misdirected assistance is showing a steady increase in growth of traffic, regularity, and safety. Unit costs of operation show an encouraging tendency to decrease. The life of planes, properly tested and maintained, exceeds the early estimates. Planes are more apt to be retired because of inadequacy and obsolescence than as a result of depreciation. Records of 200,000 miles of operation are to be found in English air lines. The proportion of reserves to operating expenses is also low. Payments to third parties on account of liability are practically negligible due to satisfactory safety records and limitations upon the liability of air transportation companies as a result of legislation.

The experience in Europe, especially in the transportation of passengers is of great value to the United States. European operators have demonstrated that air transportation is practicable under favorable economic and political conditions and with reasonable government aid and regulation. Air lines, under such conditions, can be operated with regularity, dispatch, and safety sufficient to establish the air transport service as an

[3] Act of June 3, 1924.

important channel of commerce in the United States as in Europe.[4]

Development in the United States

Air transportation in the United States as a whole has lagged behind the development of commercial air service in Europe with the notable exception of air mail service. The United States is therefore in the anomalous position of being a pioneer in the invention and development of aviation and a laggard in commercial air line progress.

In addition to the air mail service which is discussed separately in Chapter LX, commercial air services in the United States take the form of passenger and merchandise line service and industrial services of various types not connected with the transportation of passengers or goods.

Line Passenger Service

It is in the field of line transportation service that the United States lags behind Europe. In 1926 only 8 aircraft lines carried passengers in line service, some of these carrying mail by contract in addition to passengers. The Aëromarine Airways, starting in 1922, and operating between Key West, Florida; Havana, Cuba; and Detroit, and Cleveland, Ohio, is one of the pioneer lines in the United States. One of the most important experiments in regular line passenger transportation was that of the Philadelphia-Washington and Philadelphia-Norfolk routes operated in conjunction with the Sesqui-Centennial Exposition by the Mitten Management. These routes were discontinued in the fall of 1926.

Several additional passenger routes were established, or in the course of establishment, in 1927. Pitcairn Aviation, Incorporated, was organized to take over the Philadelphia-Washington route of the Philadelphia Rapid Transit service in connection with a through route connecting New York and Atlanta. Colonial Air Transport operates a route between New York and Boston and plans to establish passenger, mail, and express serv-

[4] U. S. Department of Commerce and American Engineering Council, Report, 1926.

ice on regular routes to cities of the Middle West. The National Air Transport was scheduled to operate a route starting late in 1927 between New York and Chicago carrying mail under contract with the Post Office Department, express matter under contract with the American Railway Express Company, and passengers as a common carrier line on regular schedule.

The Western Air Express operates a regular passenger service between Los Angeles, California, and Salt Lake City, Utah, a distance of 650 miles. The Pacific Air Transport operated a route paralleling the Pacific coast between Los Angeles and Seattle, a distance of more than 1,100 miles. The Ryan Airways, Incorporated, maintain daily passenger service between Los Angeles and San Diego, California, and the Stout Air Services operate a passenger and mail service between Detroit and Grand Rapids, Michigan, and plan to extend the lines to Buffalo, New York, to connect at that point with the National Air Transport. The Airplane Division of the Ford Motor Company operates a service between Cleveland, Ohio, and Detroit and between Detroit and Chicago.

STATISTICS OF AIR TRANSPORTATION, 1927

(Data from *American Aircraft Directory, 1927,* and from Department of Commerce, Aëronautic Branch)

Commercial air service and transportation companies	433
Airplanes in commercial services	1,000
Companies engaged in aërial surveying, photography, and map making	53
Companies engaged in crop dusting	22
Aërial exhibition companies	22
Flying schools	186
Number of flyers receiving training	1,200
Companies building airplane engines	23
Airports and landing fields	864
Companies carrying passengers or freight for hire	300
Passengers carried (January 1 to December 1, 1926)	387,852
Freight transported (January 1 to December 31, 1926), pounds	792,678
Companies building airplanes	66

The distinguishing characteristic of the present and proposed passenger and merchandise lines in the United States is the

length of the routes. Routes of many hundred and even a thousand miles in length are typical.

Air Taxi Service

In addition to the regular line passenger air services planes are operated by private individuals as pleasure or business craft, and by individuals or companies as carriers for hire in irregular service for special trips by air, as a sort of aërial taxicab. The privately owned and irregularly used planes far outnumber the planes used in regular line service at the present time. Sportsmen, amateur aviators, professional stunt and novelty trip flyers, and those using planes for passenger transportation as the occasions arise, own and operate many of the planes in service particularly in the Middle West and on the Pacific coast.

The trend at the present time is away from the irregular passenger taxi plane form of service and toward line service on regular schedule, and definite route. Planes have ceased to be novel toys for dilettante owners and are becoming recognized as parts of a national transportation service to fill the need for fast service. The prediction is freely made by those connected with air transportation that before many years have passed the skeleton framework of lines which now cross the continent with feeder lines connecting other large cities with one another will be filled out with a network of lines which will cover the United States from the Atlantic Ocean to the Pacific and from the Great Lakes to the Gulf of Mexico. Passengers will be able to travel between the larger cities over these lines at rates of speed well over one hundred miles per hour by day and night.[5]

The sanguine predictions of the enthusiasts for air transportation are based upon the assumption that legislation, technical improvements, and aid to air transport will be forthcoming and that the traffic will be developed to keep pace with improvements in service. There is reason to believe that passengers and a certain amount of high-grade express traffic will be developed, for

[5] George B. Post, "Aspects of Commercial Aviation in the United States," *Annals of the American Academy of Political and Social Science*, May, 1927.

the standard of living is higher and the number of professional and business men to whom rapid service at comparatively higher rates for air transportation would be attractive is greater in this country than in Europe. It is significant that a considerable number of passengers using the services of the air transport lines of western Europe are Americans.

Merchandise Service

The carriage of merchandise by aircraft is relatively an undeveloped field at the present time in the United States. It is true that occasional shipments of urgently needed goods have been forwarded by plane, but the business is yet to be developed on a commercial scale. The air transportation companies carrying mail under contract with the Post Office Department carry small amounts of merchandise freight as well as mail and passengers, and the American Railway Express has a contract with the National Air Transport to carry certain classes of merchandise of high value and low bulk that requires rapid transportation. Experiments are now being made in the handling of merchandise by aircraft. A recent series of tests was conducted at Curtiss Field, New York, to determine the practicability of unloading freight from planes at points along their routes by means of parachutes. The kinds of freight carried, the methods of handling, and the scales of charges for the carriage of merchandise freight by aircraft are problems to be worked out in the future as a result of the experience gained in the small volume of this traffic handled at the present time.

The American Railway Express Company after several years of study and experiment established a transcontinental air express service September 1, 1927, using the facilities of the Colonial Air Transport Company between Boston and New York, the National Air Transport Company between New York and Chicago and Dallas and Chicago, the Boeing Air Transport Company between Chicago and San Francisco and Los Angeles, and the Western Air Express between Salt Lake City and Los Angeles.

Air service reduces the scheduled time of express shipment between the Atlantic and Pacific coasts from two to four days

and between New York and Chicago by one or two days. Shipments leaving New York at the close of business Monday are scheduled to be delivered at San Francisco or Los Angeles Thursday morning. Overnight service is offered between New York and Chicago.

This service is of great importance in air transportation progress as it marks the first national merchandise service by aircraft.

Industrial Service

Considerable progress has been made in the United States in the use of aircraft in services other than the carriage of passengers and freight. These uses may be called collectively industrial services.

Planes were used to a limited extent before the World War in aërial photography, observer-photographers being carried in addition to the pilots of the craft to take the photographs with ordinary telescoping cameras. During the War aërial photography was used in connection with military operations and great progress was made during the War and in the period after the War in improving the airplane camera, and in the technique of aërial photography. Special cameras are now used in fast pursuit type planes operated by the pilot of the plane without an observer-photographer.

Aërial photographs and maps constructed from mosaic aërial photographs are used by industrial plants for plant photographs, by hydraulic power companies in surveying watersheds, by regional planning commissions in working out city plans, by state highways in laying out roads, by lumber companies in surveying timber tracts, by scientific expeditions in exploring, and for many other uses where comprehensive and accurate data are sought and which cannot be obtained from the ground.

The United States Topographic Survey uses aërial photography in map-making. It is stated that the use of airplanes by this branch of the government service in accomplishing less than half of its work saved $9,000,000. This saving represents the difference between the cost of making surveys by air and by land parties.

