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USSR TRANSPORTATION ECONOMY

I. RAILROADS

A. Present USSR Railroad Network

1. General Traffic Density

Although the present operating length of USSR railroads is almost two-thirds larger than that of 1913, the number of railroads is still very limited, considering the size of the country and its population. In 1937 the total railroad operating length in the USSR amounted to 86,500 kilometers, compared with 58,500 kilometers (without Poland) in 1913. In 1939 Germany, including Austria, Sudetenland, and the incorporated Eastern regions, had approximately 74,000 kilometers, not counting private railroads. The ratio of the population density per square kilometer in Germany to that of Russia is 1,000 to 53; the density of the railroad network in kilometers per 100 square kilometers in Germany to that of Russia is 1,000 to 38; and the density of the railroad network in kilometers per 10,000 inhabitants in Germany to that of Russia is 1,000 to 610.

These figures reveal that in Germany there are 19 times as many inhabitants per square kilometer as in the Soviet Union, 132 as compared with 7 inhabitants per square kilometer; that the German railroad network is 27 times as dense as the Soviet, 10.9 as compared with 0.4 kilometers per square kilometer; and that to every two Germans there is slightly more railroad length than to every three Russians, 8.2 as compared with 5 kilometers per 10,000 inhabitants. In comparing the USSR with other countries, it should, however, be borne in mind that it is composed of vast lands of which the steppes and tundras and partly desert land are of no importance whatsoever with respect to railroad freight traffic since they are without inhabitants or are only sparsely populated. These areas, however, are not clearly definable and therefore cannot be omitted for purposes of comparison. But even in the Ukraine, where the railroad length amounted to 14,400 kilometers in 1937, in the Moscow Region, and the Central Black Earth Region (area between Tula and Kharkov), which rank among the most

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developed areas from the standpoint of communications, the density of the railroad network reaches only one fourth that of the average in the Reich. The ration of the density of the railroad net in kilometers per 100 square kilometers of area in Germany to that

in the Ukraine is approximately	1,000 : 305
in the Moscow Region is approximately	1,000 : 272
in the Central Black Earth Region	1,000 : 226

2. Principal Features of Railroad Network in European USSR

At the beginning of the Second Five-Year Plan, the railroad network in European USSR was still 5 to 10 times as dense as in Asiatic USSR. Whereas in Siberia the railroad density varies between 0.9 and 11 kilometers per 1,000 square kilometers, in the western part of the Soviet Union it reaches approximately 24 kilometers, and in the Ukraine 32 kilometers per 1,000 square kilometers. In 1933, the figure was 29.6 kilometers in the Moscow region and only 14.5 kilometers in the Leningrad region. As a result of the creation of new industrial centers east and southeast of the Ural Mountains, the Western Siberian regions gained increased prominence. No significant shift in the regional distribution of the railroad network, however, is noticeable even today in spite of the fact that the expansion, by approximately 60 percent, which the Soviet railroad network experienced between 1913 and the present was confined largely to the formerly unopened areas of Central Asia and Siberia.

The real hub of the railroad network of European USSR is Moscow, the starting point of most important railroad lines. For through freight traffic from the south to the north, and to relieve the Moscow belt line, in recent years construction was begun on a semicircular by pass railroad to the east about 100 kilometers from the capital. Leningrad and Kharkov are next in importance as railroad junctions. In the Ukraine, the main lines emanate from Kiev. The radial system of the Czarist period is still recognizable even today.

Lines lead from the main junctions to the border, setting up the connection with the western and southwestern countries. Formerly traffic abroad was impeded due to the fact that the USSR railroad gauge is approximately 9 centimeters wider than the standard gauge customary in Central and Western Europe. It is 1.524 centimeters compared with the 1.435 centimeters of the standard gauge. This necessitated reloading at the border points. In the 1920s, however, a comparatively simple method was invented by which the majority of the ordinary freight cars were transferred without reloading to the wheel assemblies of the standard gauge, which provided relief for the freight traffic.

3. The Main Lines

In view of the great width of the country the long through lines /Magistral'/, hereinafter referred to as main lines/ are of particularly great importance in the Soviet Union. Primarily they link the economic areas east and west of the Urals. In the European part the three main lines, connecting the Leningrad-Moscow industrial region with the Donbass and which handle the mass transport of the raw materials from the Donets Basin to the north, should be stressed. In Rostov the lines connect with the Transcaucasian railroad leading to Baku. The last section to Rostov of the central one, the so-called Donbass Main Line, has not yet been completed. It has assumed a large part of the tasks of the Kursk-Kharkov Main Line. The Bryansk-Vyazma-Rzhev line is to relieve the Moscow railroad net, routing the Donets coal directly to Leningrad. In addition there is a through connection via Vitebsk-Gomel' between Leningrad and Odessa, likewise between Moscow and Sevastopol'.

The burden of the lateral connections between the Dnepr and the Donets Regions, which accomplish the exchange of the iron ore of Krivoy Rog and the coal from the Donets, is extremely heavy. The Krivoy Rog-Nikopol'- Zaporozh'ye and Pyatikhatki-Dnepropetrovsk lines have been electrified.

The best known of the main lines nowadays is the completely double-tracked Trans-Siberian Railroad which connects Moscow with the Far East via Kuybyshev (Samara)-Chelyabinsk, or Yaroslavl'-Perm, and Omsk-Irkutsk - Khabarovsk. From Leningrad this main line can be reached directly in Omsk, via Perm-Sverdlovsk. The Trans-Siberian Railroad is the main traffic artery of Asiatic USSR. The former through line has developed into an entire system of railroads. It is the starting point for those railroad lines that opened up the Siberian raw material resources and industrial centers in Karaganda, Bertys (Kounrad), Kuznetsk and Minusinsk. Only since the outset of the Third Five-Year Plan have efforts been made to avoid the detour via the Trans-Siberian in transport to the west, and to set up direct links between the individual industrial centers. This refers principally to sections of the South Siberian Main Line mentioned later.

The new industrial center of Komsomol'sk, in the Far East, is connected to the Trans-Siberian in Khabarovsk. Since the Amur railroad, so close to the border, is subject to serious threats in emergencies, the Soviets revived an old plan from Czarist times, namely, that of a Baykal-Amur Main Line (BAM). The BAM starts in Tayshet, by-passes Lake Baykal in the north and is to end, for the time being, in Komsomol'sk. It is not known to what extent the construction of this railroad was completed by the beginning of the war. It is planned to have its terminal at the Tatarskiy Proliv near Nikolayevsk.

