

Table of Contents.

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Geneva, March 13th, 1929.

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REPORT

OF THE

**SPECIAL COMMITTEE ON COMPETITION
BETWEEN RAILWAYS AND WATERWAYS**

SUBMITTED TO THE

**ADVISORY AND TECHNICAL COMMITTEE
FOR COMMUNICATIONS AND TRANSIT**

Series of League of Nations Publications

VIII. TRANSIT

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LETTER FROM THE CHAIRMAN OF THE SPECIAL COMMITTEE ON
COMPETITION BETWEEN RAILWAYS AND WATERWAYS TO THE
CHAIRMAN OF THE ADVISORY AND TECHNICAL COMMITTEE FOR
COMMUNICATIONS AND TRANSIT.

Geneva, March 9th, 1929.

In conformity with a resolution adopted by the Sub-Committee on Inland Navigation at its third session, in agreement with the Sub-Committee on Transport by Rail, a Committee was appointed to examine the questions contained in the chapter of the report of Mr. Walker D. Hines on Rhine Navigation entitled "Railway Competition" and the parts of the report of Mr. Hines on Danube navigation relating to competition between rail and water transport.

The Committee designated by the Chairman of the Advisory and Technical Committee for Communications and Transit, in agreement with the Chairman of the two Sub-Committees concerned, was composed of M. Julien EBERHARDT, then Under-Secretary of State at the Ministry of Railways in Warsaw; Lt. Commander Cecil M. DILLON, British Technical Delegate to the International Danube Commission, and the undersigned, who was designated as Chairman of the Committee.

The Committee has now terminated its work and I have the honour to submit herewith the report which it unanimously adopted at its last meeting, held in Geneva on March 8th, 1929.

(Signed) Eli F. HECKSCHER,
*Professor of Political Economy
at Stockholm University.*

TABLE OF CONTENTS

REPORT

	Page
I. PLAN OF ENQUIRY	9
II. GENERAL DEVELOPMENT OF TRANSPORTATION IN CENTRAL EUROPE SINCE THE WAR. ACTUAL CHANGES IN DISTRIBUTION BETWEEN RAIL AND WATER, WITH PARTICULAR REGARD TO THE RHINE :	
Rail and River Traffic	12
Seaport Traffic	13
Rhine and Rail Traffic	14
General Conclusions	18
III. DEVELOPMENT OF RAILWAY RATES :	
1. Germany :	
General Outline	19
General Policy	20
Individual Articles	21
Falling Distance Scale	22
Category for 15-ton Lots	22
Consignment Charge	23
Special Seaport Tariffs	23
Special Transhipment Tariffs	24
Special Transit Tariffs	25
Other " Competitive " Tariffs	25
Character of Latest Changes	26
2. France :	
General Evolution of the Railway Rates System since the End of the War.	26
Goods Rates	27
Special Tariffs	28
Summary	28
Conclusions	28
3. Belgium	28
4. The Netherlands	29
5. Riparian States of the Danube	29
IV. APPLICATION TO PROBLEMS OF AN INTERNATIONAL CHARACTER	29
V. PRINCIPLES OF RAILWAY RATE-MAKING	32
VI. DANUBE PROBLEMS	41
VII. SUMMARY AND RECOMMENDATIONS	43

ANNEXES

	Page
A. EXTRACTS FROM THE REPORTS OF MR. WALKER D. HINES :	
1. The Rhine	45
2. The Danube	47
B. STATISTICAL ENQUIRY INTO RAIL AND RIVER TRAFFIC WITH PARTICULAR REGARD TO THE RHINE, BY G. FRUMKIN ¹	49
Chapter I. General Survey of German Traffic by Rail and River in 1912-1913 and 1925-1928.	55
Chapter II. Maritime and Non-maritime Traffic of German Seaports and Traffic with Belgium and the Netherlands 1912-1913 and 1925-1928	72
Chapter III. Analysis of the Pre-war and Post-war Traffic of Individual Commodities by Rail and River, particularly in connection with Rhine Navigation	107
C 1. SYNOPSIS OF INFORMATION COMMUNICATED TO THE COMMITTEE CONCERNING THE EFFECTS OF THE TARIFF POLICY OF THE GERMAN, BELGIAN AND FRENCH RAILWAYS ON RHINE TRAFFIC :	
I. Effects of the Tariff Policy on Traffic to and from Rhine Seaports	137
II. Traffic to and from the Upper Rhine	139
C 2. SYNOPSIS OF INFORMATION COMMUNICATED TO THE COMMITTEE CONCERNING THE EFFECTS OF THE TARIFF POLICY OF VARIOUS RAILWAY ADMINISTRATIONS ON DANUBE TRAFFIC	140
D 1. LETTER FROM DR. W. SPIESS, DIRECTOR OF THE GERMAN RAILWAY COMPANY	142
Appendix I. Extract from the <i>Rhein</i> of August 10th, 1927: "Effects of the Railway Tariff Policy on the Transshipment Traffic of the Ports of Mannheim". Memorandum of the Chamber of Commerce for the Kreis of Mannheim, July 1927	147
Appendix II. Observations of Dr. SPIESS, Director of the German Railway Company, on the Memorandum of the Mannheim Chamber of Commerce, of July 1927, on the Effects of the Railway Tariff Policy on the Transshipment Traffic of the Ports of Mannheim.	156
D 2. GERMAN RAILWAYS: GOODS TRANSPORT TARIFFS	169
D 3. FRENCH RAILWAYS :	
I. SUCCESSIVE INCREASES IN TARIFFS	171
II. TABLE SUMMARISING THE MEASURES TAKEN BY THE FRENCH SYSTEMS IN RESPECT OF GOODS EXPORTED OR IMPORTED THROUGH THE CHANNEL AND NORTH SEA PORTS.	172
D 4. RAILWAY TRANSPORT RATES PER 10 TONS, IN REICHSMARKS, OF VARIOUS COUNTRIES INTERESTED IN RHINE NAVIGATION	177
D 5. OBSERVATIONS SUBMITTED BY CERTAIN RAILWAY ADMINISTRATIONS OF DANUBE RIPARIAN STATES :	
1. Czechoslovakia	178
2. Austria	178
3. Germany	180
E 1. (a) RHINE FREIGHTS	181
Freights for Antwerp	183
Freights for Rotterdam	186
Freights for Amsterdam	189
Freights for Rhine-Ruhr Ports	192
Freights for Mannheim-Ludwigshafen	194
(b) TRANSHIPMENT COSTS ON THE RHINE	195
E 2. SELF-COSTS IN DANUBE NAVIGATION	196

¹ For the detailed Table of Contents of Annex B, see page 49.

**REPORT OF THE SPECIAL COMMITTEE ON COMPETITION
BETWEEN RAILWAYS AND WATERWAYS**

I. PLAN OF ENQUIRY.

The present investigation owes its origin to the recommendations made by Mr. Walker D. Hines in his reports on Rhine and — to a less extent — Danube navigation dated August 20th, 1925. Extracts of these reports are given as Annex A to the present report.

Mr. Hines had been struck by the unanimity of the complaints of Belgian, Dutch, French and German shipping interests as to the unfavourable effect upon Rhine navigation resulting from recent developments of railway competition. As to the Danube, he confined himself to recommending a closer co-operation between railways and navigation companies, at the same time, however, pointing out some instances of railway rates prejudicial to Danube navigation. With regard to the Rhine, he considered the situation as immensely complicated and consequently recommended a thoroughgoing re-examination of the whole problem as to the justification for the present rates of the German, French and Belgian railways. In order to conduct such an enquiry, the Advisory and Technical Committee for Communications and Transit appointed the present Sub-Committee.

It was clear beforehand that a number of questions must arise in the course of such an investigation. The Committee has attempted to throw light upon the following problems:

The first, in logical sequence, are the changes in traffic which have taken place since before the war, in so far as they bear upon the relative position of railways and waterways in Central Europe and particularly the two great rivers in question. As the map of Europe has changed fundamentally in the meantime, a number of factors have been at work; and it would be a grave mistake to attribute the re-distribution of trade between railways and waterways simply to the rate policy pursued by the former. Further, the economic life of Central Europe has taken on rather a different character since the delivering of the report of Mr. Hines, so that opinions expressed to him at that time need not apply at the present moment. All those things, therefore, will want to be investigated as thoroughly as conditions admit, before the different factors are studied at all by themselves.

For this reason, all available statistics have been ransacked and thoroughly sifted. Unfortunately, they are very unevenly distributed over the field of investigation; and the fullness of data available for part of it may even give a false impression, in so far as it gives undue preference to some parts as compared with others. Though statistics of German inland navigation as well as railway traffic do not give all the information to be wished for and are not always very easy to make use of for the purposes of the Committee, still they are much fuller than any other part of the statistical materials. As a matter of fact, it is impossible to conduct a close enquiry into any of the subjects of the Committee not covered by German statistics of transport, with the single exception of those treated by the reports of the Rhine Commission. It follows, in the first place, that the study must unavoidably be confined mainly to the Rhine, with the addition of some figures for German railway and river traffic as a whole.

No materials of the same sort exist for the principal part of Danube transportation and even less for transport in the south-east of Europe generally, territorial changes, besides, excluding comparisons to a great extent, even if statistical materials were available. But even with regard to the Rhine a certain one-sidedness is as unavoidable as

it is regrettable ; for what can be studied is principally competition between the German railways and Rhine navigation, because statistics of transport of the same character are non-existent with regard to railways of the rest of the riparian States. However, this has not been considered as a sufficient reason for giving up this part of the enquiry ; it only makes it necessary to remind the reader of the limitations of the results reached.

This statistical enquiry has been carried on by the Secretariat of the League of Nations in the first place, having been entrusted to M. G. Frumkin, of the Economic and Financial Section ; but valuable help has also been given by M. Hostie, Secretary to the Rhine Commission, besides the assistance given throughout the enquiry by members of the Transit Section of the Secretariat. The results of the statistical enquiry are given in full as Annex B to the present report, but the principal results are summarised in the report itself.

The next problem refers to the causes of this development, in so far as these do not follow immediately from the grouping of the statistical material. What call for closer investigation in this connection are clearly the measures taken by the different railway systems influencing competition with the waterways. Several lines of study have been followed in this connection.