Aircraft are also effectively used in the United States and in Canada in forest patrol service and in forest fire-fighting as well as in timber-cruising and survey work. The United States Forestry Service is using planes and pilots of the United States Army in forest patrol and fire service while several private companies specialize in timber cruising, mapping, and survey work.

Airplanes have been successfully used for insect control. Cotton and other crops are dusted with poisonous insecticides to kill insect pests. The Bureau of Entomology of the United States Army Air Service did pioneer work in 1921 and 1922 in dusting cotton to exterminate the boll weevil. Experiments conducted by Dr. B. R. Coad at the Department of Agriculture experimental station at Tallulah, Louisiana, resulted in the development of a poisonous dust effective in killing the pest, but the effectiveness of the insecticide was found to depend upon the thoroughness and the application of the dust at the proper times. Ground machines were found to be less effective because the applications of dust could not be made as thoroughly and at the proper time to large tracts.

Army airplanes and those of a private company were used in 1925 and 1926 to dust large acreages of cotton. Three hundred to 1,000 acres per hour were dusted by planes as against 30 acres per day by ground machines. It has been estimated that the maximum use of airplane dusting would produce a net profit of $135,000,000 to cotton growers alone. Experiments are now being conducted with airplane dusting of other crops, timber and orchards so that this use of airplanes will probably be an important phase of agricultural development in the future.[6]

The progress made up to the present time in the United States has not kept pace with general developments in Europe. There are, however, many indications that a period of development surpassing that of Europe has been entered upon in this country. Economic, political, and physiographic conditions in the United States are very favorable for the rapid and sound development of air service, more favorable in many ways than in any other country of the world.

[6] U. S. Department of Commerce and American Engineering Council, Report, 1926.

The pioneering work in aviation and aëronautic engineering has given the United States the prestige of an early start, and great progress is being made in these fields.

Topographical and meteorological conditions are also favorable to air transportation. The major mountain chains extend north and south across the continent near the eastern and western borders leaving a tremendous area between free of mountainous obstructions. The marginal chains hamper the operation of planes to some extent but do not make it impossible over the most important routes. Prevailing weather conditions are more favorable to daily flights than in western Europe.

Economic conditions in the United States are favorable to permanent substantial development in air service. The vast extent of the country under one Government, with common business practices, greater business activity, one language, high standards of living, vast volume of freight, mail and passenger traffic will create a demand for rapid transportation service for passengers and goods. More freight is transported and more mail matter sent per capita in this country than in any other in the world.

The common national Government, freedom from customs barriers, and the interest of the Federal Government in other transportation projects in the past and present augur well for the future of air transportation. The policy of the Government with respect to the development of commercial air service did not crystallize until the passage of the Kelly Act of 1925 authorizing the Post Office Department to contract with private operators for the carriage of first-class mail by aircraft and the payment of compensatory remuneration to such contractors. The Postmaster General was also authorized to contract for the private operation of existing air mail routes and to establish additional routes in the future.[7] Soon after the passage of this Act another act was passed, the Air Commerce Act of 1926, establishing an Assistant Secretaryship in the Department of Commerce in Charge of Aviation to establish aids to air navigation, inspect and license planes and promote air commerce.[8]

[7] Act of Feb. 2, 1925.
[8] Bingham-Parker Act, May 20, 1926.

Prior to the passage of these acts the Federal Government had pursued a policy of laissez faire in connection with air transport. Landing fields, beacons, airways, and other facilities had been established at Federal expense for use of the Air Mail Service, but no constructive policy of aid for private operation had been followed. Subsidies or other monetary aids to air lines have not been paid by the United States Government. The report of the joint committee of the United States Department of Commerce and the American Engineering Council in 1926 expressed the conviction that commercial aviation should be developed as an economic service on a business basis if it is to justify its existence. Direct money grants were found to be neither wise nor necessary. The committee found only one air transportation operator who advocated direct subsidy.

The consensus of opinion of operators and others interested in air transportation development is that air transportation lines should be supplied with aids to navigation and operation comparable with the aids given to other transportation agencies, such as the aids to steamship navigation, improved waterways, and surface highways. Such assistance to air transportation would include public landing and terminal fields, illuminated airways, weather forecasting service and other meteorological data, adequate legislation to define the rights, duties, and liability of operators and the public and reasonable protection against ruthless and irresponsible competition. The Federal Government is launched on a policy of constructive aid and regulation of this sort, the principles of which are discussed in Chapter LXI.

Business support is needed to facilitate the development of air commerce. Responsible business men, adequate capital, and the use of air transportation facilities by business must be forthcoming to assure the future of the industry. The allocation of air mail contracts by the Post Office Department to private operators, the contracts of the American Railway Express, and the patronage of certain of the pioneer passenger lines have attracted substantial amounts of capital and competent business men to the new industry. Mr. Anthony H. G. Fokker of the Atlantic Aircraft Corporation points to the success of the Phila-

delphia-Washington air service of the Philadelphia Rapid Transit Company in 1926 as an indication of public support of regular, dependable, and comfortable air passenger service. This line, operating 8 passenger planes twice daily for 4 months carried 3,600 passengers. Mr. Fokker also points to the fact that 48 per cent of the passengers carried in 1925 by the air line operating from Croyden, England, to Paris were American citizens.[9]

Adequate insurance protection for equipment, property carried, and the lives of operators and passengers is needed to develop air transportation in the United States. At the close of the War a number of insurance companies entered the field of aircraft insurance. Many had unprofitable experience in this type of risk coverage partly through failure to distinguish properly between safe and dangerous operations. The lack of adequate experience data and the losses of other underwriters caused many insurance companies to accept only a few of the many lines of insurance coverage required in air transportation and to limit the amounts of the indemnities written.

The owners, operators, and users of aircraft were handicapped by the necessity of obtaining insurance protection against various risks from a number of different companies, some of them foreign companies. Complete protection was often not obtainable.

The rates of insurance for many of the hazards of air transportation were burdensomely high due to lack of experience which caused underwriters to accept poor risks and to load the premiums heavily to cover the average losses. Reliable air transport operators have been forced to bear an unduly high insurance premium burden caused by irresponsible flyers. Insurance rates are being reduced through more careful selection of risks by the underwriters.

Complete insurance protection for air transportation hazards is now being written in the United States. Policies of this sort include protection against fire, accidental damage, lightning, theft, robbery, pilferage, public liability, passenger liability, property damage, and loss resulting from tornado, cyclone, and

[9] A. H. G. Fokker, "Air Transportation," *Ibid.*

windstorm. Additional protection is obtainable to insure against personal accidents, compensation, employers' liability, and cargo risks.

Insurance of this kind tends to place the operation of planes in common carrier service upon a more stable basis. Owners of aircraft are now able to insure against the three important groups of hazards in air transportation; first, the loss of damage to the planes; second, the liability of the carrier for the injury or death of passengers or the loss or damage to property carried in the planes; and third, the liability of the carrier for injury or death of persons or the damage to property of others outside the plane.[10]

The rates and fares of air transportation are high compared with rates of other transportation agencies and will probably continue to be higher than the rates of other carriers on account of higher operating expenses and greater speed. A speed differential is commonly charged in other forms of transportation. Developments in the technique of aircraft operation will doubtless tend to decrease operating costs while the increased use of air transportation services will just as surely tend to decrease the level of charges.

It will doubtless be many years before air transportation rivals other facilities in the transportation of passengers and merchandise but aircraft have already come to fill a unique rôle in transportation, the importance of which will tend to increase rapidly. The announcement of several trunk line railroads that they are interested in air transportation and that plans are being considered to coördinate railroad and air transportation indicates that air transport is finding a definite place in the transportation system of this country.

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CHAPTER LX

THE AIR MAIL SERVICE

COLONEL CHARLES A. LINDBERGH states that the air mail of the United States is the envy of all Europe and the progress made since 1918 supports this view. The first air mail route in this country was established by the Post Office Department in conjunction with the War Department between Washington and New York City, May 15, 1918. Planes, pilots, and other personnel were furnished by the War Department and the operation and maintenance of the planes were attended to by the War Department while the Post Office Department attended to the handling of the mail.

This arrangement was continued in force until August 12, 1918, when the second stage of the development was marked by the Post Office Department taking over the entire air mail service including personnel and equipment and the complete operation and maintenance of the service. This stage of the air mail history was the period in which the Post Office Department experimented with equipment, weather, night flying, flying and ground service arrangements, routes, postage rates, and other unknown quantities in regular route flying on a comparatively large scale and with considerable regularity.