The Turksib (Novosibirsk-Alma Ata-Tashkent) was opened in 1931. It links Siberia with Central Asia and supplies the Turkestan population with grain, which made possible the development of cotton cultivation in this region. The first large branch line, linked to it in 1939, was from Rubtsov via Seminogorsk into the zinc, lead, and copper region of Ridder.

The following large lines are under construction or planned:

Direct Tbilisi-Moscow connection;
Stalingrad-Orsk, with connection to the South Siberian Main Line;
South Siberian Main Line, Kazan'-Ufa-Magnitogorsk-Orsk-Akmolinsk-Kuznetsk-Minusinsk-Tayshet.

Together with the BAM the latter is to form a second Trans-Siberian line designed to relieve the present one. At the end of January 1940 the first test run took place on the Karaganda-Akmolinsk-Kartaly-Magnitogorsk line, effecting for the first time a direct connection between the coal region of Karaganda and the ore deposits of Magnitogorsk.

It would lead too far to enumerate all plans for the construction of new railroad connections. Basically, their purpose is to knit together more closely the Donets Basin with Krivoy Rog; the Murmansk and Ural regions with Central European USSR; and Western Siberia with Central Asia, and to shorten the existing transport routes.

4. Proportion of Double to Single Track Lines

Apart from the comparatively limited track length, the USSR railroad network suffers from a very unfavorable proportion of the double-track to the single-track lines. Of a total length of 86,500 kilometers in the Soviet Union in 1937, only 26,500 kilometers (1913: 13,000 kilometers) were double-track lines. According to the Third Five-Year Plan, a total of 34,000 kilometers of double-track lines were to be completed by 1942, with a total track length of 97,000 kilometers. Even if this could be accomplished, the pre-

portion would still be unfavorable, considering the fact that in Germany the reverse is true. The double-track lines are of particular strategic importance for which reason they are located mostly in the western part of the USSR. Economic interests received little consideration in the development of traffic routes.

One of the greatest achievements in railroad construction was the doubling of the Trans-Siberian, carried out within 3 years and completed shortly before the war. This was not merely a matter of laying a second track on an existing roadbed; for due to terrain difficulties, routes far off the main line had to be chosen for considerable distances. The line now leads to the west double-tracked via Kuybyshev-Penza-Valuyki into the Donets Basin. In addition, the double tracking on the connection of the Trans-Siberian to the capital, via the detour Sverdlovsk-Perm-Yaroslavl', was completed.

The Novosibirsk-Barnaul-Stalinsk-Minusinsk and Karimskaya-Manchuria (at the Manchurian border) junctions of the Trans-Siberian are equipped with double tracks.

The installation of double tracks on the Murmansk Railroad is said to have been close to completion by the outbreak of the war. The Baku-Batumi railroad was likewise in the process of being converted to a double-track line. Also the three main lines from Moscow to the Donbass and the Moscow-Yaroslavl'-Konosha line have double tracks. The Leningrad-Moscow line is even quadruple-tracked.

5. Electrification

The portion of electrified lines within the USSR railroad network is very small, construction having been started energetically only since the Second Five-Year Plan. Nevertheless, electrified lines increased from 0.2 percent in 1932 to 1.4 percent in 1937. Essentially electrification is limited to the surban traffic of the four traffic centers of Moscow, Leningrad, Kiev, and Kharkov. In addition to the mentioned connections in the Krivoy Rog region, among others the Transcaucasus railroad has been partially electrified, also the last section of the Murmansk railroad from Kandalaksha on.

B. Efficiency of USSR Railroads

1. Freight Traffic

a. Transport Performance and Rolling Stock

A comparison with Germany shows how great the transport loads are that the Russian railroads must handle. Not only did the absolute quantity of the goods shipped increase, but also the average shipping distance. For example, during the Second Five-Year Plan, the latter increased from 632 to 686 kilometers. Consequently, as compared with 1913, the ton-kilometer performance increased more than fourfold while the quantity of the freight shipped barely tripled.

USSR Freight Traffic Compared With That of Germany

Year	Freight Shipped (in million tons)		Average Shipping Distance (in km)		Ton-Km Output (in billions)	
	Germany	USSR	Germany	USSR	Germany	USSR
1913	525	132.4	128	496	67	65.7
1928	481	156.2	152	598	73	93.4
1932	280	267.9	158	632	44	169.3
1936	452	483.2	156	669	71	323.4
1937	499*	517	160*	686	80*	355.0
1938	547*	516	170*	718	93*	370.5
1942 (plan)		750		680		510

* including Austria and Sudetenland

The rolling stock increased in the following manner:

Year	Stock of	
	Locomotives	Freight Cars
1928	15,100	472,000
1932	17,900	545,800
1937	23,700	750,000 (approximate)
1942 (plan)	31,700	1,200,000

For comparative purposes it should be stated that in 1938 Germany (including Austria and Sudetenland) possessed a stock of 25,200 locomotives and 650,200 freight cars.

The USSR stock of freight cars, therefore, increased from 1932 to 1937 by approximately 40 percent and that of locomotives, approximately, by only 32 percent whereas the ton-kilometer volume expanded by approximately 115 percent. It is natural that, with this rolling stock, such outputs as those shown above could be attained only through continuous, extraordinary straining of the traffic apparatus. Already in 1932 the traveling performance of the rolling stock vastly exceeded the German scale:

	Germany	USSR
Locomotive-kilometers per locomotive	36,653	34,947
Car axle-kilometers per freight car	20,074	61,239

During the Second Five-Year Plan an even more extensive utilization of the rolling stock is expected to have been attained. By cutting the hauling time of freight cars from 9 to 7 days (Germany in 1938, approximately 3.5) and increasing the average traveling speed from 14.3 to 19.6 kilometers per hour, the average day's run of the freight cars was increased from 99 kilometers in 1933 to 140 kilometers in 1937. The number of cars made available each day rose from 51,400 to 89,700 and was to reach 110,000 in 1942. In Germany, including Austria and Sudetenland, in 1938 the number of cars was 154,580.

The rolling stock is insufficient not only in view of the extraordinarily great shipping distances but also with regard to the operating length of the railroad network. The stock of locomotives and freight cars, per 1,000 kilometers of operating length, lagged far behind the density of German rolling stock.

Equipment of Line Network With Rolling Stock
(Per 1,000 kilometers of operating length)

Year	Stock of Locomotives		Stock of Freight Cars	
	Germany	USSR	Germany	USSR
1913	520	286	11,422	6,784
1928	459	196	12,550	6,139
1932	407	219	11,976	6,691
1937	400	274	10,910	8,834

After completion of the Third Five-Year Plan there was to be 316 locomotives and 12,371 freight cars to each 1,000 kilometers of operating length. In spite of this improvement the load of the Russian railroads would still be a huge one since the network, even with a length of 97,000 kilometers, would still not match the dimensions of the area to be supplied. The number of ton-kilometers per kilometer of operating length is to reach approximately 5.3 million ton-kilometers in 1942 as compared with 4.2 million ton-kilometers in 1937. In Germany, in comparison, the average traffic density in 1937 was below 1.5 million ton-kilometers per kilometer of operating length.