First, one of the members of the Committee has discussed the situation as it appeared to those interested in navigation on the Rhine and the Danube and has received a great deal of valuable information, written or oral, from them. All this has been summarised in Annex C to the present report. It ought to be pointed out, however, that these materials were mostly collected already in 1926 and that matters may have changed as to more points than one in the meantime. The Committee has been unable to begin this investigation afresh and gives the materials for what they are worth.

Next, the opinions of railway experts have been asked for. Dr. W. Spiess, a director of the Deutsche Reichsbahngesellschaft, has been pleased to discuss the problems of his railway system with the Committee and has favoured it with several papers explaining the policy pursued by the German railways. The French railway authorities have also furnished some valuable information. For the Belgian and Dutch railways some materials have been collected. Observations by the railway administrations of certain riparian countries of the Danube have also been received. These materials are reproduced in Annex D.

Actual developments of German railway rates have also been studied and summarised in the report itself, some detailed tables being given in Annex D. Also developments of river freights, self-cost and transshipment cost on the Rhine and Danube have been studied. These papers are given as Annex E.

It must be pointed out that, in this case also, German conditions have been more fully treated than the rest, on account of the nature of the available sources. As to France and Belgium, the stabilisation of the exchanges is of such recent occurrence that materials for years of normal monetary conditions do not yet exist.

This finishes the work of documentation. The next step will be to draw conclusions from the facts thus presented.

It has been found impossible to do this without going into general principles of rate-making. The interested parties have spoken a great deal about unfair competition, too high and too low rates, too little use being made of the waterways and so on. Mr. Hines is on safer ground in saying that different interests ought to be able to agree that broad public policy, both from a national standpoint and from an international standpoint, makes it desirable that the Rhine [and the Danube] should continue to carry the traffic which they are naturally adapted to carry on an economical basis. But all these views presuppose the existence of principles of rate-making. The application of these rules must be based upon a knowledge of the self-cost of railway and waterway traffic.

A study of self-costs ought therefore to have been included in the work of documentation, but they are unfortunately extremely difficult to attain, and it has therefore

been impossible to conduct a particular enquiry in their field, with the exception of the few figures given for the rivers in Annex E and some figures for railways quoted in the text of the report itself. A very painstaking study of them with regard to the two French railway systems, those of the Chemins de fer de l'Est and the Chemins de fer du Nord, was made before the war by M. Colson and M. Marlio and presented to the Congress of the International Union of Railways in 1910 ; for the Swedish railways an even more extensive investigation has been made on behalf of the Swedish State railways. But with regard to post-war conditions nothing is known to exist except some rather summary, though certainly important, figures for the German railway system, published by Dr. Tecklenburg, a director of the Deutsche Reichsbahngesellschaft. Consequently, this vital part of the subject cannot be treated in the way which might be wished for, and the conclusions must therefore also be somewhat tentative.

What has now been said refers to the general problems of competition between railways and waterways in Central Europe, and it will be necessary to start with such a study as a whole, in order to prevent results from being biassed. But when coming to the question of conclusions the case is different, for important parts of the problem must be said to fall outside the competence of the League of Nations : because it is clear that a problem is no concern of an international institution except in so far as international interests are involved, or in cases where international co-operation is regarded necessary by interested countries in order to solve national problems, which is not the present case. Now, perhaps even the most eager controversies on the subject have concerned chiefly different interested parties belonging to the same country. They must be left aside in the present enquiry and attention concentrated upon cases where international interests are treated differently from national ones. It is far from easy, it is true, to distinguish between cases where only national interests are involved and cases of international concern ; but this problem will be dealt with more fully in Section IV of this report, as it can there be exemplified with the help of actual conditions.

It is not conclusive that the motives of railway policy have been to show favour or disfavour of one set of interests or another. For it is quite possible that, even if the intention has been to favour national interests, say, national seaports, at the cost of foreign ports, the policy pursued has still been in accordance with sound principles of rate-making ; and if so, there can be no ground for further investigation. The policy actually pursued must be tested by its conformity to principles of rate-making, and only if it cannot stand that test must it be considered unfortunate from the point of view of the economics of railway and waterway transportation.

What easily converts the competition between railways and waterways into a clash between national and international interests in the first place is the fact that railway transport in Central Europe is entrusted to national enterprises, whether State or privately owned ; whereas in inland navigation the character of transport renders it possible to permit of its being carried by shipping concerns of various countries — and, in fact, either owing to international obligations or to the national law of the countries concerned, transport on most rivers or canals of Central Europe can be effected by ships of different countries. This is particularly the case for international rivers, which all the great rivers of Central Europe are.

A policy which favours railways and hampers waterways will therefore often appear to reserve its benefits exclusively to nationals and let the damage fall partly upon foreigners. Whether this is a correct view or not does not now concern us ; it is mentioned here only in order to show why and under which conditions competition between railways and waterways becomes an international problem. The fact that at times it becomes so has been the reason for the investigations of Mr. Hines, and the limits set to them are also those of this Committee, appointed to supplement his work in one important respect. In one case as in the other, the findings are confined to the international aspect of the subject, though the facts adduced in the case of this Committee cover more ground.

Most of what has now been said refers only to the Rhine. As to the Danube, the poverty of statistics of transport makes a much more summary treatment necessary. However, it goes without saying that neither in this case has the investigation been carried beyond its international effects.

II. GENERAL DEVELOPMENT OF TRANSPORTATION IN CENTRAL EUROPE SINCE THE WAR. ACTUAL CHANGES IN DISTRIBUTION BETWEEN RAIL AND WATER, WITH PARTICULAR REGARD TO THE RHINE.

As stated at the close of the preceding part of the report, the data available for transport statistics on the Danube are very meagre. Consequently, the statistical enquiry into the development of transportation had to be confined to Germany and the Rhine.

On the basis of an extensive statistical enquiry already mentioned, the results of which are laid down in Annex B, the main lines of actual development as to Central Europe and the Rhine in particular will here be indicated, referring to the Annex for detailed statements and proofs of conclusions stated.

Rail and River Traffic.

A general view of the development as a whole will give the necessary background.

Statistics of the physical quantities of goods carried by rail and water suggest that, after a severe slump in the years immediately following the war, the German water traffic made recently an important progress, which was even more pronounced than in the case of railways. Its relative importance as compared with the traffic by rail, which had fallen from 21.6 per cent in 1913 to less than 12 per cent in 1921, has been in recent years around and sometimes even above the pre-war level (see Annex B, Table 3). The remarkable increase in 1926 is easily explained by the heavy shipments of coal during the British coal strike, but 1927 showed again an important rise. Traffic by rail has suffered far more from the cession of some provinces than the water traffic, but it tended to make up this loss by intensifying the traffic within the present territory. Taking into account the present territory, railway traffic has been since 1927 above the pre-war level by some 5 to 6 per cent (see Table 2); but this increase was due chiefly to an increased inland traffic, which, in spite of a reduction in the territory, has been increasing, whilst the relative importance of railway traffic with foreign countries tended to decrease (see Table 5).

The recovery of the railway traffic affected by territorial changes took place, not only by means of replacing traffic with ceded territories by an intensified traffic in the other provinces, but also by means of an increase in the distances covered, in spite of a reduction of the territory.

The statistics of ton-kilometers show, consequently, for the railways a far more progressive situation than those of physical quantities carried. Whereas the traffic of the present territory, expressed in ton-kilometers, increased from 1913 to 1927 by 15 per cent on the waterways, the corresponding increase for rail was 26 per cent (see Table 6). The average length of haul for the railways increased from 1913 to 1927 by over 20 per cent, whilst for the waterways it fell slightly (see Table 7).

The difference between the trend of physical quantities on the one hand and of the ton-mileage on the other points to extensive changes in the nature of the traffic. As referred to further below, water traffic has gained considerably on the short distance between the Ruhr and the Dutch frontier, having lost at the same time on the longer distances to and from the Upper Rhine. The railway traffic has, on the contrary, gained on the long distances, represented chiefly by the increase of traffic between South Germany and German seaports.

Seaport Traffic.

It becomes a problem more closely allied to the problem of Rhine traffic when it is considered how traffic in different seaports has developed. For it is frequently argued that the decrease of the navigation on the Upper Rhine is due to that policy adopted by the German railways which will be further considered in the next Section, *i.e.*, of favouring the German seaports against Dutch and Belgian seaports. It might be worth while examining whether the German seaports play at present a greater rôle in German economic life as compared with foreign seaports than before the war. It must be added, however, that part of this development does, as a matter of fact, not refer to the Rhine but to some of the other great rivers, the Elbe in the first place, but also the Weser and the Ems. Especially with regard to the changes in relative importance for rail and river transportation to and from the seaports, this will have to be borne in mind.

The traffic of the German seaports, both sea-borne and non-maritime traffic, will be considered first.

The statement below, showing the sea-borne traffic of all German seaports as a percentage of the German general trade, suggests that for both imports and exports the relative importance of German seaports is at present somewhat lower than in 1913 (see Table 28).

Traffic of the German Seaports as Percentages of German General Trade.

	<i>Imports</i>	<i>Exports</i>	<i>Total</i>
1913	45.1	23.2	34.1
1925	39.1	20.6	30.7
1926	36.7	26.4	30.5
1927	39.0	20.3	30.1

If, however, reparation deliveries — chiefly coal — be omitted, as they do not affect the German seaports to any considerable extent, the relative importance of the German seaports in German export trade appears to have slightly increased since 1913.

As regards more especially Hamburg, the sea-borne traffic of which is alone more important than that of all the other German seaports put together, its inward movement from overseas has been above the pre-war level since 1927, as has also its outward movement since 1926 (see Annex B, Table 20). If account be taken of the movement of the German general trade, it would, however, appear that Hamburg's relative importance in the German general import trade has remained practically constant, whilst the export movement via Hamburg has had the tendency of outstripping the movement of German exports (see Annex B, Table 23).

As regards Bremen, its rôle in German foreign trade appears to be at present smaller than in 1913 (see Annex B, Table 24).

The above conclusions are more or less confirmed by statistics of the non-maritime traffic (see Annex B, Tables 52 and 54).

As regards the nature of this non-maritime traffic, it would appear that, in the case of Hamburg, the rail traffic has considerably increased, whilst the traffic by river has decreased.