A number of planes were obtained through transfer from the Navy and War Departments. These were rebuilt and remodeled in order to adapt them for carrying mail. Safety and carrying capacity were the attributes sought in selecting and remodeling the craft. The first planes used for mail service when the War Department operated the service were Curtiss planes of the JN4H type equipped with Hispano-Suiza motors. Later the Post Office Department acquired planes especially built by the Standard Air Craft for carrying mail. Hispano-Suiza motors were used in these planes. DeHaviland, Curtis H-A, and Curtis R-4

planes, all with Liberty motors; Martin mail planes with two Liberty motors; DeHavilands with two Hall Scott L-6 motors; and Junker or J. L-6 planes with 240 horse power B M W motors were all used in the mail service by the Post Office Department between 1918 and 1922. In that year DeHaviland planes with Liberty motors were adopted as standard equipment because unused stocks of Liberty motors were available to the Government at nominal prices, and because this type of plane was found after motor and structural changes to be speedy, reliable, comparatively safe, long-lived, and capable of carrying mail loads of 500 pounds.

The steady increase in volume of mail traffic made necessary a type of plane carrying more than 500 pounds. Competitive bids were received by the Post Office Department and 51 Douglas mail planes, faster and with twice the mail-carrying capacity of the DeHavilands, were purchased for the air mail service in 1926.

Weather difficulties have been one of the most serious problems to be overcome from the inception of the air mail service to the present time. It is still the outstanding cause of delay and failure in dispatching the planes over their routes. The weather forecasting service of the Department of Agriculture and improvements in plane design and motor construction have made air mail service possible now in weather that would have prevented flying in the first years of the service. Rain and freezing mists cause planes to come down and dense fogs prevent landings at the present time, but the planes are flown in fog and cloudy weather which would have compelled the postponement of flights less than ten years ago.

One of the outstanding contributions of the Post Office Department to aviation during this period of experimentation and development was the demonstration of the practicability of regular cross-country night flying over regular routes on definitely fixed schedules. Aircraft had of course been flown occasionally at night before the experiments by the mail service in 1923, especially by the United States Army aviators, but little regular scheduled route flying had been attempted.

Experiments were first conducted with the data compiled by

the War Department. Beacon lights were set up on a route between Cheyenne, Wyoming, and Chicago; terminal fields were laid out and lighted, and emergency landing fields equipped with lights. Flyers made experimental night flights over various routes, and in August, 1923, a regular schedule of night flying was established between Chicago and Cheyenne. Flashing gas beacon lights at 15-mile intervals; emergency landing fields with rotating electric beacons, boundary markers, and telephone equipment; terminal fields with flood lights and boundary markers; planes equipped with luminous instruments, landing lights, and parachute flares; and efficient ground and flying organizations have made night flying a regular scheduled service with a high ratio of actual flights to scheduled service.

Lighted airways have been constructed by gradual stages from 1923 to the present, eastward from Chicago to Cleveland and thence to New York, and westward from Cheyenne to Rock Springs, Wyoming, and later to Salt Lake City. The extension of the airways from Cleveland to New York and from Rock Springs to Salt Lake City was a great achievement in aviation engineering as it required the placing of beacon lights and emergency landing fields in sparsely populated mountainous country in places serviceable to the flyers and yet accessible from the ground.

Since the first experimental route between New York and Washington, inaugurated in May, 1918, and discontinued May 31, 1921, route after route has been added by the Post Office Department. The first part of a proposed transcontinental route was established May 15, 1919, between Chicago and Cleveland. The next leg from Cleveland to New York was put in service July 1 of the same year; the third, from Chicago to Omaha, May 15, 1920; and the final stage between Omaha and San Francisco on September 8, 1920. No through transcontinental service was put in operation until July 1, 1924. A 32-hour schedule of transcontinental service was established at that time and has been maintained ever since. This route necessitated regularly scheduled night flights between Chicago and Salt Lake City.

Other Post Office Department routes were added from time

to time and several were discontinued as the need or lack of need of the routes was demonstrated. The most important route perhaps is the regular overnight schedule between New York and Chicago. This service was established on a 5 nights a week schedule in 1925 and was made nightly in May, 1926. Contract routes were established through agreements between the Post Office Department and private companies to make direct connections with and to act as auxiliary services to the Government operated transcontinental or the New York-Chicago routes in the latter year.

The Post Office Department originally charged special rates for air mail service but it was forced on account of the failure to use the service to abandon this plan in 1919. From 1919 to 1924 selected first-class mail at regular postage rates was carried in the planes. Experiments were being made in service and much of the mail was not carried from the originating station to final station by air service. The transcontinental mails, for example, were carried by plane from Chicago to North Platte, Nebraska, and there placed on trains which had left Chicago 24 hours earlier and carried in railroad mail service to the Pacific coast. When the transcontinental all-air mail service was opened by the Post Office Department, July 1, 1924, special air mail rates were put in effect and since that time only mail matter addressed in care of air mail service with postage paid at air mail rates has been carried by planes. The present schedule of rates is discussed below.

The third stage in the development of the service was ushered in by the Contract Air Mail Act of 1925 which authorized the Postmaster General to enter into contracts with private persons for the carriage of the mails. Contracts were let for a number of feeder and auxiliary main lines during 1925 and 1926 and for the portions of the transcontinental route during 1927. The Postmaster-General announced that the Government in transferring the service from government to private operation was placing the air mail service in the same relationship with the Post Office Department as the mail service performed by the railroads, electric railways, and steamship lines.

This move does not mean that the Post Office Department is

losing its interest in the air mail but instead it is making the air mail service an incentive to commercial aviation which should result in the swifter development of commercial flying. The transfer of the transcontinental air mail routes and the development of auxiliary feeder routes to private mail contractors brings about the consummation of the plans of the Post Office Department to demonstrate the feasibility of transcontinental scheduled service despite weather conditions and night flying and to transfer to commercial companies as soon as these companies were strong enough not only the physical assets of the Post Office Department but the technical data and experience gained through experimentation and operation.

Contracts are awarded to private aviation companies as a result of competitive bids for handling mails. The original act of 1925 provided for a distribution of the revenues on the basis of a count of postage revenue. The act was amended in 1926 directing the making of contracts on the basis of the weight of the mail carried.[1] This change facilitated the service through the elimination of clerical expense and the saving of time in counting and prorating or dividing the postage. The weight basis resulted in increasing slightly the amounts of compensation paid the contractors but this has been more than offset in the advantages gained through the later closings of post offices and the savings in clerical hire. Twelve contract routes were awarded in the fiscal year 1925, 9 in 1926 and a number more in 1927. In addition to these regular routes, contracts were let for transportation of the mail by contract aircraft carriers between other points not on the original routes. A total of more than 12,000 miles of air mail routes was in service in 1927 and additional routes are being considered.

The rapid development of the air mail service is attested to by the increase in the daily loads carried over the transcontinental route between 1924 and 1926. The daily average load at the beginning of the service in July, 1924, was 621 pounds; in July, 1925, it had increased to a daily average of 757 pounds; in July, 1926, to 832 pounds and in December of that year to 1,106 pounds daily.

[1] Act of Congress, June 3, 1926.

The growth in size and regularity of the service is graphically illustrated in the statement of the performance of the air mail service for the fiscal years 1918 to 1926, shown in the accompanying table. The number of letters carried is determined by multiplying the number of pounds carried by 40, the number of letters estimated to be contained in each pound. It should be noted that the number of letters carried has fallen off considerably since the adoption of the policy of carrying in planes only the mail paying special air mail postage rates. This policy was adopted in 1924.

The remarkable record was made at a cost of 42 lives and 253 injuries, 25 of which were serious. The casualties included pilots, ground personnel, and passengers. One hundred and sixty-six planes crashed, 31 with fatal consequences to pilots or others. An average of 78,762 miles was flown for each crash and 326,863 miles of service were operated for each fatality either in flight or on the ground. When it is considered that of the 2,547,992 miles flown in air mail service in the fiscal year ending June 30, 1927, 945,654 miles were flown at night, and 1,602,338 in regular daily mail ferry and test flights, the record becomes the more remarkable.

The Post Office Department in the first 9 years of air mail service has received nearly $13,000,000 in appropriations and has expended nearly $15,000,000 in developing the service. The value of government property in the air mail service including plane, field equipment, buildings, motor vehicles, radio equipment, and miscellaneous property and supplies inventoried $3,816,679 at the close of the fiscal year 1926.