In recent years the technical equipment of the rolling stock was improved by the installation of air brakes in the freight cars and of continuous pressure lines and by the construction of heavy freight locomotives and of large-capacity freight cars with automatic unloading devices. However, the demands upon the railroads increased so steadily, by 400 percent over the figure of 1913 according to the Soviet press of 1940, that the output per vehicle had to be increased at the expense of safety. This is responsible for the high repair requirements of the rolling stock: 6 percent for freight cars, and 20 percent for locomotives.

b. Operating Instability

As is known, the frequency of accidents on the USSR railroads is unproportionately high. It can be attributed to insufficient training of personnel and to the poor condition of installations and rolling stock.

Already structural defects have become apparent in the foundation. The construction pattern followed is chiefly that of field railroads, as they are used in wartime. Perfect roadbeds and auxiliary installations hardly exist. The great distances, the unfavorable terrain conditions, and the complete wilderness of some of the regions through which tracks must be laid, make the procurement of the construction material so difficult that the track just constructed is used to lay the subsequent track. The top of the roadbed is in even worse condition than the foundation. As a rule, sand is used as ballast. Gravel is found rarely, broken stones hardly ever. Generally, untreated wood is used as ties. The number of ties, (1,440 per kilometer), is very low in comparison with Germany, 1,600; and the United States, 2,000. Furthermore, the track material is too light. Whereas in Germany a track weighting approximately 45 kilograms per meter was used before World War I, more than 80 percent of the Russian main tracks have a weight of less than 38 kilograms per meter.

The introduction of new heavy steam locomotives necessitated the strengthening of the trackwork, which has been effected already on some lines in the Ural region and on the railroads in the interior of the Donets region.

2. Passenger Traffic

a. Neglect of Passenger Traffic

Passenger traffic in the USSR lags far behind freight traffic. Because of the limited extent of the railroad network, the lack of trained personnel, locomotives, and repair shops, intentionally, passenger traffic was curtailed heavily. In 1937, the Soviet freight traffic load was 355 billion ton-kilometers; passenger traffic, however, only 91 billion passenger-kilometers, i.e., hardly twice the amount of German passenger traffic, whereas the freight traffic load was 4½ times that of the German. Many passenger connections were dispensed with and the lines made available to freight traffic. Special supervisory officials, whose task is the prompt routing of the freight trains, receive special premiums for each freight train routed through on schedule. Such premiums are not paid for passenger traffic. Consequently, the passenger trains and the few fast trains each day experience delays of many hours.

b. Passenger Train Performance

In contrast to the prewar period, suburban traffic is gaining increasing importance, over long-distance traffic, due to the rapid growth of cities in the process of industrialization. Of the 1.2 billion persons transported in 1938, 0.9 billion fell to suburban traffic. The main share is handled by Moscow, Leningrad, Kharkov, and Kiev. The following table shows the development of the USSR passenger traffic as compared with the prewar period:

Passenger Traffic on USSR Railroads

Year	Passengers Transported (in millions)	Average Traveling Distance (in km)
1913	185	136
1928	291	84
1932	967	87
1937	1,143	80

The rolling stock for passenger traffic is extraordinarily small. Whereas the loads, expressed in passenger-kilometers, increased by 261 percent between 1913 and 1937, the stock of passenger cars expanded only by 13 percent for the same period. A passenger-kilometer load almost twice as great as that of Germany was attained in 1937 with a rolling stock estimated to be 60 percent smaller. In 1937, Germany possessed 60,000 passenger cars, the USSR, however, only an estimated 25,000.

The average traveling speed of passenger trains is likewise low. In 1937 it amounted to 24.6 kilometers per hour. The fastest train, the "Red Arrow," runs between Leningrad and Moscow. On this comparatively favorable straight line it attains a speed of barely 71 kilometers per hour. In general, however, the traveling speed of the fast trains is between 40 and 60 kilometers per hour. The speed of the "Siberian Express" operating between Moscow and Vladivostok is 40 kilometers per hour.

II. INLAND NAVIGATION

A. Basis of USSR Inland Navigation

1. Favorable Geographical Conditions

The largest USSR rivers originate in only a few head-water regions, radiate in all directions, and empty into the seas surrounding the country. Essentially, there are two head-water regions: the Valday Mountains northwest of Moscow, and the northern part of the Urals. As in the case of the railroad network, a radial orientation of the waterways is evident. It is worth noticing that Moscow is located in the traffic focal point also with respect to the waterways network. In 1937 it was linked through the Volga-Moskva Canal to the waterways basin of the Central-European USSR, the Volga-Oka Ring.

On the other hand, a north-south, or south-north, traffic direction is quite prominent in the USSR waterways net, particularly so in two large traffic channels, namely, a western depression which comes to an end in Eastern Germany, with the Dnepr-Visla-Neman-Dvina System in which the Oginskiy and the Bug-Dnepr Canals form the connection between the Dnepr and the rivers flowing into the Baltic Sea, and an eastern depression with the Neva-Volga System which includes the Mariinsk Canal System between Moscow and Leningrad. Both traffic channels, which connect the Baltic Sea with the Black Sea and Caspian Sea, respectively, have to overcome only very slight differences in elevation, thus allowing both downstream and upstream navigation. Natural lateral connections, as well as canals which could facilitate an exchange of commodities between the various river basins, are lacking. As a rule, the canals constructed so far, serve to complete the continuous north-south connection (Mariinsk Canal, Stalin Canal).

2. Short Navigation Periods

The favorable geographical orientation of the waterways is adversely affected by a comparatively short navigation period. In winter, shipping is interrupted for months by a heavy cover of ice, and in summer the water level frequently sinks so low as a result of the drought that wandering sand banks impede navigation. Regulated water channels, which are really indispensable for the wide, mostly shallow, USSR rivers, do not exist. The rivers in the south of European USSR are frozen approximately 100 days per year; in the north, approximately 200 days; in the south of Asiatic USSR, approximately 235 days; and in the Asiatic North, approximately 275 days. The navigation period varies at the upper and lower courses of the Volga between 6 and 9 months. Conditions are more favorable in the cases of the Dnepr and Don Rivers. The period open to traffic is generally limited from 2 to 4 months on the remaining rivers.

