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TRANSPORTATION and COMMUNICATIONS

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The subjects of transportation and communication have been under study in the Office of the Assistant Secretary of War for several years. The question is often asked "Why is the Assistant Secretary of War interested and what is his part in transportation and communication?" Under the National Defense Act the Assistant Secretary of War is charged with the assurance of the adequate mobilization of industrial organizations essential to war time needs. Transportation and communication are both essential and upon the prompt mobilization of these industries will depend, in part, the success of the entire mobilization of industry. Moreover, the movement of supplies and of intelligence is quite as essential to the Assistant Secretary of War in his carrying out the supervision of the Supply Branches and the procurement of Army supplies as to the General Staff in communicating orders and moving troops. For each ton of finished products moved by the military forces, there are probably five or six tons of raw materials and semi-finished products involved in the manufacture of the finished products.

COMMUNICATIONS.

Before taking up the subject of transportation, I will briefly cover the subject of communications. In this I will limit the discussion to the radio, telephone and telegraph industries. All of those industries are well organized and firmly controlled by large central organizations, few in number, with whom the War Department is in close touch. All are more or less under the direct control of the

Federal Government. The telephone and telegraph companies report annually to the Interstate Commerce Commission with complete information as to the number of telephones and telegraph stations, the number of miles of line and the rates charged. The radio industry last year was put under the complete control of a radio board empowered to regulate all forms of interstate and foreign radio transmission. All radio corporations operate under license from the Federal Government.

The Assistant Secretary of War has not been active in developing plans for the control of communications in time of war. In this the Signal Corps of the Army and the Bureau of Communications of the Navy have been extremely active. Agreements have been reached between the Services as to how this control shall be exercised and while the matter is not completely settled as yet, effective control could be exercised promptly by one or the other of the Services. Legal authority for this is granted in the Radio Act of 1927, approved February 23, 1927, which reads as follows:

"Upon proclamation by the President that there exists war or a threat of war or a state of public peril or disaster or other national emergency, or in order to preserve the neutrality of the United States, the President may suspend or amend, for such time as he may see fit, the rules and regulations applicable to any or all stations within the jurisdiction of the United States as prescribed by the licensing authority, and may cause the closing of any station for radio communication and the removal therefrom of its apparatus and equipment, or he may authorize the use or control of any such station and/or its apparatus and equipment by any

department of the Government under such regulations as he may prescribe, upon just compensation to the owners. Radio stations on board vessels of the United States Shipping Board or the United States Shipping Board Emergency Fleet Corporation or the Inland and Coastwise Waterways Service shall be subject to the provisions of this Act."

Under this authority improper use of radio broadcasting stations could promptly be prohibited.

In the matter of cables between the United States and foreign countries, it is most essential that prompt control be exercised. During the World War we found ourselves in a very serious situation due to the foreign control of practically all of the cable systems between the United States and foreign countries. We are now in a much more advantageous position and would be able to maintain fairly complete communication with Europe, Hawaii, the Philippines and some South American ports.

TRANSPORTATION ESSENTIAL TO ALL.

Our transportation agents have come to be called common carriers. The name is significant in our work because of the fact that the transportation of goods and passengers is a service common to every agency in the country. The common carrier gives service to the General Staff in the movement of troops and supplies and the Assistant Secretary of War in the movement of raw materials essential to the procurement program and to the entire uses of the population. The goods must move along the same trucks, in the same kind of cars and be shipped and received by

the same agents of the common carriers. We cannot separate military supplies from the vast bulk of supplies moved over the lines of commerce in the United States. I mention this point because very frequently Army officers have suggested schemes for the control and militarization of the railroads. The transportation system of the country cannot be operated for the sole benefit of the military forces. In this, of course, I am speaking entirely of the zone of the Interior and not of the Theater of Operations. The conditions in the Theater of Operations are entirely different and will be discussed briefly later on. In the World War the records from the Transportation Corps show that the total tons of material moved on Government bill of lading were less than one per cent of the total tonnage moved in 1918. It is evident, therefore, that we cannot run the railroads entirely for military purposes. On the other hand, we know that there was a vast increase in the total ton mileage during the war and that corrective measures were necessary to insure the prompt movement of military supplies.

I will not go into the troubles that were encountered during the World War. It is sufficient to recall that the congestion of traffic and financial condition of the railroads became such that it was necessary for President Wilson to assume possession and control of the railroads of the country under the authority granted him in the Army Appropriation Act of August 28, 1916. This bold measure resulted in the prompt alleviation of the conditions on the railroads and in the expeditious movement of military supplies. I think it must be admitted that President Wilson's action in this case which, of course, was for the purpose of placing our transportation systems in a position to be of maximum assistance in the

winning of the war, was fully justified. Successive conditions following the Armistice have sometimes been taken to indicate that his action was unnecessary and did not accomplish its purpose. As a test of Government ownership the experiment is inconclusive.