If the year 1928 be omitted, the figures for which are still open to doubt, it would appear from the Hamburg statistics that the railway traffic of Hamburg in both directions, including transit, has increased more than the volume of its sea-borne trade (see Table 32), the increase in 1927 over the pre-war average for 1910-13 being 22 per cent, against 4 per cent for the sea-borne trade. If the German traffic statistics referring to all the Elbe seaports are taken into account, the movement is, however, less favourable (see Tables 34 and 35).

The latter statistics show that the traffic by rail between the Elbe seaports and South Germany, although still not very important, has increased (see Annex B, Tables 34 and 35). The following are the figures for the rail traffic between the Elbe seaports on the one hand and Baden, Württemberg and Bavaria on the other :

	Tons, 000's omitted	
	<i>Consignments to South Germany</i>	<i>Receipts from South Germany</i>
1913	95	132
1925	275	223
1926	274	304

Conditions were different with regard to Bremen and Emden, for which the traffic by rail shows a decrease (see Tables 39 and 40). Nor was there any important general increase in their traffic with South Germany.

The traffic by water moved in the opposite direction : it has fallen considerably in the case of Hamburg and increased in the case of Bremen and Emden (see Annex B, Tables 39, 40, 42 and 43). Taking all the German seaports together, it would appear that the traffic by river has been in recent years comparatively less important than the rail traffic (see Tables 53 and 55). This decrease is due to the influence of the traffic of Hamburg.

Comparing these results with traffic for the non-German outlets of German trade, the result with regard to Belgium is that its relative importance has decreased for both imports and exports (see Tables 52 and 54). In the case of the Netherlands, the relative importance of its traffic compared with German import trade has remained practically stable (see Table 52) ; but conditions were quite different as regards the export trade, the quantity of goods received from or via Germany having increased from 17 million tons in 1912-13 to nearly 21 millions in 1925 ; the enormous figure for 1926, over 34 millions, being directly and indirectly influenced by the British coal strike of that year (see Table 54). As the German export trade did not grow at all in the same proportion, it follows that the share of traffic to the Netherlands as compared with German total exports increased greatly, from 22 per cent in 1912-13 to over 33 per cent in 1925, and in the exceptional year 1926 to nearly 38 per cent (see Table 54).

It appears thus that, whereas there has been no substantial change in the relative importance of the traffic via German seaports, the export traffic with the Netherlands has gained considerably in importance. This movement is due chiefly, but not exclusively, to the increased consignments of coal from the Ruhr downstream.

Rhine and Rail Traffic.

This already points to some important changes in Rhine traffic and rail traffic in competition with it.

In point of fact, the Rhine traffic downstream has benefited doubly : not only have the exports via the Netherlands increased considerably, but at the same time the traffic by rail to the Netherlands and Belgium has fallen from 12.5 million tons in 1913 to 4.7 million tons in 1925 (see Table 51). As a result of this double movement, the percentage which the traffic to the Netherlands by water was of the traffic by rail increased from 166 in

1912-13 to 736 in 1925 (760 per cent in 1926; see Table 55). It would thus appear that the distribution of traffic between rail and river followed two distinct tendencies with regard to Hamburg and the foreign Rhine seaports respectively.

The picture is completely changed, however, if upstream traffic on the Rhine and traffic on the Upper Rhine are also considered. Especially as the Rhine-Herne Canal is statistically outside the Rhine basin, the best idea will be given by taking both the Rhine and the Ems-Weser basin as a basis. It will then be found that there was in 1925 a decrease of about 6 per cent as compared with 1913 (see Table 11). It appears, moreover, that the decrease was particularly serious for the German districts on the Upper Rhine (see Table 12).

Both the official statistics of the traffic by districts (see Table 12) and the statistics by ports (see Table 13) show important changes for the Upper Rhine:

(a) The water traffic of the district Mannheim-Ludwigshafen fell from 10.9 million tons in 1913 to 9.4 millions in 1925 and that for the remainder of Baden shows likewise a decrease (see Table 12).

(b) The German ports on the Upper Rhine lost between 1913 and 1925 about 14 per cent of their traffic. A striking improvement took place, however, in 1926 and 1927, the traffic in the latter year having exceeded that of 1913. As the case of Mannheim has been made the subject of protracted discussion (*cf.*, Annex D 1), it may be illustrated a little more fully than the rest, especially as it shows how many factors may have been at work at one and the same time.

Mannheim's traffic undoubtedly shows a heavy fall, by nearly 8 per cent between 1925 and 1926 and, after some improvement in 1927, again a fall of 14 per cent in 1928. This decrease in Mannheim's traffic was particularly violent in the case of goods received, which fell from 1913 to 1928 by over one-fourth (see Table 14).

Only part of this is the result of an increasing competition on behalf of the railways, however. From the statement below it will be seen that some other ports on the Upper Rhine and Aschaffenburg on the Main show an opposite movement (see also Annex B, Tables 13 and 14).

Rhine Traffic in some Rhine Ports.

Tons (000's omitted).

	Mannheim	Ludwigshafen	Karlsruhe	Strasburg	Kehl	Aschaffenburg
1913 . . .	7,397	2,873	1,478	1,988	510	45
1925 . . .	6,231	3,265	1,137	2,142	722	1,097
1926 . . .	5,722	3,364	1,516	3,094	763	737
1927 . . .	6,489	4,003	2,100	4,119	992	953
1928 . . .	(5,828) ¹		2,078	(5,372) ¹	953	959

The table above shows that the traffic of the commercial centre Mannheim tends to go in an opposite direction from that of the almost contiguous industrial centre Ludwigshafen.

The increase of Aschaffenburg is explained by the opening of a new Main district to navigation. Similarly, the increase of the Rhine traffic of Strasburg has been favourably influenced by the works carried out for the improvement of the navigation on the district Mannheim-Strasburg. This work, which had been started in 1909, was not completed at the outbreak of the war.

It may thus be stated that, whether the navigation on the Rhine has or has not suffered from competition on account of the railways, it appears to have at any rate suffered from the competition of the Main. On the Rhine itself there has likewise been an increasing competition of the various ports with each other.

¹ From monthly data published in the review *Der Rhein*. The corresponding monthly figures for 1927 were 6,749 for Mannheim and 4,742 for Strasburg.

The traffic on the German districts on the Upper Rhine has likewise suffered from territorial changes west of the Rhine. Goods coming from Alsace and Lorraine are more extensively shipped via Strasburg, which no longer belongs to Germany, and those from the Saar are carried direct by foreign railways instead of being carried by rail first and water afterwards.

What has now been said refers to total traffic. From the point of view of competition between rail and water, a particular sort of traffic, *i.e.*, transshipment traffic by rail-river and river-rail, is of outstanding importance, however, as the railway is in this case able to influence *both* the competing routes, not only by changing (possibly lowering) its rates on the all-rail route, but at the same time changing them in the opposite direction (presumably increasing them) on its part of the combined route. Statistics of transshipment traffic ought therefore to be of particular interest to the subject before the Committee. Unfortunately, however, as stated in Annex B, the official German statistics of transshipment refer to direct transshipment only, and fail to take into account the transshipment which occurs after a delay in the transshipment port. They are therefore often in contradiction with the other traffic statistics. Some reference to what they appear to show may be given, however.

Thus, for Mannheim, transshipment statistics show a decrease from 1.3 million tons in 1913 to 0.8 million in 1925 and 0.5 million in 1926, the percentage importance of the transshipment compared with total water traffic having fallen from 18.2 in 1913 to 12.5 in 1925 and 8.8 in 1926 (see Annex B, Table 15). The situation of Ludwigshafen was more favourable, but unfortunately no complete transshipment statistics are available for that port. The traffic of Aschaffenburg consists chiefly of transshipment traffic, the percentage importance of which amounted to 76.2 in 1925 and 71.5 in 1926. It is difficult to draw any conclusions from such figures with regard to competition from railways, though it appears probable that it has diminished transshipment traffic. This is confirmed by an analysis of the movement of some more important goods referred to below.

The problem becomes considerably complicated, also, by the influence of territorial changes. On that account, it is not enough to compare the Rhine traffic with the parallel rail traffic of German seaports with South Germany, the latter traffic having been frequently substituted for traffic by rail with the ceded territories. A decrease in the Rhine traffic may not be due to the competition of an increasing railway traffic north-south, but to the disappearance of a traffic originating in the ceded territories.

It is, however, impossible to study such movements without considering the individual commodities carried, and therefore they must now be considered. A more detailed analysis is set out in Chapter III of Annex B with regard to twenty-three commodities, with a view to disclosing whether in a given case the waterways lost any traffic in favour of the railways or vice versa, and if so, whether this change could be explained by other causes than deliberate competition by railways.

Taking first the great staple commodity of German rail and water traffic — *coal*, it will be found that, whilst the consignments of Ruhr coal by water in an upstream direction were in 1925 more or less the same as in 1913, the through traffic in Ruhr coal to South Germany by rail has increased from 1.7 million tons in 1913 to 2.9 million tons in 1925 and 3.0 million tons in 1926 (see Tables 66 and 67). But these increased receipts of Ruhr coal by rail compensated only in part for the fall in traffic from the Saar and the Lorraine to South Germany, which fell from 3.8 million tons in 1913 to less than 1 million tons in 1925 (see Tables 64 and 67).

The transshipment traffic on the Upper Rhine did not benefit by the exceptionally favourable circumstances arising from the cutting-off of the traffic from the Saar and

Lorraine and from the opening of the Rhine-Herne Canal shortly after the outbreak of the war (see Tables 65 and 67). When taking into account all the important sources of coal supply, it is found that there has at any rate been an increase of rail traffic at the expense of water or transshipment traffic in the case of Bavaria, but hardly in the other South German districts (see Table 67).

The situation was different as regards downstream traffic by water, which increased to an extraordinary extent, whereas the corresponding traffic by rail has decreased (see Table 57).

As regards *iron ores*, the shipments by water in an upstream direction show a heavy decrease (see page 123, Annex B), which is, however, due to a general reduction in imports of iron ore into Germany as a result of territorial changes (see Table 21) and to increased imports by water via Emden, the upstream traffic from which increased from 1.3 million tons to 1.7 million; but it is apparently not due to railway competition.

The reduction in the upstream shipments of *ores other than iron* does not seem to be due to railway competition either.