3. Structural Conditions of Waterways

The poor maintenance of the waterways during World War I, and their deterioration in the postwar period, rendered many of the waterways completely unusable. When the Soviet regime finally came to recognize the importance of inland shipping for the mass transports so characteristic of USSR communications, it first had to center its attention on the improvement and increase in efficiency of the waterways. However, it could devote only limited effort to new construction projects. Except for the brief navigation period, the poor structural condition of the waterways does not permit any extensive utilization of inland shipping for freight traffic. The numerous USSR waterways, therefore, constitute traffic routes of only subordinate importance in the country's communication system.

Only 110,000 kilometers of the USSR rivers are described as navigable. At the beginning of 1940, 94,800 kilometers of waterways were actually navigated, of which 3,000 kilometers were canals. The length of the inland waterways network thus is longer than the USSR railroad network whereas in Germany the inland waterways account for approximately only one sixth of the length of the railroad network.

B. The Artificial Waterways

Of the canals built under the Czar the old Mariinsk Canal System (1,050 meters long) /Probably 1,050 kilometers/ is the most important one. It links the Baltic Sea via the Neva, Svir, Vytegra, and Sheksna Rivers with the Volga, and through the latter, with the Caspian Sea. The canal installations are outmoded. Traffic is not very extensive. Until now only ships with a maximum load capacity of 800 tons could navigate this canal system. According to the most recent plans it was to be dredged to a depth of 4.5 meters and provided with modern locks for ships with a maximum load capacity of 20,000 tons.

A connection between the Baltic Sea and the Black Sea, via the Dvina and Dnepr was established through the Berezina Canal upon completion of the Dneprostroy Locks. The efficiency of the canal, however, does not come up to present day demands and therefore is of little importance to traffic. Besides, the estuaries of these rivers, at the Baltic Sea, are located in foreign countries. For this reason several plans were considered according to which the Dnepr was to be employed as a useful connection. The shortest route would be via the Lovat and a projected Lovat-Dnepr Canal. Furthermore, a canal between the Desna and Oka is planned which would establish the connection with the Volga-Oka Ring and the Mariinsk System. This waterway would fulfill an old desire for a link between the Upper Volga and the Black Sea, which would give the Ukraine, so rich in natural resources, a link with all USSR economic areas, over the navigation ring of Central-European USSR.

The construction of canals under the Soviet regime was carried out principally from a viewpoint of defense. Two large new works should be mentioned here: the Stalin Canal, as connection between the Baltic and the White Seas, and the Volga-Moskva Canal. The Stalin Canal was to relieve the Murmansk railroad; among other things, to assist it in the transport of foreign war materials, and to facilitate the exchange of light naval forces. In 1933 it was opened to traffic. Contrary to some allegations, it is definitely not altogether free of ice. Its depth is 3.6 meters. Of great economic importance is the already mentioned Volga-Moskva Canal which was opened to traffic in 1937. It can be navigated by sea-going vessels and a small naval force will be able to cast anchor at the naval port planned for the vicinity of Moscow. It is 128 kilometers long, approximately 60 meters wide and 4.5 meters deep.

Finally in European USSR, the frontier canals in Belorussia should be mentioned which, after being taken over by the Soviets, probably were to have been built into typical routes for strategic concentrations directed against Germany. Above all, the Bug-Dnepr Canal (built in 1780, 100 kilometers long) may gain importance for transport of Ukrainian raw materials to Germany via the Vistula River and the Baltic Sea. Until 1939 it was in comparatively poor repair. The USSR built new locks and dams and increased the depth of the canal. Only after the Dnepr had been made navigable through the construction of the reservoir (Dneprostroy) near Zaporozh'ye, did the canal gain importance. However, navigation conditions on the Dnepr must be improved still further if the canals connected with it are to be used to a large extent for the traffic between Germany and the Ukraine. Its depth varies between 0.9 meters at the upper course and 1.7 meters at the lower course. The Soviets intend to ensure a continuous depth of 5 meters by means of ten reservoirs. Freight traffic of the Ukraine with Northern Europe could at a future time, if necessary, develop also via Danzig and Koenigsberg. A navigation period of 7 to 8 months may be expected. Computation by the German Institute for Economic Research (Deutsches Institut fuer

Wirtschaftsforschung indicate that with continuous use and full utilization of a shipping space of approximately 14,000 tons, up to 600,000 tons of freight may be transported from Kiev to Brest-Litovsk during the most favorable shipping period.

The Oginskiy Canal, built in 1770, for the present is of importance only in local traffic. It is 12 meters wide and its mean navigation depth is one meter; however, in some spots, it is only 0.40 meters.

The Augustovo Canal is used only to float lumber.

In Siberia, navigation has gained relatively greater importance than in European USSR since hardly any other means of communication exist there and the rivers are navigable far into their upper courses. The Ob-Irtysh is navigable 19,500 kilometers; and the Yenisey for 8,400 kilometers.

The Siberian rivers serve as approach roads to both the Trans-Siberian railroad and to the Arctic Ocean Route which the Soviet Union intends to use in an increasing measure.

It is intended to transport Kuznetsk coal by water to the industrial region of the Urals. Navigation conditions on the Tom, Ob', Tobol, Isset, and the Chusovaya are to be improved and the gap between the Iset and the Chusovaya is to be closed by means of a canal. In this manner Western Siberia would also be tied to the Great Volga System and obtain a water route to the Black Sea. Beyond this, the plans provide for a continuation of this waterway from the Ob' via the Ket through a canal to the Yenisey and farther via the Upper Tunguska and the Angara to Lake Baykal.

C. The Great Volga Project

The most revolutionary of the projects for USSR inland navigation is concerned with the improvement of the Volga and its junction with the water-rich rivers of the north. Its completion will be of great importance not only to USSR economic life but also for the exchange of commodities between USSR and Central and Western Europe.

In spite of good navigability and abundance of water the largest stream of Europe at present serves only internal USSR economy, due to the unfavorable location of its mouth. Sea-going vessels cannot reach it. Although the land at the mouth is very fertile, the climate is much too dry. In spite of the huge volume of water which the Volga carries to the Caspian Sea, the latter's water level continues to sink and is already 26 meters below that of the Black Sea. Prerequisite to the solving of the Volga Project, in the framework of which 4 to 4½ million hectares of steppe land are to be irrigated with the waters of the Volga, is the tapping of the water-rich rivers of northern USSR. A large reservoir of approximately 18,000 square kilometers, roughly the area of Lake Ladoga, at the upper course of the Kama near Solikamsk where Kama, Vychegda and Pechora Rivers approach each other, is to collect the waters of the rivers mentioned and feed them into the Volga. Along the Volga, Kama, and Oka Rivers a total of 16 reservoirs are to be built, eight of which are allocated to the Volga. They will make possible the production of 12 million kilowatts of electric energy and an annual supply of 60 billion kilowatt hours. The past Soviet production varied from 40 to 45 billion kilowatt hours. The largest reservoir is under construction at Kuybyshev. Upon completion it will occupy an area of 740,000 hectares and will be up to 20 kilometers in width. By means of a 2 kilometer break through the divide of Perevoloksk, the Volga loop at Kuybyshev is to be cut off. This will shorten the Volga route by 173 kilometers. The Uglich and Rybinsk locks were opened to traffic in part this summer and were to be completed by 1942. The reservoir below Kalinin was put into operation in 1937.