DIVISIONS OF TRANSPORTATION SYSTEMS.

Transportation is no small subject. On the steam railroads alone there are some 2,000,000 employees, while reports show that perhaps 8,000,000 persons are involved in the automotive and allied businesses. Hence, it is only natural that there are fairly distinct divisions in the transportation industry. We first have the railroads of the country, both steam and electric, which carry the bulk of our transportation. The traffic on the steam railroads in 1916 amounted to some 447 billion ton miles. That on our inland waterways amounted to 99 billion. No records are available of the traffic on our highways. Ocean transportation from coast to coast and from Gulf ports to the Atlantic and Pacific ports has increased by leaps and bounds and in some cases is in competition with the railroads. The pipelines of the country carry petroleum, petroleum products and natural gas move vast volumes of supplies in a most economical and efficient manner. As yet our airways are moving a very small proportion of freight. The latest figures give the freight carried by air transport as around ~~16,000,000~~^{1678,000} tons for 1927. All of these modes of transportation have different organization, different characteristics as suited to move certain classes of traffic and unsuited for others. The broad picture of transportation visualizes each of the modes dove-tailing into the other and carrying that traffic for which it is most suited. Another form of transportation is that

of transmission of electrical energy over wires. In recent years this has assumed gigantic proportions and has raised the question as to the Federal control of the activities. Electrical energy is a commodity which may enter into interstate commerce and, hence, may ultimately fall under the control of the Interstate Commerce Commission.

ORGANIZATION AND CONTROL.

All of the above modes of transportation are more or less under the control of the Federal Government. In the case of railroads and pipelines the control is almost complete in every detail. In the others it is not so complete as I will show in more detail.

The railroads of the country are very numerous, but the Class I carriers, that is those having an annual revenue, are only 180 in number. The Class I steam railways file monthly reports of revenues and expenses, operating statistics, wage statistics, fuel consumed, etc. The small railroads make only an annual report. From these reports and from others collected by the American Railway Association through its Car Service Division and the Bureau of Railway Economics, we have a fairly complete picture of the condition of the railroads of the country. In the control of the railroads there are three important organizations. The first of these is the Interstate Commerce Commission with broad authorities delegated to it by law. Its principal functions at present are in the fixing of rates, in the consideration of service, in gathering statistics and in evaluating the property of the railroads. It is primarily a control organization and does not operate in any sense whatsoever.

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The operation is more or less left to the railroads themselves which voluntarily have formed the American Railway Association and agreed to abide by its decisions in certain matters. This is particularly true of the Car Service Division which is organized to exercise complete control in the distribution of freight cars throughout the country. By means of standing orders the distribution of cars is cared for very effectively. You have all heard Mr. Gormley's lecture at the Army War College in which he outlined the duties of the Car Service Division and the ease with which it shifted cars from one part of the country to another when it was necessary to do so to meet sudden emergencies. The efficiency with which this division operates is one of the marvels of the last few years. It is operating, of course, through the cooperation of the railroads, but at no time should we forget that the secret of its success lies in the full authority delegated to it by the Interstate Commerce Commission and that if any railroad, at any time, fails to carry out the Car Service rules as laid down by the American Railway Association, the Interstate Commerce Commission may intervene and direct the movement of cars. Another reason for its success is the splendid cooperation that it has obtained from industry through the medium of the Regional Advisory Shippers' Boards. These board were set up at the instigation of the Car Service Division in fourteen different cities of the United States. They meet quarterly and submit, through their commodity committees which, by the way, are very similar to our own commodity committees, estimates of the number of cars needed in each city in their districts for the next quarter. Railroads are thus able to make plans to meet any sudden demands

which the industries themselves visualize and report to their boards. In time of war the Army becomes a large shipper and should be prepared to furnish information to these same boards and thus to the railroads. The third organization of the railroads is called the Association of Railway Executives. This association dominates the policies of all the railroads of the country.

Coming to the inland waterways of the United States we find the organization quite different. On all of our waterways there are recognized carriers. In general, they are not consolidated into large units with the exception, of course, of the transport systems on the Great Lakes. Much of the traffic that they carry is local in nature, although there is an increasing demand for long distance hauling, especially on the Ohio and Mississippi Rivers. One Government organization is operating boats on the inland waterways. This is the Inland Waterways Corporation formed during the War and still operating under the direction of the Secretary of War. The corporation has barge lines on the lower Mississippi and the Black Warrior Rivers and is just establishing another line on the upper Mississippi. While the corporation was first formed as a war organization to aid in the movement of war traffic, it was continued in 1920 in accordance with the announced policy of Congress that the Government was in favor of stimulating water transportation within the United States. The purpose of the corporation was to prove that waterway transportation was economical and had a legitimate place in our transportation systems.