The Post Office Department has experimented with rates of postage. During the first stage of the service special rates were charged for each route. Later selected mail was carried at regular postage rates. On July 1, 1924, with the establishment of the transcontinental route special airplane postage rates of 10 cents per ounce or fraction thereof were put in effect for transportation over the New York-Chicago overnight route and 8 cents per ounce or fraction of an ounce over each of the three transcontinental zones or legs, Chicago-New York, Chicago-Cheyenne, and Cheyenne-San Francisco. When the contract

routes were inaugurated the zone rates were changed to 5 cents per ounce or fraction thereof for the transportation of the mail over each zone of the transcontinental or Chicago-New York overnight route plus 10 cents per ounce for transportation over the contract route. Thus the rate from Detroit to New York via contract route to Chicago and the overnight service, Chicago to New York, was 15 cents per ounce or fraction of an ounce.

CONSOLIDATED STATEMENT OF PERFORMANCE, AIR MAIL SERVICE

Fiscal Years 1918 to 1928

Compiled from data published by the United States Post Office Department

Fiscal Year	Miles Mail Trips Scheduled	Miles Traveled with Mails	Percentage Miles Flown with Mail	Number of Letters Carried	Total Miles Flown Including Ferry and Test
1918	18,000	16,009	84	713,240	21,389
1919	166,843	160,066	96	9,210,040	194,986
1920	653,764	549,244	84	21,063,120	648,400
1921	1,819,978	1,554,985	86	44,834,080	1,770,658
1922	1,629,250	1,537,927	94	48,988,920	1,727,265
1923	1,644,457	1,590,637	96	67,875,840	1,809,028
1924	1,590,425	1,522,763	95	60,001,360	1,853,251
1925	2,160,022	2,076,764	96	9,300,520	2,501,555
1926	2,405,059	2,256,137	94	14,145,640	2,547,992
1927*	2,482,865	2,329,553	95	22,385,000	2,583,006
1928	179,304	173,987	97	3,338,080	195,712
TOTAL	14,749,967	13,768,072	93	301,855,840	15,853,242

* Government operation relinquished to contractors July 1, 1927.

In 1927 the air mail postage rate was put on a flat-rate basis of 10 cents per half ounce or fraction thereof without regard to distance, zone or route.[2] A further reduction to 10 cents per ounce is being considered at the time this is written.[3] The flat-rate basis has the advantages of simplicity and is designed to encourage the use of the mail service for important business and social communications.

Special airplane mail stamps are issued by the Post Office

[2] February 1, 1927.

[3] Rate reduced to 5 cents for the first ounce and 10 cents for each additional ounce, effective August 1, 1928.

Department and special envelope markings have been approved. One recommended marking consists of three horizontal stripes horizontally across the envelope, the top stripe blue; the center, white; and the lower one, red. Another approved envelope marking consists of two horizontal blue stripes and two vertical stripes with the words "Via Air Mail" between the horizontal stripes. These markings are not required but the payment of the air mail postage rates and the endorsement of the envelopes with the words "Via Air Mail" in prominent places is required.

Mail that is to be transported partly by airplane and partly by railroad mail service must be paid at air mail rates, and the envelopes must be endorsed "Via Air Mail" to or from the point at which the mail is exchanged between the air and railroad routes.

The air mail service has contributed greatly to expediting the mail service between the larger cities of the United States and has saved whole business days in connection with mail service between a number of important cities. The service has been brought from an experiment to a demonstrated and proven institution of great and growing value. The contracts for mail service awarded to private operators permit the carriage of passengers and freight by these lines and the mail contracts will unquestionably supplement the earnings of these lines to a substantial extent and encourage the development of commercial aviation.

The Honorable W. Irving Glover, for a number of years Second Assistant Postmaster-General in charge of the Air Mail Service, has expressed the view that the transfer of the air mail service to private operators, after the successful pioneering work of the Post Office Department, will result in the stimulation of the use of air mail service and carry on the development of commercial aviation to a point undreamed of at this time.[4]

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CHAPTER LXI

THE REGULATION OF AIR TRANSPORTATION

THE regulation of air transportation is the concern of municipal, state and Federal governments and of international agreements. Of these four agencies the national and international are by far the more important on account of the span and cruising radius of the aircraft.

Municipal regulations are of relatively slight importance as they include ordinances regulating the use of municipal airports and other details pertaining to the flight and landing of aircraft within the limits of the municipalities.

The first state law regulating aviation was enacted by the Connecticut legislature in 1911. The draft of this important pioneer act was the result of the activities of the American Bar Association, the aviation committee of which had been working on legislation to fix the responsibilities and define the rights of the owners and operators of aircraft and the public. The significant feature of the Connecticut law is that it departs from the common-law rule of negligence and makes the owner of an aircraft causing injury or damage to persons or property liable to the injured party even though proper care and skill have been exercised in operating the craft. Twenty-one states have passed laws of some sort affecting air transportation.

Air transportation in this country has lagged partly because of the failure of the Federal Government until 1926 to provide adequate legislation necessary to put it upon a sound business basis. No national regulations were provided to license pilots, to inspect planes and other aircraft, to define the rights of aviation companies to acquire property in landing fields or other aids to air navigation or to determine the rights and liabilities of the owners and operators of aircraft. Air transportation is obviously best regulated by the national Government. Muni-

cipal and state boundaries are too narrow for an adequate regulatory system. The danger of conflicting legislation and of conflicting interpretations of the laws by the states is too great for the public wisely to allow air transportation, which is essentially an interstate matter, to be regulated by municipal and state bodies.

Federal regulation of air transportation is based upon the commerce clause of the Constitution which gives to Congress the power to regulate commerce among the states and with foreign nations. Although intrastate commerce is subject to the regulations of the states, it is not an invasion of the authority of the states when the Federal Government in regulating interstate commerce so acts as incidentally to regulate state commerce if interstate and intrastate commerce are commingled. The power of the Federal Government over interstate Commerce is plenary.[1] The Supreme Court has also held that the power of Congress to regulate commerce among the states is not confined to the regulation of instrumentalities as they are used in interstate commerce.[2]

Federal legislation of air transportation in this country largely grew out of the efforts of the aircraft industry, the work of the Committee on the Law of Aëronautics of the American Bar Association and the appointment by Congress of at least 20 aircraft investigating committees and boards since the entrance of the United States in the World War. One important bill introduced in Congress, the Civil Aëronautics Bill of 1923, failed to be reported out of Committee. Two of these investigating committees are of special importance, for their reports were the immediate forerunners of the Air Commerce Act of 1926. The Select Committee of Inquiry into the Operations of the United States Air Services, the Lampert-Perkins Committee, was appointed in March, 1924, and the President's Aircraft Committee, of which Dwight P. Morrow was Chairman, was appointed in September, 1925, to report upon the best means to be adopted to develop and apply aircraft to national defense.

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[1] C., M., and St. P. Ry. Co. *v.* P. U. Commission of Illinois, 242 U. S. 333.

[2] C. and W. C. Ry. Co. *v.* Varnville Furniture Co., 237 U. S. 597.

The scope of the inquiries of the Morrow Board was broad enough to enable the Board to consider all phases of air transportation and to assist Congress to proceed with a program of legislation to develop civil air transportation as well as to shape a program covering a period of 5 years' development for army and naval aviation.

The Bingham and Parker Bills introduced in the Senate and in the House of Representatives were identical and became a law, The Air Commerce Act, May 20, 1926. The object of the law was so to stabilize civil or commercial aviation as to attract adequate capital into the business and to provide it with the assistance and legal basis necessary to its development. It fixes the relationship of the Federal Government to the development of civil air transportation and provides for aid, encouragement, and regulation.[3]

The Air Commerce Act of 1926

Air commerce is defined in the Act as transportation in whole or in part by aircraft of persons or property for hire, the navigation of aircraft in furtherance of, or for the conduct of, a business.

Interstate or foreign air commerce is defined as air commerce between any state, territory, or possession, or the District of Columbia, and any place outside these limits or between points within the same state, territory or possession, or the District of Columbia, but through the air space over any place outside thereof; or wholly within the air space over any territory or possession or the District of Columbia.

The Act makes it the duty of the Secretary of Commerce to foster air commerce by encouraging the establishment of airports, civil airways, and other air navigation facilities; by making recommendations to the Secretary of Agriculture as to necessary meteorological service; by studying the possibilities for the development of air commerce and the aëronautical industry and trade in the United States and to collect and disseminate information relative to aëronautics; by advising with the Bureau of Standards and other agencies in the executive

[3] Senate Document Public No. 254, 69 Cong., approved May 20, 1926.

branch of the Government in carrying forward research and development work tending to create improved air navigation facilities.

The Secretary of Commerce is authorized to transfer funds available for carrying out these purposes to any agency for research and development work in coöperation with the Department of Commerce; to investigate and publish the cases of accidents in civil air navigation in the United States; and to exchange information pertaining to civil air navigation with foreign governments through existing governmental and international channels.