By 1960 the entire Volga was to have a continuous depth of 3 meters. The plan to attain a depth of the Volga channel of 2.6 meters by 1942, was, however, only partially accomplished.

The task of the Great Volga Project, from a standpoint of communications, is to provide the shortest possible connection between Moscow and the Black Sea. To this end a Volga-Don Canal is being built near Stalingrad which for traffic purposes shifts the mouth of the Volga to the Sea of Azov or the Black Sea. Its construction is said to have begun this year. A minimum depth of 6.4 meters is planned. It will also be utilized as a traffic route between the Caspian and Black Seas, particularly for the transport of petroleum. To be sure, a shorter connection between these two seas via the Manych and Kuma Rivers has been planned and completed in part.

In addition to the project of the Volga-Don Canal another very old plan is under consideration, according to which the Oka would be linked with the Upper Don, and thus a direct waterway connection set up between the Donbass and the industrial region of Moscow. Such a route would be only 2,250 kilometers long whereas the one leading over the Volga-Don Canal will be 3,420 kilometers long. This proposed route, however, would first have to be regulated along its entire length.

D. Performance of USSR Inland Navigation

1. Freight Transport

Freight Traffic on Inland Waterways

	Freight Transported (in million tons)	Output (in billion ton-km)
1913	48.2	37.2
1928	18.3	15.9
1938	66.6	32.9
1939	72.6	35.0
1940	--	36.0
1942 (plan)	--	58.0

The ton-kilometer output did not increase in the same measure as the freight tonnage transported. Thus the average transport distance, in contrast to the railroad, has decreased. In 1913 it was 772 kilometers; in 1928, 867 kilometers; in 1938, 481 kilometers; and in 1939, 526 kilometers.

This decrease of the transport distance may be attributed in part to the increased shipment of goods which requires relatively short shipping distances, such as building materials. On the whole, the average shipping distance decreased for almost all types of goods. This is particularly true of petroleum, which has to travel the longest distance: 1,650 kilometers in 1928, 1,140 kilometers in 1937. For short hauls, inland shipping was used; long-distance hauls were left to the railroads.

Distribution of Inland-Shipping Traffic Over Various Waterways in 1937

	Quantity of Goods in Million Tons	Percentage of Total Quantity
Volga, Kama, Oka	31.4	46.9
Northwestern waterways	10.5	15.7
Rivers of Northern USSR	11.0	16.7
Dnepr, Don, Kura	6.8	10.1
Others	7.2	10.7
	66.9	100.0

The insignificant achievements of USSR inland shipping, particularly in view of the waterways network at its disposal, are shown by the following comparison of the shipping loads of Germany and Russia in 1937:

	Waterways Traveled (in 1,000 km)	Goods Transported (in million tons)	Output (in billion ton-km)
USSR	85.5	66.9	33.0
Germany (without Austria)	7.7	133.1	29.2

Nevertheless, the USSR has made efforts in recent years to utilize inland shipping more extensively for freight traffic. The combined transport is being effectively subsidized by reduced feeder tariffs. By 1942 the traffic load of inland shipping was to be increased by 76 percent as compared with 1937, whereas the load carried by the railroads was to be raised by only 44 percent for the same period. Decades of neglect of the waterways, however, could not be overcome so rapidly. Moreover, the amount of available tonnage is insufficient. Thus is brought about the fact that the economy, even in the case of typical bulk goods, is making increasing use of the railroads which are more reliable in spite of their inherent deficiencies.

Transport Distribution of Most Important Bulk Goods Over Inland Waterways and Railroads (in million tons)

Inland Waterways

	Building Materials	Grain	Petroleum	Lumber	Coal
1913	--	5.9	5.4	11.7	0.8
1928	1.2	1.2	4.8	8.3	0.1
1932	5.4	2.6	7.4	26.3	0.6
1937	9.8	4.3	7.9	35.5	2.1
1938	--	4.8	8.3	34.8	2.1

Railroads

	Building Materials	Grain	Petroleum	Lumber	Coal
1913	7.3	18.3	5.8	20.8	26.3
1928	13.7	15.5	8.7	20.1	30.4
1932	43.4	23.8	17.0	46.3	56.7
1937	102.4	38.9	24.7	66.2	116.6
1938	--	40.4	28.2	63.5	120.9

Figures on the transport of ore, iron, and steel in inland shipping were not available. According to the above figures the total amount of building materials, grain, petroleum, lumber and coal, transported over the inland shipping system in 1937 was approximately 60 million tons. In addition, over one million tons of salt were transported over inland waterways. This leaves about 6 million tons for miscellaneous goods shipped. An approximate amount is shown for miscellaneous goods in 1938. Even if the remaining quantities were to be ascribed in full to the transport of ore, iron, and steel, the share of inland shipping in the transport of bulk goods would still be unproportionately small. In contrast, the railroads transported in 1937 a total of approximately 57 million tons of ore, iron, and steel.

2. Passenger Transport

Compared with the slight consideration which passenger transport receives in railroad traffic, inland navigation is being used increasingly for tourist traffic. The rise of passenger traffic between 1932 and 1938 amounted to 24 percent on the railroad and to 55 percent on the water routes, or approximately 18 and 52 percent, respectively, figured in passenger-kilometers. These figures show further that in inland navigation, too, the average traveling distance has decreased, although not in the same manner as on the railroads.

Passenger Traffic on Inland Waterways

	Passengers Transported (in millions)	Average Traveling Distance (in km)
1928	17.8	117
1932	43.6	103
1938	68.1	47

E. Inland Merchant Fleet

World War I heavily diminished the Russian tonnage. The procurement of new ships under the Soviet regime was so slight that in 1937 the total tonnage is said to have amounted only to an estimated 60 to 70 percent of that of 1913.