The consignments upstream of *iron and steel wares* from the Ruhr to South Germany (districts 35-37) by rail have similarly increased from 231,000 tons to 282,000 tons, whereas the direct transshipment traffic of Mannheim-Ludwigshafen is stated to have decreased from 13,700 tons in 1913 to 9,200 tons in 1925 and 600 tons in 1926. But here again it should be remembered that, whereas consignments by rail from the Saar to Mannheim-Ludwigshafen amounted to 215,000 tons in 1913, they fell in 1926 to about one-fifth of this amount. It may be stated that as regards upstream shipments, the Rhine traffic from the Ruhr proved unable to take advantage of the falling-off of the traffic with ceded territories. The downstream water traffic of iron and steel wares on the Lower Rhine developed on the contrary at the expense of the railways.

The reduction in the upstream shipments of *cereals* is due rather to a general decrease of imports than to railway competition, and the decrease in the upstream shipments of *flour, oil- and other seeds and cotton* appears likewise to be due to reasons other than growing railway competition. Similarly, the reduction in shipments downstream of *glassware, porcelain, china and other pottery* appears to be due in part more to territorial changes than to competition of railways, with the exception of the Main-Rhine traffic, which in the case of porcelain appears to have suffered from rail competition.

As regards the traffic in *fertilisers*, it should be emphasised that the use of chemical manures produced at home has tended to replace foreign fertilisers; it would therefore appear that the increased supply by rail to South Germany is due more to changes in the nature of manures than to a competition on behalf of the railways.

The traffic downstream of *salt* and of *sugar* developed favourably without having apparently suffered from an increasing competition on behalf of the railways.

There appears, on the contrary, to have been an increasing competition on the part of the railways in the case of the following commodities :

1. *Rice*. — Here the upstream traffic from Dutch and Belgian ports decreased from 46,700 tons in 1913 to 30,400 tons in 1925, Mannheim being particularly affected by this decrease. The traffic by rail from Hamburg to Baden, Württemberg and Bavaria increased at the same time from 1,900 tons to 10,300 tons.

2. *Coffee, Tea, Cocoa*. — Traffic on the Upper Rhine appears to have suffered from increasing competition of traffic by rail from Hamburg.

3. *Oils and Fats.* — The traffic on the Rhine and particularly on the Upper Rhine appears to have suffered increasing competition from railway traffic from German seaports.

4. *Wool.* — Whereas the arrivals of wool in Mannheim-Ludwigshafen fell from 9,800 tons in 1913 to 3,600 tons in 1925, the consignments by rail from Bremen to South Bavaria increased from 141 tons in 1913 to 3,366 tons in 1925. The shipments from Mannheim-Ludwigshafen to that province fell from 2,832 to 177 tons. It would thus appear that the Rhine traffic of wool has suffered severely from rail competition.

5. *Jute, Hemp, etc.* — Whereas consignments upstream from the Dutch frontier fell from 1913 to 1925 by one-half, the consignments from the German seaports to Rhine districts nearly quadrupled. The growing competition of railways made itself felt on the Lower Rhine as well as on the Upper Rhine.

6. *Hides and Skins.* — The Rhine did not benefit from the increase in the traffic, such increase having been entirely taken over by the railways.

As regards consignments to Württemberg, the railways gained five times as much as they lost owing to territorial changes.

7. *Paper and Cardboard.* — The reduction in the downstream traffic from the Upper Rhine appears to be due to some extent to competition from the railways.

8. *Mineral Oils.* — There appears to be an increasing competition of the railways as regards consignments to Bavaria and Switzerland.

9. *Cement.* — Whereas consignments by rail from Mannheim-Ludwigshafen to South Germany (Districts 31, 33, 35, 36 and 37; see map in Annex B) decreased from 92,500 tons in 1913 to 14,700 tons in 1925, the direct consignments by rail from districts other than Mannheim-Ludwigshafen increased from 925,600 tons in 1913 to 1,110,500 tons in 1925. This increase is all the more remarkable as, before the war, the traffic originated chiefly in Alsace-Lorraine and the consignments from this origin have been greatly reduced, and replaced by consignments from Hesse-Nassau, which is itself a river district.

General Conclusions.

After eliminating the economic factors unconnected with competition between railways and waterways, and taking into consideration, as far as possible, changes in currents of traffic due to frontier changes (and their economic consequences), the following conclusions appear to emerge :

1. The railways have in many cases taken traffic from the river.
2. Railway competition is particularly marked on the Upper Rhine.
3. Rhine traffic has lost some of its former relative importance owing to :
 - (a) All-rail traffic to and from German seaports in place of all-water or par water traffic to and from Belgian and Dutch seaports.
 - (b) The development of traffic in an east-west direction, or at any rate in directions other than north-south along or near the Rhine.
4. The average length of haul has increased by rail but not by water.
5. The traffic between German seaports and South Germany has increased.
6. On the other hand, downstream river traffic to the Netherlands has increased greatly.

III. DEVELOPMENT OF RAILWAY RATES¹.

1. GERMANY.

The important bearing on the subject in hand of the development of railway rates has led the Committee to examine this aspect of the problem. In this connection, much of the data utilised have been taken from the "Reports of the Commissioner for the German Railways to the Reparation Commission".

General Outline.

The German railway system has been entirely changed in post-war years in several directions : (1) by centralisation ; (2) in rate-making. The principal features of the changes in the latter are : (a) the falling distance scale ; (b) the category for 15-ton lots ; (c) the consignment charge ; (d) the competitive tariffs (for seaports, for transhipments, for transit, for international traffic, for short-distance hauls and hauls conditional on a minimum tonnage being transported). The particular changes which are of importance to the subject under the consideration of the Committee are : the falling distance scale, the seaport tariffs, the transhipment tariffs and also, to a smaller extent, the transit rates. These will therefore have to be considered more fully than other features of the system. It is obvious, for instance, that the influence of the falling distance rates and the seaport rates should have made itself felt in competition between rail and water carriage.

Before proceeding to a more detailed examination of these changes from such data as are available, it may be useful to keep in view the relative importance of the respective classes of goods affected by changes in rates, in comparison with the total quantities of goods moved. The following table, which will be referred to from time to time, therefore shows, for 1925 : (a) by index numbers (1913=100), the 1925 rates for various distances for the main groups of tariff classes — on the first line of each group in the table ; (b) by percentages, the relative importance in 1925, for each group, of the goods moved for the respective distances — italic figures on the second line of each group in the table ; (c) by percentages, the relative importance in 1925 of each group, as a whole, to the total railway traffic — italic figures in the last column of the table.² A proper perspective is thus obtained.

The degree of specialisation in the tariffs is great. Apart from the general classes for wagonload lots A to F, there are special classes, for coal, wood, stone, ores, manures, etc., with numerous subdivisions.

The distribution of the ton-mileage as between the two broad groups of classes — the normal classes and the special tariffs — is about the same in 1925 as in 1913 (42 per cent for normal classes and 58 per cent for special tariffs). On the other hand, the distribution of the rates has changed considerably. Including the transport tax, the normal classes paid, in March 1925, 7.35 pfennige per ton-kilometer (an increase on 1913 of 48 per cent), while the special classes paid 3.34 pfennige (an increase of only 33 per cent, as reflected in the table on pages 20 and 21).

The relative importance of the special tariffs is shown by the fact that in March 1925 they applied to 39 per cent of the total receipts for the transport of goods, to 58 per cent of total tonnage (56 per cent for the whole year) and to 56 per cent of the ton-mileage.

¹ See also table in Annex D 4.

² The table on the following pages (20 and 21) is a summary reproduction of the table in Annex D 2, where the individual tariff classes and special tariffs are shown.

TABLE SHOWING GOODS

1925 Rates compared with

Groups of tariff classes and special tariffs	Distances in kilometers				
	1 to 100	101 to 200	201 to 300	301 to 400	401 to 500
Small lots (<i>Stückgut</i>) and Special tariff 25 (milk) %	146.3 51.5	150.0 20.2	153.1 9.6	154.3 6.2	152.5 5.0
Wagonload, Classes A-F %	176.4 57.5	161.7 19.6	161.7 8.1	156.0 5.1	151.6 3.8
Special tariffs: 1, 5, 6, 7, 11 (wood, stone, coal, iron ore, manures) %	141.5 58.9	138.7 19.5	137.9 7.5	139.9 5.4	130.5 3.3
Other special tariffs . . . . .	...	...	...	...	...
Total of all tariff classes %	156.0 57.9	150.6 19.6	151.6 7.9	149.8 5.3	145.3 3.6
<i>Ditto</i> , excluding transport tax (<i>Ver- kehrssteuer</i>)	149.1	143.3	144.0	142.6	137.9

Note: The transport tax is 7 per cent (except

General Policy.

The important changes in the German policy came in 1920, 1924, 1925, 1927 and 1928.

In 1920 came the unification of the railway systems, the reform of the normal tariffs, the introduction of the falling distance scale, the creation of the category for 15-ton lots, and the change in the consignment charge. The reform of the normal rates included a reduction in rates for raw materials (Classes D, E and F) and an increase in rates for finished goods (Classes A, B and C), resulting in an increased difference between the rates of the two extreme classes.

At the end of 1923, on the stabilisation of the mark, the general rates were much increased, but in the following year they were lowered considerably, being, however, still much higher than in 1920.

In 1925-27, the general rates remained practically unchanged until August 1st, 1927 (when they were lowered), while many competitive rates were introduced. In this connection the Commissioner's report states, with regard to the Deutsche Reichsbahngesellschaft:

"...The company, while maintaining the tariffs of the normal classes at the level necessary to meet its expenditure, has endeavoured on the other hand to assist the national economy by the concession of numerous largely reduced tariffs for the import of certain raw materials, for the transport of coal, ores, fertilisers, for the export of manufactured products and also to favour the development of the German ports."

The last important change came at the end of 1928, when the policy of reduction in the general rates was reversed, but the policy in the cases of particular interest to the Committee rather emphasised the decreases. There was an increase in the general rates of 11 per cent, but quite a decided movement in the downward direction for the special rates.

The average rate per ton-kilometer for all goods fell from 6.51 pfennig in January 1924 to 4.74 pfennig in October 1924; it rose to 4.79 pfennig in June 1925 (4.92 for the whole year), and fell to 4.76 pfennig in 1927 (calendar year) and to 4.70 in the year ending July 31st, 1928.

TRANSPORT TARIFFS.