The Department of Commerce is authorized by the Act to provide for the registration of aircraft eligible for registration, if the owners request registration. No aircraft is eligible for registration unless it is a civil aircraft owned by a citizen of the United States, and not registered under the laws of any foreign country, or is a public aircraft.

The Department of Commerce is also authorized to provide for the rating of aircraft as to their airworthiness. As a basis for rating full particulars of the design and of the calculations upon which the design is based and of the materials and methods used in the construction may be required. The Department may accept reports of properly qualified persons employed by the manufacturers or owners of aircraft, and reports of the periodic examination of aircraft in service by officers or employees of the Department of Commerce or by properly qualified private persons. Such examinations and reports by such qualified persons may be accepted in lieu of examination by the employees of the Department of Commerce. Aircraft may be re-rated as to their airworthiness upon the basis of information obtained from time to time.

The Act authorizes the Department of Commerce to examine periodically and rate airmen serving in connection with aircraft of the United States as to their qualifications for such service, and to provide for the examination and rating of air navigation facilities available for the use of aircraft as to their suitability for such use. The Department may establish air traffic rules for the navigation, protection, and identification of air-

craft. Rules of this sort include regulations governing the safe altitudes of flight and rules for the prevention of collisions between vessels and aircraft.

Regulations are authorized to be made by the Department of Commerce respecting the issuance, suspension, and revocation of the registration certificate of aircraft, and of airmen. Within 20 days after notice that application for any certificate is denied or that a certificate is suspended or revoked the applicant or holder may file a written request with the Secretary of Commerce for a public hearing. The Secretary is directed to arrange for a public hearing to be held at a convenient place within 20 days after the request is received and to give the applicant or holder at least 10 days' notice of the hearing, unless an earlier hearing is consented to by him. Notice may be served personally upon the applicant or holder or sent him by registered mail. The Secretary, or any officer or employee of the Department of Commerce designated by him in writing for the purpose, may conduct the hearings. Evidence taken at the hearings is forwarded to the Secretary for decision. The decision of the Secretary, if in accordance with law, is final.

The airways under the jurisdiction and control of the Postmaster-General, together with all emergency landing fields and other air navigation facilities, except airports and terminal landing fields, used in connection with the air mail service are directed by the act to be transferred to the jurisdiction and control of the Secretary of Commerce. Airports and terminal landing fields may be transferred to the jurisdiction and control of the municipalities concerned under arrangements subject to approval by the President.

The Secretary of Commerce is authorized to designate and establish civil airways and to establish, operate, and maintain all necessary air navigation facilities, excepting airports, along the airways. The Department is authorized to chart airways and arrange for the publication of maps of the airways, utilizing the facilities and assistance of existing agencies of the Government so far as practicable. The Secretary of Commerce is directed not to grant exclusive right for the use of any civil airway, airport, emergency landing field, or other air navigation facility.

Air navigation facilities owned or operated by the United States may be made available for public use under conditions and to the extent deemed advisable by the heads of the government bodies controlling the facilities. The head of any government department or other independent establishment having jurisdiction over any airport or emergency landing field owned or operated by the United States may provide for the sale of aircraft fuel, oil, equipment, supplies, mechanical service, temporary shelter, and other assistance to aircraft in emergencies under regulations determined by the head of the department or establishment. Assistance of this sort may be rendered only when it is necessary to the continuance of the aircraft on its course to the nearest airport operated by private enterprise. Supplies and service are furnished at the fair market value prevailing locally.

The Weather Bureau, under the direction of the Secretary of Agriculture is directed to furnish weather reports, forecasts, warnings, and advices required to promote the safety and efficiency of air navigation, particularly upon civil airways, designated by the Secretary of Commerce as routes for air commerce, and to investigate atmospheric phenomena, and establish meteorological offices and stations.

The Air Commerce Act of 1926 does not prevent the Secretary of War from designating routes as military airways and regulating the use of military aircraft on routes which do not conform to the civil airways. Neither does the Act in any way prevent the Secretary of Commerce from designating any military airway as a civil airway.

The United States has, to the exclusion of all foreign nations, complete sovereignty of the air space over the lands and waters of the United States, including the Canal Zone. Aircraft of the armed forces of any foreign nation may not be operated in the United States and Canal Zone except with the authorization of the Secretary of State. Foreign aircraft not of armed forces may be navigated in the United States but only if authorized by the Secretary of Commerce, who is empowered to grant such authority if the same privilege is accorded by the foreign nation to aircraft of the United States. No foreign

aircraft are permitted, however, to engage in interstate or intrastate air commerce in the United States, which is reserved exclusively to domestic planes and ships.

The Secretary of the Treasury is authorized to designate ports of entry for civil aircraft and for the entry of merchandise carried in aircraft. Employees of the customs service are used for this purpose. Regulations of the Treasury Department provide for the application of the laws and regulations relating to the administration of the customs and public health laws to air navigation. The Secretary of Commerce is authorized to provide for the application to civil aircraft of the laws and regulations relating to the entry and clearance of vessels and the Secretary of Labor is authorized to designate any of the ports of entry for civil aircraft as ports of entry for aliens arriving by aircraft and to apply to civil air navigation the laws and regulations relating to the administration of the immigration laws. Penalties of fines and imprisonment are provided for violation of provisions of the Act.

The Act provides for the creation of an Assistant Secretary of Commerce for Aëronautics, to be appointed by the President by and with the advice and consent of the Senate, to aid the Secretary of Commerce in fostering air commerce. William P. MacCracken was appointed the first Assistant Secretary on August 11, 1926.

The work of establishing and maintaining aids to air navigation has been assigned to the Lighthouse Service, and an Airways Division of that branch of the service has been created to attend to the establishment, maintenance, repair and operation of light beacons, lighted emergency landing fields, radio and other communication facilities and other aids to aërial navigation. The Coast and Geodetic Survey Division has been given jurisdiction of the mapping of airways, and a special Aëronautics Division has been created in the Bureau of Standards to consolidate research in aëronautics.

The Aëronautic Branch of the Department of Commerce was organized to include three divisions: the Air Regulations Division, the Airways Division, and the Air Information Division, and the work of these dvisions and the activities of allied

branches of the Government are controlled by the Assistant Secretary of Commerce for Aëronautics.

The Department of Commerce commenced an investigation into suitable regulations to govern the operation of aircraft and issued a code of regulations which went into effect December 31, 1926.[4] These rules govern the licensing of aircraft, the requirements as to their operation and the licensing of pilots and mechanics. The rules apply to planes and operators in interstate commerce who voluntarily apply for licenses to the Department of Commerce.

General regulations governing the marking of aircraft, air traffic rules and penalties for violations thereof apply to all operators of licensed and unlicensed craft in intrastate and interstate air transportation and to private noncommercial, as well as to commercial flying.

In drafting the rules to govern commercial air transportation in the United States the Department of Commerce had the benefit of the code of the International Air Navigation Convention as well as the testimony and drafts of reports of aircraft manufacturers, operators, pilots, engineers, and other individuals and organizations interested in the development of air transportation. The rules have the force of law, but they may be changed at the discretion of the Secretary of Commerce if experience demonstrates the need of changes.

The law and the activities of the Department of Commerce in applying the law have met with the approval of the air transportation industry generally. Lieutenant Colonel W. Jefferson Davis, formerly War Department Legal Advisor in Europe and a member of the Air Law Committee of the American Bar Association, states that Congress in the Air Commerce Act of 1926 has written a Bill of Rights for the "fourth estate of transportation," the commerce of the air. "The legislation was rather belated but it atones, partially, for the legislative laggardness of the past. . . . This act put the Government to the task of developing commercial aviation but without the intervention of a direct Government subsidy. Our Government has shied rather consistently from direct subsidies, although European

[4] "Air Commerce Regulations," Department of Commerce.

nations are not so aloof. . . . The new law gives commercial aviation a legal standing—something it has never had before."[5]

Regulation Abroad and International Control

European nations almost without exception have laws governing air transportation and aiding air commerce through subsidies. Sixteen of the most important European nations have adopted the International Air Code formulated at the Prague Conference in 1919. The international control of aviation was attempted first in 1910, when a convention was called at Paris to draft a code. Nothing definite was accomplished by this convention partly because of the refusal of nations to recognize the exclusive national sovereignty of air spaces above countries, and a second convention of delegates of sixteen of the Allied Powers was called by the Premier of France in 1919 to draw up an international code for air transportation. A commission was appointed consisting of two delegates each of the United States, Great Britain, France, Italy, and Japan and one delegate each of Belgium, Portugal, Greece, Roumania, Servia, Brazil, and Cuba. This commission became the Aëronautical Commission which advised in aëronautic matters the Supreme Council of the Peace Conference at Versailles.