Inventory of Inland Merchant Vessels

	Self-Propelled Ships		Ships Without Self-Propulsion	
	Number	Driving Power (in 1,000 hp)	Number	Capacity (in 1,000 tons)
1913	5,556	1,700	24,151	13,400
1928	1,898	483	7,000	4,960
1933	2,082	549	7,224	5,514
1937	2,514	687	7,477	5,786

In the figures for 1937 the number of scrapped ships was not considered, therefore the actual number of available ships should be somewhat lower. In 1938, the German fleet (without Austria) possessed 5,440 self-propelled ships with a total of 849 horsepower [sic] and 12,441 ships without self-propulsion, having a load capacity of 5.8 million tons.

The majority of the USSR ships are very old, and repair work and the production of spare parts claim the largest part of the total production. Since the repair shops are unable to meet the demands made on them at the beginning of the navigation period, usually, a considerable percentage of the ships (in 1937 approximately 30 percent) are not ready for use.

Part of the newly built ships are large, efficient craft, the dimensions of which are considered in the blueprints for new canal construction, such as the cargo ship of 8,000 tons capacity and the naphtha tanker approximately 200 meters long, 20 meters wide, with 4.5 meters draught, and a water displacement of 18,000 to 20,000 tons. Some of them are small tugs, so-called "river automobiles" which can also navigate small rivers. The corresponding barges are 8 meters long, 3 meters wide, and have a capacity of 3 to 10 tons and a draught of approximately 30 centimeters. The standard USSR ship, in accordance with the dimensions of present artificial waterways, has a capacity of 700 to 800 tons, is 77 meters long, and 8.5 meters wide. Its maximum draught is 1.8 meters.

Collisions are quite frequent even in inland navigation. They may be attributed largely to the incompetence and unreliability of the personnel.

A. Tasks of USSR Ocean Navigation

The largest portion of the USSR export and import trade is carried on water, as indicated by the following data:

Foreign Trade Across Sea and Land Borders
(in % of total export and import)

	Export		Import	
	By Sea	By Land	by Sea	By Land
1913	78.3	21.7	60.8	39.2
1929	84.4	15.6	62.6	37.4
1932	94.0	6.0	82.3	17.7
1937	93.4	6.6	84.6	15.4

The Soviet Government is making a determined effort to transport its import and export goods increasingly on its own ships. At least in the import trade it has succeeded in largely eliminating foreign ships. Approximately 82 percent of the imports, but only 30 percent of the exports, are transported on USSR ships. USSR tonnage is not large enough to interpose itself more strongly in the field of exports. For this reason and particularly in the event of strong traffic fluctuations which accompany the irregular development of its export trade, the Soviet Union is forced to make use of foreign tonnage. From the structure of USSR export trade it is easily explained why USSR ocean shipping is concentrating primarily on import trade. The Soviet Union imports high-grade industrial products. Their transport is a source of relatively high revenue for the Soviet fleet. Cheap bulk goods are exported, the transport of which must be left largely to other countries due to lower profits and lack of tonnage.

A special circumstance is the fact that a considerable portion of the traffic load of USSR ocean shipping serves domestic traffic. The merchant fleet also assumes the task of connecting with each other the widely separated water areas of the Baltic Sea, White Sea, Arctic Ocean, Black Sea, and Pacific Ocean. In 1936, a year of little foreign trade, domestic ocean traffic with 23.2 million tons even exceeded foreign ocean traffic amounting to 14.8 million tons. Thus it amounted, in 1936, to approximately one third of the inland shipping traffic.

B. Regional Distribution of Merchant Fleet

The important industrial areas at the Dnepr, Don, and Donets Rivers were decisive in the development of USSR ocean navigation. The bulk of the ocean navigation is centered in the Black and Azov Seas. In 1939 approximately two fifths of the merchant fleet, 150 merchantmen with 420,000 gross register tonnage and the tanker fleet with 28 units of 133,000 gross register tonnage, was located in the Black Sea through whose ports was channeled, primarily, the export of bulk goods produced in the adjoining industrial areas, of the grain from the Ukraine and of oil from the Caucasus. The Pacific Ocean was second until 1939. Over one fourth of the merchant fleet, 380,000 gross register tons, (since 1939, 270,000 gross register tons) was at home there. The Baltic Sea occupied only third place. Barely one fourth of the USSR merchant fleet was anchored in 1939. Primarily the Baltic Sea ports transship import goods. A total of 80,000 gross register tonnage was accounted for by the White Sea and the Arctic Ocean.

C. The Most Important Seaports

The following data is available on the foreign traffic of the seaports, i.e., transshipping, excluding domestic ocean traffic.

	Import (1,000 tons)		Export (1,000 tons)	
	1913	1937	1913	1937
Leningrad	4,008	336	2,648	2,720
Arkhangel'sk	123	1	1,060	1,908
Murmansk	--	107	--	756
Vladivostok	280	404	43	11
Batumi	31	2	1,148	1,528
Mariupol'	117	--	361	740
Nikolayev	24	2	1,796	541
Odessa	572	128	1,379	356
Baku	31	2	1,148	1,528

Information regarding the total tonnage of freight transhipped at the seaports, including domestic ocean traffic, is very vague and unreliable. At present Leningrad is handling the largest volume of transshipments, which is stated to be above 5 million tons. Formerly the volumes handled by Leningrad and Odessa were almost equal. Under the Soviet Government, however, grain shipments were stopped but shipments of petroleum and manganese ore were increased. Today Batumi is the most important Black Sea port, even ahead of Odessa. The transshipment volume of Batumi is said to exceed 5 million tons while that of Odessa is said to have diminished to barely 4 million tons. A transshipment volume of approximately 3 million tons each is given for Mariupol' and Taganrog, and of over one million tons each for Astrakhan and Baku. Sevastopol' is reported to be handling a traffic volume of more than 4 million tons, and so is Murmansk.

D. Arctic Sea Route

For years the Soviet Government has been turning its attention to the Arctic sea route with a view to setting up a connection between the Far Eastern regions and European USSR which would be shorter than the route through the Indian Ocean. According to Soviet sources a few ships successfully sailed the Arctic Route in 1937. Some ships got as far as the estuaries of the Indigirka and Kolyma Rivers. The problem of coal supply causes great difficulties. Formerly the requirements were filled at Spitsbergen or Sakhalin. However, since these distances are too great, the coal deposits on the Chukotskiy Peninsula are to be opened. It is not known to what extent these plans have been realized. The Soviets were anticipating that this year (1941) the Arctic fleet could be supplied by these coal mines. In addition, other coal deposits in Northern Siberia, the mining of which has not yet been started, are to be utilized.