1913 Rates (1913=100.)

Distances in kilometers							
501 to 600	601 to 700	701 to 800	801 to 900	901 to 1,000	over 1,000	Average for all distances	Proportion per cent of each group of the total goods carried
150.3 3.6	146.9 2.0	141.7 0.9	135.5 0.6	127.3 0.2	115.9 0.2	149.3 100	5.10
145.8 2.5	136.9 1.5	127.3 0.8	118.5 0.5	106.6 0.3	93.4 0.3	156.0 100	38.51
120.0 2.4	112.0 1.1	106.1 0.8	104.0 0.4	101.1 0.3	95.3 0.4	133.2 100	53.48
...	...	...	...	...	...	135.0	2.91
138.6 2.5	132.3 1.4	122.1 0.8	117.3 0.4	116.8 0.3	96.6 0.3	145.6 100	100
131.6	125.1	115.8	110.8	101.8	92.3	138.4	

on coal and the Rhine traffic, which are exempt).

Individual Articles.

As will be seen presently in dealing with the individual features of the changes in the German system, all kinds of goods are affected.

Most important among these is perhaps coal, which represents about 39 per cent of the total tonnage handled. Practically all the features of interest to the Committee come into prominence in the case of the changes affecting coal — the falling distance rate, of course, and the competitive tariffs — particularly the seaport tariffs and the transshipment tariffs. The individual cases are dealt with in rather more detail below under the headings of the different features of the system. But the following more important cases may be enumerated here :

1. In May 1925, reductions up to 28 per cent of the general rates, for coal from the Ruhr and Silesia to the seaports.

2. Early in 1926, reductions up to 29 per cent for Ruhr coal to the Dutch frontier.

3. Early in 1927, special rates designed to compete with Belgian and French railways, special rates from Upper Silesia, special rates for Ruhr coal to Italian ports in competition with the sea route via Rotterdam, and reductions up to 19 per cent for lignite to German North Sea and Baltic ports.

4. Later in 1927, reductions for short distances, and for certain transshipments.

5. Early in 1928, in continuation of the exports policy, rebates on bunker coal to German North Sea and Baltic seaports.

6. Late in 1928, reduction in the consignment charge and increases in transshipment rates for the Rhine to South Germany, increases (in fact, though not in form) in the rebates granted on the bunker coal mentioned above, and the very important stipulation withdrawing, in practice, the transshipment rates for foreign coal upstream from Rotterdam.

Special reduced rates now exist for all important German coalfields for transport to German seaports. They were untouched by the tariff increases of October 1928.

In addition to coal, many other commodities were affected by changes, and the importance of these cannot be judged from their mere bulk or weight alone, because of the highly specialised system of classification of the German tariffs, combined with the wider spread, in post-war years, between the low rates for raw materials and the higher rates for more finished goods. New classes were created and goods were transferred from one class to another, or, rather, the concessions granted to a class were extended to certain goods of another class. For instance, the seaport rates for iron and steel products of the normal Classes A to D were extended to pig-iron and crude steel of Class E.

Other changes affecting iron and steel goods were the reductions of 20 per cent of August 1927 for exports by land, and further reductions in March 1928 for exports through seaports, amounting to as much as 60 per cent in some cases. The object of this last measure, states the Commissioner, was to combat the increasing tendency of exporters of Western Germany to ship through foreign seaports of the Rhine, either by the all-river or by the rail-river route. Later in 1928, special seaport rates were granted to exports of iron products of Class F.

The rates for manures were reduced in 1925, and special seaport rates in that year were granted for kaolin, potash, alum, etc., and in 1927 for vitriol, acetic acid, fats and oils, only to mention a few. Special seaport rates for imports of phosphates, sulphur pyrites and certain ores were granted in 1927.

* * *

The changes brought about in the individual features of the system may now be treated.

Falling Distance Scale.

The falling distance rates are graduated so that the greater the distance the lower comparatively is the rate, instead of the pre-war system of no reduction for a longer distance. One of the effects of this is a greater inducement to transport goods by an all-rail route. The table given above and the more detailed table in Annex D show in a striking manner the descending scale of rates in 1925 for the longer hauls, as compared with the flat rates per kilometer — irrespective of distance — of 1913. The spread of the rates scale, even for such an important item as coal (39 per cent of the total tonnage handled), is considerable, the index-number (1913=100) descending from 144 for the short hauls to 100 for the "over 1,000 kilometer" hauls. Taking individually only those classes the traffic in which exceeds 5 per cent of the total traffic, there are seen the following spreads in rates as compared with pre-war (the figure for which is 100 for all distances): wagonloads E (18 per cent of total tonnage), 169 falling to 89; wagonloads F (8 per cent of total tonnage), 134 falling to 85; stone (7 per cent of total tonnage), 109 falling to 74; wagonloads C (5 per cent of total tonnage), 209 falling to 91; total of all classes, 156 falling to 97.

Category for 15-ton Lots.

A new category in the wagonload classes (A to F, etc.), viz., the 15-ton lots, was introduced in 1920. The pre-war normal category of 10 tons (with one secondary category of 5 tons) was replaced by a normal category of 15 tons (with two secondary categories — 10 tons and 5 tons). For instance, in Class E (see Annex D 2) it will be seen that, of its 17.93 per cent (*i.e.*, 17.93 per cent of Germany's total railway traffic), 15.36 was

carried in 15-ton lots and only 1.25 in 10-ton lots. Under the 1913 system, the rate would have been the same in both cases ; that is to say — other things being equal — the 15.36 per cent quantity would have paid, not the present E 15 rate (meaning the rate for 15-ton lots in Class E) of 144.6, but the E 10 rate of 179.5.

Consignment Charge.

The consignment charge for 100 kilometers and over ranges from RM. 2 per ton (Class A) down to RM. 1 per ton (Class F). In pre-war times it was graduated on a falling distance scale (that is to say, the charge per ton fell as the distance increased). This was changed in 1920 to a fixed rate for all distances, so that the charge now results in a relative greater cost to the shipper for short distances than to the shipper for long distances. The consignment charge on coal was reduced from RM. 1.10 to RM. 0.90 per ton in October 1928.

* * *

The important question, from the Committee's standpoint, of the so-called "competitive" (*Verkehrswerbende Tarife*) tariffs may now be considered.

Special Seaport Tariffs.

The special seaport tariffs are designed to encourage the import and export of goods through the German seaports. The total imports and total exports consigned by rail each represent about 9 per cent of Germany's total railway tonnage (figures for the half-year January-June 1925 : Commissioner's report).

At the beginning of 1924, the seaport tariffs, which had existed before the war, were again introduced. Certain stipulations of the Treaty of Versailles having lapsed after five years from the date of the coming into force of the treaty, the Reichsbahn in January-September 1925 modified all the seaport tariffs, largely reducing the rates and applying them to new classes. "These measures have favoured the German ports in their competition with the Belgian and Dutch ports, as also with the port of Trieste" (Commissioner's report of October 1925).

In May 1925, reductions, conditional on a minimum tonnage guarantee, were granted for coal from the Ruhr and Upper Silesia to the German North Sea and Baltic coasts respectively.

During the early part of 1926 this policy was actively continued. New special tariffs were granted for exports of cellulose, mechanical wood-pulp, crude aluminium, spirits of wine, cotton tissues, kaolin, potash, alum, etc.

In the latter half of 1926 (October 1st), owing to the re-classification of the normal rates on machinery and hides, some seaport rates were reduced. But, in general, during that period, the seaport rates did not need to be frequently changed, because of the stability of Belgian and French rates as a result of their currency stabilisation.

During 1927, special seaport rates were granted for exports of cement, raw sugar, vitriol, acetic acid, fats, vegetable oils and lorries ; and for imports of oranges and tangerines. Further, towards the end of the year, special seaport rates were granted for exports of certain iron goods from Upper Silesia, for caustic potash, furniture and motor vehicles, and for imports of phosphates, sulphur pyrites, etc. On August 1st, 1927, all the special seaport rates for exports in wagonloads by slow trains (*Frachtgut*) were extended to express consignments (*Eilgut*), at double rates, provided that such rates are not less than the rates of Classes D (*i.e.*, D 15, D 10 and D 5).

Reductions in the rates for iron and steel exports were made on March 1st, 1928, amounting in some cases to 60 per cent for the districts most exposed to competition with foreign seaports, favouring Bremen in competition with the Rhine seaports.

A settlement of the tariff war between Hamburg and Trieste was arrived at the end of 1926 by a provisional agreement — later extended to June 1928 — whereby the

railways concerned agreed not to introduce competitive measures in the meantime. A definitive agreement was reached in 1928 by which the territory was divided among the Czechoslovak, Austrian and German railways, including an arrangement for Reichsbahn-Danube transshipment traffic, and provision for the establishment of a Tariff Union.

In February 1928, rebates of RM. 2.40 and RM. 1.90 per ton respectively, in addition to ordinary special-tariff concessions, were granted on bunker coal destined for: (a) German North Sea ports, and (b) German Baltic ports. This extra concession was increased later in the year by a reduction in the minimum tonnage required. This means that the bunker coal of both these tariffs enjoys the rebate on the total tonnage (previously only on the "excess" tonnage above the minimum) and, further, that the monthly minimum required in order to benefit by the North Sea tariff is reduced from 455,000 to 355,000 tons. The reductions in these bunker coal tariffs (including the rebate, which is in future to be applied direct and not in the form of a rebate) represent, in relation to the general coal tariff, decreases of between 22 and 45 per cent (North Sea) and between 13 and 40 per cent (Baltic Sea), and are designed "to give German ocean and river shipping greater facilities for supplying the home market".

In the latter part of 1928, special seaport tariffs for imports of raw tobacco destined for Karlsruhe and Stuttgart were introduced; similarly for copper destined for Westphalia. In the same period, export tariffs were granted for paper, cardboard, cellulose, brass, copper and zinc goods, certain iron products and salt.

On October 1st, 1928, the Reichsbahn introduced a *general* tariff for both imports and exports through German seaports, applying to a series of goods of Classes A to C which did not already benefit by existing seaport tariffs. The similar pre-war measure granted reductions ranging from 11 to 50 per cent; the present reduction, for certain Rhineland stations, may be as high as 70 per cent.

Special Transshipment Tariffs.