When we come to motor transportation we again find the organization very loosely knit with very few large operating units and with activi-

ties, in general, much localized. The bulk of all motor transportation is privately owned in units of not over five motor vehicles to the unit. A few large fleets exist but, in general, they are distributed in small units in various cities of the country. Motor transportation is nearly all operated under license from the states. In 1925 the Supreme Court held that the state regulating bodies had no authority to interfere with motor trucks and motor busses engaged in interstate commerce. As a result the number of busses entering the field increased very rapidly, many of which were in the hands of small irresponsible owners operating over routes for a few days at such rates as they could establish. They soon came into competition with the steam railroads and with the electric lines. Immediately a cry was set up demanding Federal control of motor busses and motor trucks. Several bills have been introduced in Congress and the Interstate Commerce Commission has submitted a report favoring control of both these services. In general, the automotive industry is in favor of Federal control of busses but not of truck service. If the bills become law it is probable that the control exercised by the Interstate Commerce Commission will be through the State Public Utilities Commission. No cases will be brought to the Interstate Commerce Commission unless they cannot be settled satisfactorily by the two states involved.

In approaching ocean transportation we find the control more or less centered in the United States Shipping Board and Emergency Fleet Corporation. Through the vast number of idle ships which are in their hands they are able to exercise a very definite effect upon ocean transportation. Very important bills with respect to our Merchant Marine are

in Congress at the present time. That the result of these discussions will be no one knows. The fact remains that our Merchant Marine is not increasing with the speed that we would desire. Restrictions as to conditions of labor on board American vessels and the high subsidies paid by foreign nations for the establishment of commercial routes make competition very severe. The movement on the part of the ship builders and operators for Government subsidies is very strong. The Shipping Board furnishes fairly complete information as to its ships both in service and tied up. The Department of Commerce also publishes yearly a complete list of our Merchant Marine with pertinent data as to tonnage, speed, home port, owner, etc. Using this information, the Navy, which, under agreement with the Army will be charged with transportation of troops to any foreign theater of operations, has prepared fairly complete lists of these vessels most suited to the transport service. Their plans include the calling in to active service through rentals, requisition or otherwise, all of these particular vessels converting them to transports or cargo carriers and placing them in service. We are thus assured that our Merchant Marine, such as it is, would be mobilized as promptly as possible.

STUDIES NECESSARY.

As will be seen from the above it is impossible for the Planning Branch to cover in detail all of the subjects included under the term "transportation". There are certain very vital subjects on which we have directed detailed study. The first of these is the subject

of requirements. The necessity for the Army knowing its requirements in transportation is evident. Any summation of these requirements in time of peace will be so approximate and will bear such a small ratio to the total traffic in time of war that it should not be undertaken. The basic data which is necessary for any branch to have on hand to enable it in time of war to rapidly compute its transportation requirements should be put in available form. For each of our items of issue the branch should know the weight and volume of the article, the number packed in the usual container and the weight, cubical content and ship tonnage of such container. Nearly all of the branches have done this by the direction of the General Staff. This data should be included in the specific procurement plan for the item. It would also be well to state the number of containers that can be packed in a standard box car. So much for the part of the Supply Branches with respect to requirements. The Supply Branches should also fully investigate the local transportation conditions at the factories when the surveys are made to assure themselves that adequate sidings, highways or waterways are available to move the raw materials in and the finished products out at a rate fast enough to meet the accepted schedule of production. In selecting the sight for any new facility one of their first considerations should be ease of transportation.

In attempting to arrive at a conclusion as to whether our transportation facilities are sufficient to meet the probable demand in time of a major emergency many variables enter the problem. These have been

covered in some detail in Industrial Notes No. 12. Further studies have shown that the total increases of traffic in France and England during the war amounted to forty and fifty per cent and in some cases one hundred per cent above the traffic in 1913. During certain months the traffic was one hundred fifty per cent above normal. In the United States the traffic the first eight months of 1917 was fifty per cent above the first eight months of 1916, and for the year 1917 was thirty-nine per cent above that of the five-year period from 1912 to 1916, inclusive. Some such increases must be anticipated in a future emergency. I doubt very much if our railroads could carry a fifty per cent increase if it were suddenly thrown upon them. In fact, the strenuous efforts on the part of the railway executives to reduce the number of idle cars in the country to a minimum has resulted in the available reserves being cut down considerably below what they were in 1916. Another phase of transportation, however, lies in the congestion that is apt to occur at the terminals. These will always be the choke points on the railroads. Few, if any, of our main lines are carrying anywhere near the total number of trains per day that they could. Double tracking, automatic signals, reduced grades and lengthened curves together with increased tractive effort on the locomotives has increased the capacity of the main lines far above what it was in 1917. Terminals, sidings and classification yards have been increased. Some choke points have been eliminated. There are still others that need study and we are attempting to get this done from an engineering point of view through cooperation with the railroads.