By the end of 1942, in accordance with the Third Five-Year Plan, a scheduled connection with the Far East via the Arctic sea route was to be ensured and a transport load of 158,000 tons attained. According to a pamphlet issued by the USSR Commercial Attache in Berlin in 1930, a load of 10,300 tons was shipped from Siberia to Arkhangel'sk via the Arctic Ocean in 1920. The total turnover had become 12 times greater (i.e., 120,000 tons) by 1930 as compared with 1920. All transshipping operations of the Ob' region it was stated, were effected at Noviy Port in the Ob' Bay, and those of the Yenisey region in the port of Igarka. According to the pamphlet, the port of Igarka is a calm, deep-water port protected from floating ice and winds and accessible to ocean steamers having a maximum draught of 7 meters. It is called the "future Siberian Arkhangel'sk." In the situation created by the

war, consideration is being given to the possibility of American deliveries of war materials by this route via Arkhangel'sk. Judging from the present state of affairs it remains, however, very questionable whether any scheduled traffic of sizeable extent can ever be accomplished by means of the Arctic route.

E. Performance of USSR Ocean Shipping

Ocean Shipping of USSR (coastal shipping excluded)

	Goods Transported (in million tons)	Passengers Transported (in millions)
1913	36.9	--
1929	8.8	1.5
1933	16.3	3.3
1938	30.4	3.1
1942 (plan)	44.5	--

Under the Soviet regime the traffic volume has again closely approached the prewar level. In spite of this, the quotas provided in the five-year plans have not been attained. In 1937, for example, the plan was only 69 percent fulfilled and in 1938 the traffic volume decreased from 37 billion to approximately 34 billion ton-kilometers.

F. USSR Merchant Fleet

The merchant fleet is operated by eight State Shipping Companies of which the Baltic Line in Leningrad, the Black Sea Line in Odessa, the Northern Line in Arkhangel'sk, and the Far Eastern Line in Vladivostok should be emphasized. The largest part of the merchant fleet consists of steamers having an average tonnage of 1,700 gross register tons. Approximately one fourth of the fleet is made up of motor vessels of an average tonnage of 2,470 gross register tons. In 1939 the merchant fleet possessed

560 steamers with 960,000 gross register tons
139 motor vessels with 346,000 gross register tons
17 sailing ships with 10,000 gross register tons

i.e., a total of 716 ships with 1.3 million gross register tons. The steamer tonnage consists mainly of used units purchased abroad. The motor vessel tonnage, however, is comprised of new constructions. Ten shipyards are at present available for the building of new ships. It is estimated that their maximum annual production was around 60,000 gross register tons. The main center of ship construction is Leningrad with five shipyards. Nikolayev has two shipyards, Sevastopol', Vladivostok and Astrakhan, one each. In order to be able gradually to operate without foreign tonnage even in the field of export, the attention of the Commissariat for Ocean Shipping is centered at present on the construction of merchant vessels suitable for the transport of bulk goods.

The number of ships and the tonnage showed the following development:

	Number of Ships	Gross Register Tonnage Available (in 1,000)
1913	747	852
1928	222	336
1933	352	867
1937	--	1,258
1938	--	1,281
1939	716	1,316

There is a lack of special ships, tugs, oil and grain lighters. The number of available pilot boats and ice-breakers is likewise insufficient.

IV MOTOR VEHICLE TRAFFIC

A. Highways

There are two types of USSR highways: namely, chaussees, i.e., improved and surfaced roads; and roads, i.e., somewhat graded but nonsurfaced field and wood roads. Great cross-country connections are called highroads. They consist in part of chaussees but most of them are merely ordinary roads. In spite of the expanse of the country there are no continuous road systems. The majority of the roads connect individual localities or represent approach roads to railroads or waterways. There are only few bridges. Most of them are made of wood and are very narrow. As a rule, fords are found satisfactory for crossing small rivers, and punts for larger ones. During the rainy season in the fall and the melting of the snow in the spring the roads are completely impassable. In summer they are passable, although rough and dusty. In winter they can be used only with sleds. Generous plans strive to match the Western European road net. For the time being, however, the most sensitive gaps in the road nets must be closed and existing roads improved. A real road network, executed according to a uniform plan covering the whole country is nonexistent.

The total length of USSR roads is approximately 3 million kilometers. Approximately one half thereof are passable and only 4 percent of this half had paved surfaces in 1934. The following estimated figures show the development of the continually passable roads, i.e., those provided with stone or asphalt surfaces, or the paved runways now preferred by German motorized units:

1928	25,000 kilometers
1932	37,000 "
1934	56,000 "
1937	63,000 "

It may be assumed that the total length of the chaussees today approximates 80,000 kilometers, i.e., approximately 3 kilometers per 1,000 square kilometers. Germany without Austria, in 1938 had 392,000, i.e., approximately 83.2 kilometers per 1,000 square kilometers. The above figures are rough estimates. Somewhat more exact information was given regarding the new construction of paved highways in the First and Second Five-Year Plans. During the First Five-Year Plan, approximately 12,000 kilometers of roads were paved, and during the Second Five-Year Plan, 26,500 kilometers. At any rate, the network of chaussees is still smaller today than the railroad network. Only within a radius of 60 kilometers around Moscow are all roads paved with concrete or asphalt. Long and well-constructed road systems connect Moscow with Leningrad via Kalinin-Novogorod; with Minsk, Kiev, Kharkov via Tula-Orel; Voronezh via Tula; and with Gor'kiy. Shorter roads extend from Moscow to Yaroslavl', Rzhev and Ryazan'. A continuous road links Leningrad with Kiev via Pskov-Vitebsk-Gomel' and it is to be extended as far as Odessa. A road was planned to lead from Kharkov to the Crimea. During the Third Five-Year Plan a total of 210,000 kilometers of roads were to be newly constructed or improved.

B. Performance of USSR Motor-Vehicle Traffic

Like all other means of transportation, in the Soviet Union the motor vehicle is used primarily for freight traffic. Quantitatively, 56 percent of the freight traffic load is said to be carried by motor vehicles. From what was said it is understood, however, that the average transport distance for motor-vehicle traffic is considerably shorter than that on railroads and waterways; therefore, in ton-kilometer volume the share of trucks in the total freight traffic in 1937 amounted to only 2 percent. The main achievements lie in the field of local traffic. Detailed information regarding

quantities transported is not available. According to the Third Five-Year Plan, the volume of motor-vehicle traffic is to be raised from 8.7 billion ton-kilometers in 1937 to 40 billion ton-kilometers in 1942.

C. Production and Stock of Motor Vehicles

1. USSR Automobile Industry

The emphasis of the USSR automobile industry is placed on the production of trucks. In 1938, in contrast to a production of only 27,000 passenger automobiles, 184,000 trucks were manufactured. The truck production of the Soviet Union thus ranked directly behind that of the US and topped that of Great Britain. In 1938 the USSR built almost as many trucks as Germany, England and France combined; but, as a whole, i.e., including passenger automobiles, it did not quite reach the total production of France.