The International Convention on Air Navigation drafted by this body provides that the high contracting parties recognize that every power has complete and exclusive sovereignty over the air space over its territory including the territory of the mother country, and of its colonies and the territorial waters adjacent to the country or its colonies (Article I). The right of innocent passage in times of peace over the national air space except prohibited areas is granted by each of the contracting states to the aircraft of the other states subscribing to the convention.

The Convention defines the nationality of aircraft and provides for the international registry of craft licensed under national laws and requires the display of identification insignia on the craft. Aircraft crews and wireless certificates are re-

[5] "Clearing the Air for Commerce," *Annals of the American Academy of Political and Social Science*, May, 1927, pp. 141, 142.

quired to be validated by each nation and certificates of airworthiness of the craft and competency of the crews are required of all crews and craft operated in international flights. Standard medical requirements for flyers are recognized as being desirable and necessary.

The right is reserved by each contracting nation to establish reservations and restrictions in favor of its own national aircraft in connection with the carriage of passengers or goods for hire between points within its own territory (Article 16).

International airways may be established subject to the consent of the nations over which the routes lie. Non-stop flights may be made over or through the territory of any contracting nation along certain designated routes without the possibility of the detention of the craft en route. Provisions are made for the landing and departure of craft of one nation in the territories of other contracting states. Every craft internationally registered is required to be provided when under way with a certificate of registry, a certificate of airworthiness, a log book, and a list of cargo and passengers carried.

Each state over which flights are made has jurisdiction with regard to breaches of its laws for the public safety, its military and its fiscal laws. Equal facilities are to be given to all craft in the use of airdromes and assistance in distress.

Aircraft are forbidden to carry arms, munitions, or explosives in international commerce. The use of photographic apparatus carried by the craft of one contracting nation over the territories of other contracting countries is regulated and military aircraft are forbiden to fly over the territories of other nations.

The United States has not ratified the International Convention on Air Navigation. The Convention was connected with the League of Nations and decisions of the Commission are communicated to the League of Nations. The refusal of the United States to enter the League has delayed the ratification of the Convention, although it is possible to adhere to these regulations without joining the League just as the United States has adhered to the Permanent Court of International Justice, which has also some connection with the League of Nations.

If the United States does not adopt this code separate treaties

must be entered into with all nations over the boundaries of which fliers of the United States operate. Certainly treaties must be made with Canada and Mexico if routes across the territories of these nations are established. Special permission must now be obtained for each flight over foreign soil or territorial waters, for American aviators have no right to fly over the boundary lines of other nations. Permission of this sort had to be obtained by the State Department from each nation when the Round-the-World Flyers made their voyage of 20,000 miles in 1924 and permission had to be obtained separately for each overseas flight in 1927. Flyers of the United States are put at a disadvantage also if, after permission is granted to fly over foreign nations, damage results from accidents to persons or property in the nations granting the permits. They are not given the benefit of special international consideration enjoyed by aviators under the protection of the International Aëronautical Agreement.

The operators of air transportation services of the nations signatory of the agreement are given greater freedom of action. Boundary lines are in a measure obliterated, and the international operations are given legal standing. If international air service is to be developed by American air transportation companies the failure to adhere to the Convention will prove a burden of importance.

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APPENDIX

MERCHANT MARINE ACT, 1928

AN ACT To further develop an American merchant marine, to assure its permanence in the transportation of the foreign trade of the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—DECLARATION OF POLICY

SEC. 1. The policy and the primary purpose declared in section 1 of the Merchant Marine Act, 1920 [U. S. C., Title 46, § 861], are hereby confirmed.

TITLE II—SHIPPING BOARD VESSELS

SALES BY BOARD

SEC. 201. The United States Shipping Board shall not sell any vessel or any line of vessels except when in its judgment the building up and maintenance of an adequate merchant marine can be best served thereby, and then only upon the affirmative vote of five members of the board duly recorded.

REMODELING AND IMPROVING

SEC. 202. In addition to its power to recondition and repair vessels under section 12 of the Merchant Marine Act, 1920, as amended [U. S. C., Title 46, § 871], the board may remodel and improve vessels owned by the United States and in its possession or under its control, so as to equip them adequately for competition in the foreign trade of the United States. Any vessel so remodeled or improved shall be documented under the laws of the United States and shall remain documented under such laws for not less than five years from the date of the completion of the remodeling or improving and so long as there remains due the United States any money or interest on account of such vessel, and during such period it shall be operated only on voyages which are not exclusively coastwise.

REPLACEMENTS

SEC. 203. The necessity for the replacement of vessels owned by the United States and in the possession or under the control of the board and the construction for the board of additional up-to-date cargo, combination cargo and passenger, and passenger ships, to give the United States an adequate merchant marine, is hereby recognized, and the board is authorized and directed to present to Congress from time to time, recommendations setting forth what new vessels are required for permanent operation under the United States flag in foreign trade, and the estimated cost thereof, to the end that Congress may, from time to time, make provision for replacements and additions. All vessels built for the board shall be built in the United States, and they shall be planned with reference to their possible usefulness as auxiliaries to the naval and military services of the United States.

TITLE III—CONSTRUCTION LOAN FUND

TERMS AND CONDITIONS OF LOANS

SEC. 301. (a) Section 11 of the Merchant Marine Act, 1920, as amended [U. S. C., Title 46, § 870; 44 Statutes at Large, pt. 2, 1451], is amended to read as follows:

"SEC. 11. (a) That the board may set aside, out of the revenues from sales, including proceeds of securities consisting of notes, letters of credit, or other evidences of debt, taken by it for deferred payments on purchase money from sales by the board, whether such securities are to the order of the United States, the United States Shipping Board, the United States Shipping Board Emergency Fleet Corporation, or the United States Shipping Board Merchant Fleet Corporation, either directly or by indorsement, until the amounts thus set aside from time to time aggregate $125,000,000. The amount thus set aside shall be known as the construction loan fund. The board may use such fund to the extent it thinks proper, upon such terms as the board may prescribe, in making loans to aid persons citizens of the United States in the construction by them in private shipyards or navy yards in the United States of vessels of the best and most efficient type for the establishment or maintenance of service on lines deemed desirable or necessary by the board, provided such vessel shall be fitted and equipped with the most modern, the most efficient, and the most economical engines, machinery, and commercial appliances; or in the outfitting and equipment by them in private shipyards or navy yards in the United States of vessels already built, with engines, machinery, and commercial appliances of the type and kind mentioned; or in the reconditioning, remodeling, or improvement by them in private shipyards or navy yards in the United States of vessels already built.

"(b) The term 'vessel' or 'vessels', where used in this section, shall be construed to mean a vessel or vessels to aid in whose construction, equipment, reconditioning, remodeling, or improvement, a loan is made from the construction loan fund of the board. All such vessels shall be documented under the laws of the United States and shall remain documented under such laws for not less than twenty years from the date the loan is made, and so long as there remains due the United States any principal or interest on account of such loan.

"(c) No loan shall be made for a longer time than twenty years. If it is not to be repaid within two years from the date when the first advance on the loan is made by the board, the principal shall be payable in equal annual installments to be definitely prescribed in the instruments. The loan may be paid at any time, on thirty days' written notice to the board, with interest computed to date of payment.

"(d) All such loans shall bear interest at rates as follows, payable not less frequently than annually: During any period in which the vessel is operated exclusively in coastwise trade, or is inactive, the rate of interest shall be as fixed by the board, but not less than 5¼ per centum per annum. During any period in which the vessel is operated in foreign trade the rate shall be the lowest rate of yield (to the nearest one-eighth of 1 per centum) of any Government obligation bearing a date of issue subsequent to April 6, 1917 (except postal-savings bonds), and outstanding at the time the loan is made by the board, as certified by the Secretary of the Treasury to the board upon its request. The board may prescribe rules for determining the amount of interest payable under the provisions of this paragraph.

"(e) No loan shall be for a greater sum than three-fourths the cost of the vessel or vessels to be constructed or than three-fourths the cost of the reconditioning, remodeling, improving, or equipping hereinbefore authorized for a vessel already built.

"(f) The board shall require such security as it shall deem necessary to insure the completion of the construction, reconditioning, remodeling, improving, or equipping of the vessel within a reasonable time and the repayment of the loan with interest; when the construction, reconditioning, remodeling, improving, or equipping of the vessel is completed the security shall include a preferred mortgage on the vessel, complying with the provisions of the Ship Mortgage Act, 1920 [U. S. C., Title 46, Chap. 25], which mortgage shall contain appropriate covenants and provisions to insure the proper physical maintenance of the vessel, and its protection against liens for taxes, penalties, claims, or liabilities of any kind whatever, which might impair the security for the debt. It shall also contain any other covenants and provisions the board may prescribe, including a provision for the summary maturing of the entire debt, for causes to be enumerated in the mortgage.