In 1913, an important number of transshipment tariffs (*i.e.*, rail to river and vice versa) were in force. They were abolished at the same time as the seaport tariffs; but no transshipment tariffs were reintroduced for the Rhine, with the exception of those referred to below.

In 1925, certain transshipment tariffs for Danube ports came into force.

These were supplemented in 1926 by other tariffs, not only for the Danube, but for Main, Oder and Weser. The Reichsbahn, states the Commissioner, was unable to grant further concessions asked for, because of the losses that would be involved in the short hauls to the river-ports.

On August 1st, 1927, changes were made in the transshipment tariff for coal between the Rhine and Main river-ports and the stations of South Germany, including certain reductions. Further, a new tariff came into force for timber from South Bavaria to Rhine, Main and Neckar ports. Similar rates existed in 1913, but had been suppressed.

On the other hand, the transshipment rates for the transport of coal to South Germany from the Rhine and Main river-ports were increased at the end of 1928 by an average of 15 per cent on the previous tariff, as against only 7 per cent in the case of the increase in the general coal tariff, the extra increase having been made "with a view to maintaining the ratio between the cost of transport by the direct rail route and the cost by the combined Rhine and rail route, as it existed prior to the tariff increase". Moreover, the rate is to be granted only on coal which uses the Reichsbahn *before* using the waterway.

In connection with Rhine traffic it may be noted that, in April 1925, a further reduction of 10 per cent on tariff A T 6 a (coal) was granted from the Ruhr to the Siegerland (Rhenish Prussia and Westphalia), and, in the earlier part of 1926, a special rate was granted to coal from the Ruhr to the Dutch frontier, representing a reduction on normal rates of between 3 and 29 per cent, according to tonnage, the object being to facilitate exports.

Moreover, in March 1927, a special rate, designed to compete with Belgian and French railways running parallel to the western frontier, was introduced for coal and coke going towards Lorraine and Luxemburg from Aix-la-Chapelle and the Ruhr to the frontier stations of Igel and Perl. Similarly, reduced rates, to compete with the sea route via Rotterdam, were

introduced for Ruhr coal to Italy via Basle. Further, the seaport special rates system was completed by the introduction of tariff A T 6 L, granting, subject to a monthly minimum tonnage, reductions as high as 19 per cent on lignite going to the German North Sea and Baltic coasts. Again, in August 1927, a special rate for lignite and briquettes from the Rhineland to Switzerland was introduced, equivalent to a reduction, varying by tonnage, up to 11.6 per cent.

Special Transit Tariffs.

During 1925, the German railways made serious efforts to increase the transit traffic, which, both in 1913 and 1925, amounted to no more than a fraction of 1 per cent of the total tonnage carried by rail. " To this end, the transit tariffs have been subject to big reductions and they have been continually modified to adapt themselves to the conditions of the competition on the foreign lines of communication surrounding Germany " (Commissioner's report of October 1925).

In the early part of 1926, new special transit tariffs from land frontier to land frontier were introduced, and some of those already existing were reduced.

On February 1st, 1927, the rates of tariff S D 2 for transit from Switzerland to German ports were slightly raised, as these rates had been fixed in competition with foreign lines. Similarly, as a result of the provisional settlement of the Hamburg-Trieste tariff war, the rates of tariff S D 4 for transit between the Austrian frontier and German ports were increased by between 5 and 25 per cent for certain goods, simultaneously with the lowering of Austrian rates for lines competing with Danube navigation.

Early in May 1927, direct transit rates through Germany were created for traffic between the Baltic countries and various Central and South European States.

In the second half of 1927, important reductions were accorded for timber in transit by land frontiers from Czechoslovakia and Austria to Switzerland, France or Luxemburg. Early in the following year, the S D 2 rates between the Swiss frontier and German seaports were increased for traffic to the Baltic and Norway; and negotiations were proceeding with the French railways for the reduction of competition on German and French lines parallel to the western frontier.

In the second half of 1928, following on the increases of March 1st, 1928, in the French tariffs, the Reichsbahn increased the S D 2 tariff by 30 per cent for traffic between the Swiss frontier and German seaports. On the other hand, the S D 5 rates (Poland to German seaports) were again reduced — particularly for Stettin — on account of severe competition of Polish lines terminating at Danzig.

Other "Competitive" Tariffs.

Various "international" tariffs, some of which have already been touched on above in connection with coal, have been put into force with a view to facilitating imports and exports by land frontier. Among these are tariffs established in 1925 with Italy, Czechoslovakia and Hungary.

In the first half of 1927, export tariffs of this nature were introduced, granting reductions on various goods going to Switzerland, Roumania and France, most of them being conditional on a minimum tonnage being carried within a certain period. New direct rates were introduced between Germany and Czechoslovakia on April 1st, 1927, and between Germany and Belgium on May 1st, 1927.

Later in 1927, arrangements for export tariffs by land frontiers were made, including a 20 per cent reduction for paper, cardboard, cellulose, glass, glassware and pottery. Similar facilities existed before the war for these articles and, as regards their exportation through German seaports, had been granted since 1923.

In the earlier part of 1928, in order to increase German coal exports, special tariffs, with reductions varying from 10 to 25 per cent, were granted for : (a) coal from Silesia and Saxony to Czechoslovakia; and (b) coal from Rhineland-Westphalia to Hungary and the Kingdom of the Serbs, Croats and Slovenes via the German Danube ports. The system of tariffs designed

to encourage German coal exports and simultaneously to compete with foreign railways was completed during the last few months of 1928. Although designed to compete with foreign railways, their influence on river transport should not be lost sight of.

In order to combat the increasing competition of motor-lorry transport, the utilisation of which by industrialists, for short hauls to nearby river-ports and between their branch establishments, was increasing rapidly, the Reichsbahn applied twenty-one special "K" rates during the early part of 1927, involving reductions of between 15 and 40 per cent. The Reichsbahn policy of making reductions for short distances was opposed by the private railways (which are interested solely in short-distance traffic), and the Reichsbahn itself was sceptical, because it was thought that "goods would be diverted from their present journey by rail and would be sent by a much shorter route to the nearest river-port" (Commissioner's report of June 1927).

The reform of August 1st, 1927, in reducing the normal rates of Class E, reduced at the same time the special rates for coal (which comes between Classes E and F) for certain short distances, by between 10 and 20 pfennige per ton.

Character of Latest Changes.

As the statistics given in the previous Section (and more fully in Annex B) usually do not go further than 1926, it may be well to give, in conclusion, an idea of the changes in the German railway rates which have occurred after that time.

Although, in the second half of 1927, special rates for coal and timber between the river-ports and South Germany were introduced, the facilities given to traffic with the German seaports were much greater in number. The second group of measures was followed up in the first half of 1928, most of the seaport rates being reduced for stations situated in areas competing with foreign seaports: for iron and steel it meant as much as a reduction of 60 per cent as compared with normal rates.

The great change came in connection with the general increase of 11 per cent introduced on October 1st, 1928. From December 1st, 1928, the above-mentioned transshipment rates for coal to South Germany were not only raised by 15 per cent as against the normal rise of only 7 per cent, but were discontinued altogether with regard to coal going to the river before coming to the railway, *i.e.*, for coal imported from foreign countries by the non-German seaports. On the other hand, coal from all German coalfields to the German coast was exempted from the general increase of October 1st; and a number of special tariffs were introduced for different categories of imports and exports by German seaports.

It is, of course, yet too early to say how strong effects these changes will have upon the relative position of railway and waterway traffic.

2. FRANCE.

General Evolution of the Railway Rates System since the End of the War.

In view of the difficulties of the economic situation and the increasing weight of their burdens, the big French Railway Companies had proposed, as early as 1916, a temporary general and uniform increase of 15 per cent in all their commercial rates (an increase which would have been inadequate), but, in view of the growing deficit, they later asked that the rate of increase might be raised to 25 per cent.

This 25 per cent increase did not come into force until April 15th, 1918.

Meanwhile, as the deficit was growing, the Companies had to propose individual increases of the special rates for *petite vitesse* — the Higher Administration not having approved of any addition to the general rate of increase.

The Companies thought it necessary radically to revise the *petite vitesse* rates so as to afford the public, in compensation for the proposed increases, the advantages of a

considerable simplification of the rates in force, which had become very complicated through the introduction of numerous special lists and special rates. The form adopted was particularly simple: a general combined tariff (for all the various French railway systems); special tariffs acting, with the exception of a few rare particular arrangements, both as local tariffs and as combined tariffs.

Certain inconveniences were thus removed, *e.g.*, the difficulty of fixing proper charges, prolonged waiting at station booking-offices, the cost of checking charges which in the case of some large firms required the employment of a competent specialist staff.

This unification of *petite vitesse* rates, carried out between 1918 and 1920, entailed an average increase of from, approximately, 35 to 50 per cent on basic pre-war rates.

Later the Companies' ever-growing burdens led them to propose general increases affecting, through the application of a fixed coefficient, all their rates for both fast and slow traffic.

These general increases, the rates of which are shown in the table annexed to the report (see Annex D 3, Table I), were applied and modified on the following dates:

February 23rd, 1920.
March 10th, 1924.
January 1st, 1925.
March 16th, 1925.
January 1st, 1926.
April 16th, 1926.
May 1st, 1926.
March 1st, 1928.

The application of the increases was, moreover, accompanied by the concession of special advantages to certain classes of traffic which might have been particularly hit by so general a measure.

Goods Rates.

In the same way the Companies had to fix special rates in the form of reduced scales, or fixed rates applicable to certain goods for certain specific journeys. Many rates were thus introduced, chiefly in view of the following considerations:

Protection against competition by other means of transport, *e.g.*, motor-cars, canals, the coasting trade, etc., which through lower rates were threatening to rob the railways of traffic that was previously theirs.

Decreases in rates designed to help an industry to retain certain markets the loss of which was threatened through transport charges.

Measures designed to facilitate the transport to certain markets of particular goods (vegetables, foodstuffs, etc.).

The creation of new currents of traffic, *e.g.*, for the export trade, etc., etc.

The French Railway Companies are of opinion that experience has shown that the commercial necessities which confront the Companies in the maintenance and development of their traffic are not to be reconciled with a rates system as simple as that which had been introduced in 1920.

Special Tariffs.