Manufacture of Motor Vehicles in Largest Producing Countries in 1938

Country	Total (1,000 units)	Trucks (1,000 units)	Trucks (in %)	Passenger Automobiles (1,000 units)	Passenger Automobiles (in %)
United States	2,490	498	19.6	2,001	80.4
Great Britain	445	104	23.3	341	76.7
Germany	346	65	18.8	281	81.2
France	227	27	11.9	200	88.1
USSR	211	184	87.4	27	12.6

Only under the Soviet regime did the country turn to the production of its own trucks and, finally, its own passenger automobiles. The Stalin Plant in Moscow and the Molotov Plant in Gor'kiy should be stressed particularly. The Stalin Plant has a daily capacity of 280 trucks, 30 passenger automobiles and 7 omnibuses; the Molotov Plant, a total of 580 motor vehicles.

Motor Vehicle Production of the USSR

Year	Trucks	Passenger Automobiles	Total
1928 - 29	1,200	100	1,300
1932	23,800	30	23,900
1935	77,700	19,000	96,700
1937	171,500	18,500	200,000
1938	184,400	27,000	211,400
1942 (plan)	300,000	100,000	400,000

2. Motor Vehicle Park

Stock of Motor Vehicles of USSR
(in 1,000 units)

	1928	1932	1937	1938	1942 (plan)
Motor Vehicles	18.7	75.4	570	760	1,700
Trucks	7.5	54.6	475	635	--
Passenger automobiles and omnibuses	11.2	20.8	95	125	--

In 1939, Germany, including Austria, possessed a stock of 471,000 trucks and 1.6 million passenger automobiles.

In 1938 only two thirds of the existing Soviet vehicles were in operation. The number of vehicles undergoing repair was larger than the new production. Repair facilities remained inadequate even during the following year. Fuel, lubricants, and rubber tires, in comparison to other countries, are of poor quality and expensive. A rubber tire, which abroad lasts for 30,000 to 40,000 kilometers, can be driven only 8,000 to 12,000 kilometers in the USSR. This is due not only to the poor quality of the tires but also to the bad condition of the roads. The material wear is great even on vehicles capable of cross-country travel. Before the war the repair trade and the spare-parts industry could no longer keep up with the heavy material wear. There was also a lack of skilled labor. Ignoring these conditions, Stalin aspired with all means to complete motorization, the prerequisites of which did not yet exist either in the construction of roads or in the accessories manufacturing industries.

V. GERMAN-SOVIET TRANSPORTATION RELATIONS UNTIL 1941

Prior to World War I, freight traffic between Germany and the USSR was largely over the sea route, i.e., the Baltic ports. Around the turn of the century railroad through-connections from Riga to Orel, from Lepaya to Romny, from Paldiski and Tallin to Leningrad, and a connection from Ventspils to Yelgava were established, which carried the goods imported by sea into the interior of the USSR. The port of Klaypeda was not used as heavily as the Baltic ports since from there the railroad had to pass two borders. When the Baltic States were made independent, following World War I, part of the German Soviet sea traffic was shifted to the ports of Leningrad and Murmansk.

As a result of the creation of the little states between Germany and the USSR, by virtue of the Treaty of Versailles, the re-establishment of railroad connections between the two countries was delayed for a long period. For political reasons Poland wished to prevent a rapprochement of its two neighbors. Thus a railroad connection could be established only via the Baltic countries. When the traffic on this route assumed large proportions, Poland did not want to forego its share of the transit revenues and showed readiness to permit transit traffic through Poland. German-Soviet traffic increased rapidly thereafter and reached its maximum in 1931 with more than one million tons, of which 680,000 tons were transported through Poland. Prior to World War I, railroad shipments from Germany to the area of present day Russia (i.e., minus shipments to that part of Poland which was ceded to Russia at the Congress of Vienna in 1815) amounted to approximately 750,000 tons, and shipment to Germany from this area amounted to approximately 1 1/3 million tons.

Starting in 1932, the German-USSR railroad traffic again receded heavily. Except for express transports, the exchange of goods was accomplished via the Baltic Sea. German traffic statistics reveal the following quantities for shipments from Germany and receipt of goods from the Soviet Union over the sea route in 1937:

	Shipped (in 1,000 tons)	Received (in 1,000 tons)
White Sea	19	187
Baltic Sea	48	269
Black Sea	0	2
Total	67	478

In 1937 a total of 243,000 tons are said to have been shipped by rail through Poland in both directions.

The Railroad and Transit Agreement of December 1939 created again the prerequisites for the revival of mutual railroad traffic. Following the subjugation of Poland, Germany had a common border with the USSR for almost 1,000 kilometers. Whereas previously there has been only two railroad lines between Germany and the USSR, now nine border crossings were set up of which two were located at the border between East Prussia and USSR, namely, at Szczepki-Augustovo and Prostken-Grayevo. Of the remaining crossings, those at Zurawica-Peremyschl and Terespol--Brest-Litovsk were the most important. From the start, tariffs with special rates were established for the most important commodities, i.e., grain, mineral oil, yarns, cotton, iron and manganese ore, iron, steel, and iron and metal goods.

As before, a considerable part of the goods went via the Baltic Sea. In addition the route via the Black Sea and the Danube was used or the goods were shipped from Black Sea ports by rail to Germany via Rumania and Hungary or Slovakia. Additional possibilities for German-Soviet goods traffic would have opened up had the inland shipping route Dnepr-Bug-Visla been improved accordingly.

In the future, it should be possible to utilize the USSR inland waterways for German-Soviet change of goods which will be characterized in particular by delivery of bulk goods from the Ukraine. A corresponding regulation of the rivers and improvements of the canals in view of the present condition of the USSR inland waterways will, of course, be unavoidable. There is, for example, the Volga System which handles the transports to the Baltic Sea; and the Dnepr-Visla route via the Dnepr-Bug Canal. Moreover, transport via the Black Sea will expand. The conditions regarding railroad transport between Germany and the Ukraine are relatively favorable. The USSR railroad network attains its greatest density in the Ukraine and also the largest number of double-tracked lines are found there. The difficulties stemming from the wider gauge of the Soviet railroads have been eliminated in part. In the beginning of October of this year already more than 15,000 kilometers had been converted to the German gauge. It is anticipated that gradually the entire rail network of the Ukraine will be converted. It will be more difficult, however, to solve the problem of space utilization on the return transports, since the finished products shipped by Germany to the USSR will occupy less space.

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