"(g) The board shall also require and the security furnished shall

provide that the owner of the vessel shall keep the same insured against loss or damage by fire, and against marine risks and disasters, and against any and all other insurable risks the board specifies, with such insurance companies, associations, or underwriters, and under such forms of policies, and to such an amount, as the board may prescribe or approve; such insurance shall be made payable to the board and/or to the parties, as interest may appear. The board is authorized to enter into any agreement that it deems wise in respect to the payment and for the guaranty of premiums of insurance."

(b) Section 11 of the Merchant Marine Act, 1920, as in force immediately prior to the enactment of this Act, shall remain in force in respect of all loans made before the enactment of this Act.

INCREASE OF CONSTRUCTION LOAN FUND

SEC. 302. (a) There is authorized to be appropriated, to be credited to and for the purposes of the construction loan fund created by section 11 of the Merchant Marine Act, 1920, as amended, such amounts as will, when added to the amounts credited to such fund by the United States Shipping Board under authority of law (exclusive of repayments on loans from the fund), make the aggregate of the amounts credited to such fund (exclusive of such repayments) equal to $250,000,000.

(b) When $250,000,000 has been credited to such fund (whether by the board under authority of law or from appropriations authorized by this section, but exclusive of repayments on loans from the fund) then no further sums (except such repayments) shall be credited by the board to such fund.

(c) The construction loan fund shall continue to be a revolving fund. Repayments on loans from the fund shall be credited to the fund, but interest on such loans shall be covered into the Treasury as miscellaneous receipts.

TITLE IV.—OCEAN MAIL SERVICE

SCOPE OF TITLE

SEC. 401. All mails of the United States carried on vessels between ports (exclusive of ports in the Dominion of Canada other than ports in Nova Scotia) between which it is lawful under the navigation laws for a vessel not documented under the laws of the United States to carry merchandise shall, if practicable, be carried on vessels in respect of which a contract is made under this title.

REQUIREMENTS OF POSTAL SERVICE

SEC. 402. As soon as practicable after the enactment of this Act, and from time to time thereafter, it shall be the duty of the Post-

master General to certify to the United States Shipping Board what ocean mail routes, in his opinion, should be established and/or operated for the carrying of mails of the United States between ports (exclusive of ports in the Dominion of Canada other than ports in Nova Scotia) between which it is lawful under the navigation laws for a vessel not documented under the laws of the United States to carry merchandise, distributed so as equitably to serve the Atlantic, Mexican Gulf, and Pacific coast ports, the volume of mail then moving over such routes and the estimated volume thereof during the next five years, the times deemed by him advisable for the departure of the vessels carrying such mails, and other requirements necessary to provide an adequate postal service between such ports.

RECOMMENDATIONS BY SHIPPING BOARD

SEC. 403. The board shall, as soon as practicable after receipt of such certification from the Postmaster General, determine and certify to him the type, size, speed, and other characteristics of the vessels which should be employed on each such route, the frequency and regularity of their sailings, and all other facts which bear upon the capacity of the vessels to meet the requirements of the service stated by the Postmaster General. The board in making its determination shall take into consideration the desirability of having the mail service performed by vessels constructed in accordance with the latest and most approved types, with modern improvements and appliances.

AUTHORITY TO MAKE CONTRACTS

SEC. 404. The Postmaster General is authorized to enter into contracts with citizens of the United States whose bids are accepted, for the carrying of mails between ports (exclusive of ports in the Dominion of Canada other than ports in Nova Scotia) between which it is lawful under the navigation laws for a vessel not documented under the laws of the United States to carry merchandise. He shall include in such contracts such requirements and conditions as in his best judgment will insure the full and efficient performance thereof and the protection of the interests of the Government. Performance under any such contract shall begin not more than three years after the contract is let, and the term of the contract shall not exceed ten years.

VESSELS

SEC. 405. (a) The vessels employed in ocean mail service under a contract made under this title shall be steel vessels, shall be steam or motor vessels, and shall be either (1) American-built and registered under the laws of the United States during the entire time of such employment, or (2) registered under the laws of the United States

not later than February 1, 1928, and so registered during the entire time of such employment, or (3) actually ordered and under construction for the account of citizens of the United States prior to February 1, 1928, and registered under the laws of the United States during the entire time of such employment.

(b) A vessel for the services of which a contract is entered into under authority of this title, and the construction of which is hereafter begun, shall be either (1) a vessel constructed, according to plans and specifications approved by the Secretary of the Navy, with particular reference to economical conversion into an auxiliary naval vessel, or (2) a vessel which will be otherwise useful to the United States in time of national emergency.

(c) From and after the enactment of this Act, all licensed officers of vessels documented under the laws of the United States, as now required by law, shall be citizens of the United States; from and after the enactment of this Act and for a period of four years, upon each departure from the United States of a vessel employed in ocean mail service under this title, one-half of the crew (crew including all employees of the ship other than officers) shall be citizens of the United States and, thereafter, two-thirds of the crew as above defined shall be citizens of the United States.

ADVERTISING FOR BIDS

SEC. 406. Before making any contract for carrying ocean mails under this title the Postmaster General shall give public notice by advertisement once a week for three weeks in such daily newspapers as he shall select in each of the cities of Boston, New York, Philadelphia, Baltimore, New Orleans, Charleston, Norfolk, Savannah, Jacksonville, Galveston, Houston, and Mobile, calling for bids for carrying of such ocean mails; or when the proposed service is to be on the Pacific Ocean then in Los Angeles, San Francisco, Portland, Tacoma, and Seattle. Such notice shall describe the proposed route, the time when such contract will be made, the number of trips a year, the schedule required, the time when the service shall commence, the character of the vessels required, and all other information deemed by the Postmaster General to be necessary to inform prospective bidders as to the character of the service to be required.

AWARDING CONTRACTS

SEC. 407. Each contract for the carrying of ocean mails under this title shall be awarded to the lowest bidder who, in the judgment of the Postmaster General, possesses such qualifications as to insure proper performance of the mail service under the contract.

CLASSIFICATION OF VESSELS

SEC. 408. (a) The vessels employed in ocean mail service under this title shall be divided into classes as follows:

Class 7. Vessels capable of maintaining a speed of 10 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 2,500 tons.

Class 6. Vessels capable of maintaining a speed of 10 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 4,000 tons.

Class 5. Vessels capable of maintaining a speed of 13 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 8,000 tons.

Class 4. Vessels capable of maintaining a speed of 16 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 10,000 tons.

Class 3. Vessels capable of maintaining a speed of 18 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 12,000 tons.

Class 2. Vessels capable of maintaining a speed of 20 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 16,000 tons.

Class 1. Vessels capable of maintaining a speed of 24 knots at sea in ordinary weather, and of a gross registered tonnage of not less than 20,000 tons.

(b) The classification of a vessel may be based upon its speed without regard to its tonnage if the Postmaster General is of opinion that speed is especially important on the particular route on which the vessel is to be employed, and that a suitable vessel documented under the laws of the United States of a higher classification is not available on reasonable terms and conditions, or, on account of the character of the ports served or for other reasons, can not be safely or economically employed on such route.

COMPENSATION UNDER CONTRACTS

SEC. 409. (a) The rate of compensation to be paid under this title for ocean-mail service shall be fixed in the contract. Such rate shall not exceed: For vessels of Class 7, $1.50 per nautical mile; for vessels of Class 6, $2.50 per nautical mile; for vessels of Class 5, $4 per nautical mile; for vessels of Class 4, $6 per nautical mile; for vessels of Class 3, $8 per nautical mile; for vessels of Class 2, $10 per nautical mile; and for vessels of Class 1, $12 per nautical mile. As used in this section the term "nautical mile" means 6,080 feet.

(b) When the Postmaster General is of opinion that the interests of the postal service will be served thereby, he may, in the case of

a vessel of class 1 capable of maintaining a speed in excess of 24 knots at sea in ordinary weather, contract for the payment of compensation in excess of the maximum compensation authorized in subsection (a), but the compensation per nautical mile authorized by this subsection shall not be greater than an amount which bears the same ratio to $12 as the speed which such vessel is capable of maintaining at sea in ordinary weather bears to 24 knots.