With regard to special tariffs applicable to goods exported or imported through the French Channel or North Sea ports, it should be noted that, generally speaking, the special "petite vitesse" tariffs involve for goods exported a reduction of 10 per cent, sometimes increased to 15, 20, 25 or 35 per cent for goods the export of which it is desired to encourage.

Apart from these reductions, the principal French systems have found it expedient — in order either to help industries which found difficulty in consolidating their foreign markets, or to encourage new sources of traffic, or to maintain or expand existing traffic — to take special steps to stimulate exportation or importation through the seaports they serve.

A summary of the measures of this kind taken by the French systems is given in the table appended (see Annex D 3, Table II).

Further, in order to keep on their own lines traffic for which foreign routes are keenly competing, the French systems in certain cases allow for goods imported or exported through French seaports the same rates as would be obtainable if they were imported or exported through foreign seaports.

Summary.

To sum up, the rates system seems at present to be directed on the following lines : general rates applicable in principle to all goods, with special reductions in the form of reduced scales or fixed charges applicable to certain goods and to certain routes.

Conclusions.

It seems that, as far as the present enquiry is concerned, only special tariffs need be taken into account.

It follows from the preceding information, completed by data reproduced in Annex D 3, that the competitive tariffs on the French railway systems can be subdivided as follows :

(1) Special tariffs favouring French seaports in their competition with foreign seaports (see, *e.g.*, P.V.7-107 Chapter I; P.V.10-110, Chapter III, § 1, Nord, and P.V.10-110 Chapter XII, Etat-Nord).

(2) Special tariffs resulting in the favouring of transport by rail in competition with transport by water on the French inland waterway system.

(3) Special tariffs established with a view to competing with foreign railways (see, *e.g.*, G.V. and P.V. 300 (transit) *a*; G.V. and P.V. 400 (transit) and P.V. 407 (transit).

(4) Special tariffs established with a view to competing with the sea route (see, *e.g.*, G.V. and P.V. 300 (transit) *b*).

Amongst these special tariffs those under (1) and (3) might exercise, at least for certain French districts, a direct influence on Rhine navigation, although they do not seem to have been established with the view of competing with the Rhine route.

3. BELGIUM.

The National Company of Belgian Railways, the North Belgian Company, and the other Belgian railway companies have established special tariffs considerably lower than the normal ones, with the object of favouring the Belgian seaports, that is to say, favouring transit traffic and export via those ports. These special tariffs are to be found in the official collection of special tariffs, and apply to nearly all goods loaded or unloaded from a sea-going vessel in the Belgian ports. It has been definitely stipulated that a favourable tariff only applies to those shipments that are loaded on or unloaded from a sea-going vessel under the supervision of the railways, and that shipments despatched by lighter for subsequent loading on a sea-going vessel, for instance, at Rotterdam or Flushing, are excluded from the application of the special tariffs. Moreover, it is necessary that the transshipment take place within thirty days after the date of arrival, which renders it impossible for goods to be stored in the interior of the country in warehouses or bonded warehouses, except in the case of potash and ores, for which goods no such time-limits for transshipment have been fixed. The railways very often give still more favourable terms. Such has been the case, for instance, with the contract for coal from Germany, shipments of ores from Luxemburg to the Ruhr region, potash from Alsace-Lorraine, etc.

Notwithstanding these very low tariffs, the railway company only succeeds in taking away traffic from the Rhine in cases where the place of origin or destination of the goods is situated on the left of the Rhine, and the rate from the interior to a Rhine port is higher than that to a Belgian frontier station. Otherwise competition is hardly possible in view of the very low Rhine freights, including Rhine freights to Antwerp and Ghent. The railway rates in Belgium have recently been increased by 10 per cent and it is almost certain that within a short time a new similar increase may be anticipated.

4. THE NETHERLANDS.

The Netherlands railways have also established special tariffs for goods in transit loaded on or unloaded from a sea-going vessel. This special tariff applies to all goods independently of their nature, and is known as Special Tariff No. 7. Moreover, the railways grant to shippers who guarantee by a contract a minimum shipment an extra reduction on those tariffs, which amounts to 10 per cent for 10,000, 20 per cent for 20,000 and 30 per cent for 30,000 tons. Notwithstanding these facilities the Netherlands railways are not in a position to take away traffic of any importance from the Rhine, because of the fact that the railway rates on the Dutch section, that is to say, from seaport to frontier station, and *vice versa*, still remain too high for them to be able to compete with the Rhine freights. In general, moreover, German railways do not furnish the Dutch railways any assistance in this respect, most of the railway tariffs from the interior to the Dutch frontier being normal ones.

5. RIPARIAN STATES OF THE DANUBE.

As to the Danube States, some information is given in Section VI of the Report, devoted to Danube problems.

IV. APPLICATION TO PROBLEMS OF AN INTERNATIONAL CHARACTER.

In discussing the application of the previous problems to facts of an international character, the Committee will confine itself to the Rhine. The Danube will be treated briefly later on in a separate Section.

The fundamental fact with regard to Rhine traffic is that the mouths of the principal German river are outside Germany. Most measures influencing Rhine traffic will therefore also influence non-German ports. It must be reckoned with that the German authorities take this into consideration when deciding upon questions bearing upon the traffic on the Rhine. This is irrespective of the fact that, under the various treaties in force, German nationals and German ships, like the nationals and ships of all other States whose vessels navigate the Rhine, enjoy in the ports at its mouths rights and privileges equal to those of the nationals and ships of the country to which the port belongs.

To some extent the same must be expected to take place with regard to other countries not in possession of the mouths of the Rhine. Lastly, it is conceivable that pure railway interests inside a country might occasion a policy detrimental to river traffic; whether there is the possibility of such a policy going against sound principles of rate-making will be considered in the next Section.

However that may be, it is far from being the case that all competition between the Rhine and the railways is of an international character.

First, railway traffic between river-ports or places adjacent to the railway, on one side, and places inside the same country, on the other, mostly fall outside the international aspect of the problem. With regard to the Rhine, this holds good in the first instance as to traffic between the Ruhr and South Germany, on the one hand by an all-rail route, on the other by a combined route via a Rhine port; it may be the same with traffic between Strasburg and French stations within the country. Though competition between the two means of transportation is very keen in some of these cases as well, they need consequently not detain the Committee.

Secondly, traffic going both by rail and by river between river-ports (or adjacent places) inside the country and foreign seaports at the mouth of the same river — with regard to the Rhine, principally Rotterdam, Amsterdam and Antwerp — are certainly of an international character. But still it hardly raises an international problem; for whether the river or the railway takes the traffic, it goes to a foreign port. It is, of course, theoretically conceivable that a greater part of the distance to be traversed falls to the country of origin or destination in one case than in another, and that this will raise an international problem; but, as matters are, this consideration is unimportant, applying, as it does, practically only to France and Belgium with regard to transit traffic from and to Switzerland irrespective of the port of destination or origin. These cases, with insignificant exceptions, will consequently be also left aside.

Lastly comes the case which is of real importance in this connection: that of a choice between traffic going by a combined (rail-water) route to a foreign seaport and traffic going by an all-rail route to a national seaport. The eagerness of the different Governments to develop their own seaports to the detriment of those of their neighbours makes the choice between national and foreign ports a fundamental consideration, and it rules very important parts of the railway policy of the present day, not only with regard to competition between railways and waterways, but also as to competition between railways of different countries. In all these cases, it is not really a matter of railway interests versus waterway interests, or even of the interests of one railway as against another; it is a question of making use of the national railways for purposes outside their own department but considered as national ones, as against other purposes considered as alien to the interests of the country. It is important to bear in mind that the real subject of the present enquiry consequently is part of a general economic policy of a country, making use of railways as its agents. That this is the motive of a great deal of the actual rate policy of the railways at the present time is outside doubt.

It goes without saying that the same cannot apply to the freights quoted by the river navigation companies. For, first, it would be asking too much of them to expect them to go straight against their own interests by turning away traffic through prohibitive rates, simply because they are carrying goods to foreign seaports; and secondly, they are less influenced by political considerations than are the railways. Consequently, the river navigation companies are mainly actuated by commercial motives, while the policy of the railways takes on more or less a political character.

The fact that the interests at stake are greater with regard to Germany than to the rest of the riparian States of the Rhine makes it natural that discussions have been focussed upon Germany in the first place. Besides, as has been pointed out already in the first Section of this report, knowledge about the actual policy pursued, as well as of the motives for it, is far greater with regard to Germany. With every intention of being just to all interests involved, the Committee must therefore devote the principal part of its attention to that country, without implying by this that the motives actuating the Governments and the railways of the other riparian States differ fundamentally from those prevalent in Germany, except in so far as the problem must be much less important for France and Belgium.

As to Germany, there exists a number of utterances of an official character which leave hardly any doubt about the motives behind the policy of the German Reichsbahn. The basis for the policy pursued has been found in a section of the German railway law.

Article 2 of the Law of August 30th, 1924, concerning the German Railway Company states: "The Company shall operate the railways in accordance with business principles, due regard being paid to German economic interests".

It must, at the same time, be understood that this general idea is not in any way peculiar to Germany, being also expressed, *inter alia*, in the Convention of June 28th, 1921, between the French Government and the French railways, and in the Ordinance of the Czechoslovak Government of January 27th, 1921.

The article of the German Railway Company Law referred to above has been interpreted to mean that the German railways ought to be used as a means of what might be called a system of Protection, favouring the German seaports in the first place. A few extracts from the last reports of the Commissioner of the German railways will make this clear.

With regard to the changes in the rates during the second half of 1927, the Commissioner, in his report of December 2nd, 1927, says:

"The measures discussed above show that the Company has continued its tariff policy, which aims at promoting trade and encouraging activity in the German seaports. The tendency is still clearer if we consider the so-called S D transit rates for traffic between the frontier stations in the South and the East and the German seaports. The receipts per ton-kilometer from these rates, which are in general applied for long distances, fall to a very low limit even for valuable goods: for the journey between Basle and Hamburg, for example, which is 853 kilometers in length, the receipts per ton-kilometer for the grouped consignments of category A (the dearest category) are only 2.2 pfennig. The special rate S D 4 for traffic between the Austrian frontier stations and the river-ports of the Danube, on the one hand, and the German seaports, on the other, is also priced very low. For the journey between the port of Passau and Hamburg, for example, the receipts per ton-kilometer are 2.9 pfennig for grouped consignments and fall to 1.8 pfennig for less valuable commodities. It is not certain that with such low rates the Company can make any real profit; it is the German seaports which benefit most in their competition with foreign seaports."