There is another engineering study that has been carried on by

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the Corps of Engineers. This relates to the ability of the railroads to move heavy railway artillery. It has taken the form of a preparation of a railroad map which could be printed over in different colors indicating those roads which can take various types of railroad artillery and indicating points such as tunnels, short curves, excessive grades and light bridges which would prevent the movement unless remedial measures were taken. Turning again to motor transportation we find many subjects that should be studied. The statistics upon the subject are very complete. We know the number of passenger cars and trucks in every state in the Union, the consumption of gasoline in most of them and the number of busses that would be available. In case motor transportation is called upon to assist the railroads in the movement of traffic we could very easily make a proper apportionment to the states as to the number of vehicles that each should furnish. However, sufficient studies have not yet been made as to the best utilization of these modes of transportation. In many cases the mobilization point will be in localities off of our good roads in isolated positions where modern transportation would have great difficulty in operating. In the Theater of Operations this is often more true and until cross country vehicles are further developed too great reliance cannot be placed upon motor transportation as the sole means of moving supplies to the front. In the eastern part of the United States there are few points more than five or six miles from an improved road but the same is not true over the entire United States.

PLANS

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I will now come to plans for the control of transportation

that have been worked up by this office in conjunction with the General Staff and the Quartermaster General. The General Mobilization Plan provides a proposed bill for the creation of a Transportation Corps. This corps would become independent of the Quartermaster Corps and would be the shipping and receiving agency of the Army. It would not operate any railroads but would be furnished with truck, train and motor transport companies for the purpose of efficiently assembling material for shipment by rail and for disposing of the material received at point of destination. It would also have control over animal drawn transportation. A transportation officer would be at each Corps Area Headquarters, camp, depot, procurement district headquarters, and other points under military control. It would thus form the coordinating agency of all Army shipments and receipts. Cooperation with the American Railway Association has resulted in plans for a representative of the Car Service Division being placed at each of our important shipping centers. Between the transportation officer and the American Railway Association representative there should be the closest harmony and movements of troops and supplies could be worked out in the great majority of cases to avoid any congestion at any point along the route. One thing very important in this connection is that no cars could be ordered and no shipments made before assurance is received that the shipment can be unloaded promptly at the other end. This is especially true in the case of shipments from depots to ports of embarkation. Ships should be on hand to receive the goods from the trains as they arrive. Our ports of embarkation should not develop into huge storehouses.

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and depots. One of the most glaring examples of our mistakes along this line is the Brooklyn General Intermediate Depot. At that point on an island with bottle necks in every direction and subject to the ~~attack~~ ^{signal} of any enemy, we have our largest stocks of war reserves of medical and engineering material. Fortunately the Ordnance Department did not attempt to store its material on that island. That, in general, is the plan for the control of transportation on the railroads in case of a sudden emergency. It seems to be an entirely workable scheme and utilizes to the maximum existing agencies, both of control and of operation.

However, we must always be prepared for the worst and in the case of the railroads a plan has been drawn up with the approval of the President of the United States and has been accepted by the Association of Railway Executives which provides for taking over all the railroads in case of an emergency. Under the plan the Government would assume possession and control of the railroads of the country through the Secretary of War as provided for by law. The Secretary of War will select an executive assistant who will direct the operations and be responsible for the execution of such policies as are outlined by and with the approval or by the authority of the Secretary of War. The Secretary of War will also be assisted by a committee of railroad presidents to be known as the Executive Committee, the members of which will be nominated by the Association of Railway Executives and approved by the Secretary of War. The plan has clauses outlining the general policies under which the railroads will be operated and the compensation to be paid to the carriers. This plan, thoroughly understood by the General Staff and the Assistant Secretary of War's office stands as the best thought of the present administration.

In approving it, President Coolidge stated that it should not be considered to foreclose any future action or supersede any other plan the Government may wish to adopt in time of action.

In closing, I might state that the closest cooperation and harmony exists between the Transportation Section of the Planning Branch and the transportation officials in the Quartermaster General's office and G-4 of the General Staff. This is essential if our plans are to be of any value whatsoever. The transportation of troops and supplies must be carried on. Priority orders can be issued by the General Staff or the Assistant Secretary of War which will conflict with the demands of the other. Priorities should be kept to a minimum. Red tags and rush orders on individual cars mean the general delay of the entire transportation program. However, emergencies will arise and priority orders will have to be issued. They will be closely coordinated by the interested agencies and issued as War Department priorities promulgated by the Chief of the Transportation Corps. Our plans provide for this feature and cover, we believe, the essential features of the transportation problem.