(c) If the Postmaster General is of opinion that to expedite and maintain satisfactory service under a contract made under this title, airplanes or airships are required to be used in conjunction with vessels, he may allow additional compensation, in amounts to be determined by him, on account of the use of such airplanes or airships. Such airplanes or airships shall be American-built and owned, officered, and manned by citizens of the United States.

(d) The Postmaster General shall determine the number of nautical miles by the shortest practicable route between the ports involved and payments under any contract made under this title shall be made for such number of miles on each outward voyage regardless of the actual mileage traveled.

VIOLATION OF CONTRACTS

SEC. 410. In the case of failure of a vessel from any cause to perform any regular voyage required by a contract made under this title, a pro rata deduction shall be made from the contract price on account of such omitted voyage; and suitable deductions, to be determined by the Postmaster General, may be made from the compensation payable under the contract for delays, failures to properly safeguard the mails, or other irregularities in the performance of the contract. Deductions so determined upon shall be deducted by the Postmaster General from the payments otherwise due and payable under the terms of the contract. The Postmaster General may, in case of emergency, permit the substitution for a particular voyage of a vessel not within the provisions of the contract, even though not conforming to the requirements of section 405.

PASSENGERS, FREIGHT, AND EXPRESS

SEC. 411. Any vessel operating under a contract made under this title may carry passengers and their baggage, and freight and express, and may do all ordinary business done by similar vessels.

NAVAL OFFICERS

SEC. 412. Naval officers of the United States on the active list may volunteer for service on any vessel employed in mail service under a

contract made under the provisions of this title, and when accepted by the owner or master thereof may be assigned to such duty by the Secretary of the Navy. While in such employment such officers shall receive from the Government half pay, exclusive of allowances, and such other compensation from the owner or master as may be agreed upon by the parties; but such officers while in such employment shall be required to perform only such duties as appertain to the merchant marine.

MAIL MESSENGERS

SEC. 413. Upon each vessel employed in ocean mail service under a contract made under this title, the Postmaster General shall be entitled to have transported such mail messengers as he may require, for whom shall be provided subsistence, suitable staterooms, and working quarters, all free of charge.

AMENDMENTS AND REPEALS

SEC. 414. (a) Section 24 of the Merchant Marine Act, 1920 [U. S. C., Title 46 § 880], is amended to read as follows:

"SEC. 24. That all mails of the United States shipped or carried on vessels shall, if practicable, be shipped or carried on American-built vessels documented under the laws of the United States. No contract hereafter made with the Postmaster General for carrying mails on vessels so built and documented shall be assigned or sublet, and no mails covered by such contract shall be carried on any vessel not so built and documented. No money shall be paid out of the Treasury of the United States on or in relation to any such contract for carrying mails on vessels so built and documented when such contract has been assigned or sublet or when mails covered by such contract are in violation of the terms thereof carried on any vessel not so built and documented. This section shall not be applicable in the case of contracts made under Title IV of the Merchant Marine Act, 1928."

(b) Section 7 of the Merchant Marine Act, 1920 [U. S. C., Title 46, § 866], is amended by striking out so much thereof as reads as follows: "The Postmaster General is authorized, notwithstanding the Act entitled 'An Act to provide for ocean mail service between the United States and foreign ports, and to promote commerce,' approved March 3, 1891, to contract for the carrying of the mails over such lines at such price as may be agreed upon by the board and the Postmaster General."

(c) The Act entitled "An Act to provide for ocean mail service between the United States and foreign ports, and to promote commerce," approved March 3, 1891 [U. S. C., Title 39, §§ 657-665], is repealed.

(d) So much of the Act entitled "An Act making appropriations for the service of the Post Office Department for the fiscal year ending June 30, 1918, and for other purposes," approved March 3, 1917, as provides for contracts for the carrying of mails between the United States and Great Britain [U. S. C., Title 39, § 666], is repealed.

(e) Subdivision (b) of section 4009 of the Revised Statutes, as amended [44 Statutes at Large, pt. 2, 900], is amended to read as follows:

"(b) The provisions of subdivision (a) of this section shall not limit the compensation for transportation of mail which the Postmaster General may pay under contracts entered into in accordance with the provisions of section 4007 of the Revised Statutes [U. S. C., Title 39, § 652], section 24 of the Merchant Marine Act, 1920 [U. S. C., Title 46, § 880], or Title IV of the Merchant Marine Act, 1928."

(f) Any contract made prior to the enactment of this Act shall remain in force and effect in the same manner and to the same extent as though this Act had not been enacted. Any such contract which expires on June 30, 1928, may be extended for a period of not more than one year from such date.

TITLE V—INSURANCE FUND

SEC. 501. Section 10 of the Merchant Marine Act, 1920 [U. S. C., Title 46, § 869], is amended to read as follows:

"SEC. 10. That the board may create out of insurance premiums, and revenue from operations and sales, and maintain and administer separate insurance funds which it may use to insure in whole or in part against all hazards commonly covered by insurance policies in such cases, any legal or equitable interest of the United States (1) in any vessel constructed or in process of construction; and (2) in any plants or property in the possession or under the authority of the board. The United States shall be held to have such an interest in any vessel toward the construction, reconditioning, remodeling, improving, or equipping of which a loan has been made under the authority of this Act, in any vessel upon which it holds a mortgage or lien of any character, or in any vessel which is obligated by contract with the owner to perform any service in behalf of the United States, to the extent of the Government's interest therein."

TITLE VI—TRANSPORTATION OF GOVERNMENT OFFICIALS

SEC. 601. Any officer or employee of the United States traveling on official business overseas to foreign countries, or to any of the possessions of the United States, shall travel and transport his personal effects on ships registered under the laws of the United States when such ships are available, unless the necessity of his mission requires

the use of a ship under a foreign flag: *Provided,* That the Comptroller General of the United States shall not credit any allowance for travel or shipping expenses incurred on a foreign ship in the absence of satisfactory proof of the necessity therefor.

TITLE VII—MISCELLANEOUS

AUTHORIZATION OF APPROPRIATIONS

SEC. 701. The appropriations necessary to carry out the provisions and accomplish the purposes of this Act are hereby authorized.

REQUISITION OF VESSELS

SEC. 702. (a) The following vessels may be taken and purchased or used by the United States for national defense or during any national emergency declared by proclamation of the President:

(1) Any vessel in respect of which, under a contract hereafter entered into, a loan is made from the construction loan fund created by section 11 of the Merchant Marine Act, 1920, as amended—at any time until the principal and interest of the loan has been paid; and

(2) Any vessel in respect of which an ocean mail contract is made under Title IV of this Act—at any time during the period for which the contract is made.

(b) In such event the owner shall be paid the fair actual value of the vessel at the time of taking, or paid the fair compensation for her use based upon such fair actual value; but in neither case shall such fair actual value be enhanced by the causes necessitating the taking. In the case of a vessel taken and used, but not purchased, the vessel shall be restored to the owner in a condition at least as good as when taken, less reasonable wear and tear, or the owner shall be paid an amount for reconditioning sufficient to place the vessel in such condition. The owner shall not be paid for any consequential damages arising from such taking and purchase or use.

(c) The President shall ascertain the fair compensation for such taking and purchase or use and shall certify to Congress the amount so found by him to be due, for appropriation and payment to the person entitled thereto. If the amount found by the President to be due is unsatisfactory to the person entitled thereto, such person shall be entitled to sue the United States for the amount of such fair compensation and such suit shall be brought in the manner provided by paragraph 20 of section 24 or by section 145 of the Judicial Code, as amended [U. S. C., Title 28, §§ 41, 250].

DEFINITIONS

SEC. 703. (a) When used in this Act, and for the purposes of this Act only, the words "foreign trade" mean trade between the United

States, its Territories or possessions, or the District of Columbia and a foreign country: *Provided, however,* That the loading or the unloading of cargo, mail, or passengers at any port in any territory or possession of the United States shall be construed to be foreign trade if the stop at such territory or possession is an intermediate stop on what would otherwise be a voyage in foreign trade.

(b) When used in this Act the term "citizen of the United States" includes a corporation, partnership, or association only if it is a citizen of the United States within the meaning of section 2 of the Shipping Act, 1916, as amended [U. S. C., Title 46, § 802].

REAFFIRMATION OF POLICY

SEC. 704. The policy and the primary purpose declared in section 7 of the Merchant Marine Act, 1920 [U. S. C., Title 46, §866], are hereby reaffirmed.

SHIP OPERATIONS

SEC. 705. In the allocations of the operations of the ships, the Shipping Board shall distribute them as far as possible and without detriment to the service among the various ports of the country.

SHORT TITLE

SEC. 706. This Act may be cited as the "Merchant Marine Act, 1928."

Approved, May 22, 1928.

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