In his next report, dated June 1st, 1928, the Commissioner says:

"The revision of normal tariffs on August 1st, 1927, led to changes in the most important special tariffs to seaports. A reduction varying in general between 2 and 9 per cent has been granted in the case of these tariffs, but it applies only to stations situated in areas competing with foreign seaports."

And in his last report, dated December 2nd, 1928, the following sentences, *inter alia*, occur:

"The Reichsbahn has during the last few months actively pursued the tariff policy which aims at facilitating imports and exports and at the same time encouraging the development of traffic in the German seaports . . . For certain stations in the Rhineland situated within the sphere of counter-attraction by French and Belgian ports, the reduction may be as much as 70 per cent."

Next, with regard to France, shipping interests in Rotterdam raised complaints not so much against French railway policy as against the general tariff policy of the Government, the so-called *surtaxes d'entrepôt et d'origine*. These surtaxes give preference to some kinds of overseas goods imported through national ports. There is no doubt that the idea inspiring the general policy of the surtax, if carried out consistently, would have similar results to those of the German methods which are discussed and that it is founded upon the same principle. In order to show the identity between the two, it would in such a case only be necessary to imagine that the German Reichsbahn had not introduced all the preferential seaport rates which it does now, but that, on the other hand, the German Government had paid back part of the railway freights through a reduction in the Customs duties in the case of importations by German seaports. There is no doubt, either, that the way the policy of the *surtaxe d'entrepôt* is at present carried out is damaging to the traffic of Rotterdam.

It is at least doubtful, on the other hand, whether it has any appreciable effect on Rhine navigation. The French Government, in dealing with the question of Rhine navigation,

seems, on the contrary, to have tried to promote the development of the traffic of the port of Strasburg, and the figures quoted in Annex B show that it has succeeded in achieving that result.

Since 1919, Strasburg has been considered for the purpose of the surtax as a French maritime port, as far as goods coming to Strasburg through Antwerp and the Rhine are concerned. At a later date, the benefit of the suppression of the surtax has, it is true, been given also to imports through Antwerp by rail, but only for imports having their final destination in Alsace or Lorraine.

One might say that Rhine navigation would be affected in an unfavourable way by the present manner in which the surtax is applied, if it could be proved that some traffic which could reach Strasburg by the Rhine through Rotterdam could not economically reach Strasburg by Antwerp; although this is not impossible, there is no evidence of such being the case. Nevertheless, the French policy of the surtax ought to be mentioned here as indicating on the part of the French Government the same intention of favouring national ports which has been noted as regards the policy of the German railways.

The policy of the French and Belgian railways cannot be left out entirely either, as those railways are in competition with each other, making the Belgian railways quote exceptional rates for goods going to or coming from Antwerp through the country. They are also for other traffic in competition with the German and Dutch railways.

It is clear that the policy pursued by one of several competing railway systems to some extent reacts upon that of the others. It is therefore possible for each of them to say, with perfect justice, that its measures do not intend to take away traffic from the river but to prevent traffic from being transferred to one of the other railway systems, and that, consequently, the river would stand to gain nothing by the particular railway giving up its competitive rates. Still, this does not prevent traffic from being, as a matter of fact, transferred from the river to the railway through the competitive, but unanimous, action of all the railways. If all of them desisted from continuing the policy they have now begun, the river would be able to retain more traffic than it does now. Consequently, the different railway systems are all of them hampering river traffic, even if their intention should be to hamper one another.

The tendency, therefore, is clear enough. It must, however, not be inferred from what has now been shown that the railway rates actually introduced are necessarily in conflict with sound principles of rate-making. It is not at all clear beforehand that traffic which is taken away from the Rhine ought to have remained there. In order to answer that question, which ought to be the deciding one, it is indispensable to discuss those principles of rate-making. They will form the subject of the next Section of this report.

V. PRINCIPLES OF RAILWAY RATE-MAKING.

The simplest method to follow in order to come to a result with regard to the policy which has now been shown would appear to be to make use of some simple test or another, in order to find out whether the international cases under consideration differ from what is in the interests of the different countries as well as the community as a whole. Such a simple test might obviate the necessity of going into the difficult problems of rate-making generally. The Committee will therefore first consider whether such a simple test can be found.

The test nearest at hand would be to compare the rates in the international cases with the rates in purely national ones. It might be expected that such a comparison could be made with the rates quoted by the railways for the ports of purely national rivers; if these could be found to agree with the rates for ports on international rivers, like the Rhine and the Danube, all might be thought to be well.

It appears very soon, however, that this test is inapplicable. Practically all the important rivers of Central Europe are more or less international, so that we would have nothing to compare with. But even if such an objection is waived and the treatment of, say, the Oder or the Elbe is compared with that of the Rhine or the Danube, it becomes instantly clear that even the thought of a discrimination against those of the second group is out of the question. There can be no doubt that, in so far as inland navigation interests are taken into account by the railways, those of the Rhine at least are considered in the very first place ; as a matter of fact, it has been made an argument on the part of the German Reichsbahn, against favours to the Rhine ports, that the ports of the other rivers would then claim the same favourable treatment. But it would be rash to consider the treatment of the Rhine or the Danube navigation as justified simply by that : for considerations of an international character might influence the rate policy of the railway with regard to the international rivers ; and purely national rivers, in so far as they exist, being a secondary consideration, would simply have to submit to the same treatment, though the policy might none the less never have occurred unless the object had been to favour other and presumably more important national interests at the expense of foreign ones.

It would, consequently, be nearer at hand to make such a comparison, as between internal and international conditions, not with regard to different rivers but with regard to different ports, as the predominant national interests considered to be at stake refer to the seaports, and the real clash of interests influencing the policy is to be found there.

Unfortunately, however, it is out of the question to do this on the simple basis of comparing the railway rates for the German seaports on the one side and the river ports on the other, because these rates are not directly comparable. Generally speaking, the distance from the South German stations of interest in this connection to the North Sea ports is twice or thrice that to the river-ports ; and it follows from general principles of rate-making in almost every country that the rate quoted by railways for one ton-kilometer is falling with the distance. To consider whether this is justified, to what an extent, and under which conditions, takes the Committee to the general problem of rate-making ; and it is consequently impossible to avoid that problem by following the line now indicated.

There is, however, a third and comparatively easy line of thought which is very often made use of in this case and which might therefore be considered to apply. It may be called the line of vested interests, assuming a sort of prescriptive right to the pre-war position either of the river-ports or of the river traffic or of both. Against considerations of this sort it has been argued, on the part of the German Reichsbahn, that the important changes which have occurred are due to factors over which the railway has got no power, not only the falling distance scale on the railway but pure non-railway factors also.

Whether this is a complete explanation or not, the plea put forward cannot be admitted ; for there does not exist any indefeasible right to a position once acquired. Even if it might be shown that the railway had been instrumental in changing railway conditions to the detriment of one port of another, no case has been made out against the policy pursued. The situation of, say, 1913 cannot be considered more sacrosanct than that of any other date or period, *e.g.*, than the after-war period ; it was in itself the outcome of innumerable factors which had changed an earlier state of things, and it must be prepared to give room for the play of new influences. It is certainly of very great importance to know the actual changes and their causes, and they have been investigated with particular care by the Committee, the results being embodied in Annex B to the present report. But it is the very reverse of conclusive against a policy that it has changed the relative situation of different ports, districts or means of transportation. It is necessary to have some objective standard upon which to judge the use to which the different means of transportation should be put, in order to be able to come to a result with regard to the advisability of one policy or another. The Committee must therefore proceed to that part of its task.

The economics of transportation, or at least railway economics, present a particular sort of problem — far from lacking in other departments of economic life, it is true, but seldom of the same importance anywhere else. The reason for this is the fact that a very considerable part of what is usually considered as the cost of carriage on a railway is something which is not incurred through the handling of the particular traffic in question

or perhaps by any new traffic at all. Part of it belongs altogether to the past, being uninfluenced by the use to which the railway is put, and another part is being influenced only by very great increases in existing traffic or only by increases of a particular character. A great deal of this so-called cost consists of interest upon capital which has already been sunk; which, further, cannot by any means be set free again; and which does, moreover, not have to be raised appreciably in the case of an increase in traffic. Another part is not sunk for all time, it is true; but, if it is to be incurred for the purpose of some sorts of traffic, the railway will be able to take on other sorts also without the cost being increased through that.

Taking as an instance the figures given by Reichsbahndirektor Dr. Tecklenburg, in the paper, "Die Güterumschlagswoche des Vereines Deutscher Ingenieure in Düsseldorf, 1925" (Sonderausgabe der *Zeitschrift des Vereines Deutscher Ingenieure*, 1926), for the German railway system in the half-year April to September 1924, it will be found that, out of the "cost" of handling the traffic existing at that time, 15.6 per cent represented the lines and buildings and work upon the lines; 16.6 per cent represented locomotives, wagons, and machinery; these two groups together consequently amount to almost one-third. These "costs" are irrespective of any traffic and do not, up to a certain point, increase by an increase in traffic. Dr. Tecklenburg even considers that, under the existing traffic conditions, fixed charges amounted to 43 per cent when debt charges, etc., were excluded, and no less than 52 per cent when they were included. Out of the rest, part is dependent upon the number of trains started but not upon their length or bulk; another part is dependent upon the bulk of goods (and passengers) received, but not upon the distances over which they are hauled; a third part is dependent upon the weight of the trains, but that is something quite different from the weight of the load of the trains, as the unused room in the cars does not diminish the weight of the cars themselves and the weight of the locomotives.

The reason for all this is the same, namely, that there exists an exceptional amount of unused power in a railway and that the railway is consequently, to quite an exceptional degree, able to do more work in different directions without incurring additional cost. To sum it up in a single phrase, a very great part of a railway is an "intermittently free good", to be looked upon, for a shorter or longer time, in the light of a free gift of nature. In some cases, the end of this situation comes very soon, as when a train is fully loaded and cannot take on more goods (or passengers); in other cases, it hardly ever comes at all, so long as the railway continues to exist; for there are almost always parts of the line of a railway which are not taken up by existing traffic and which are consequently able to receive more of it without additional cost.

From this result important consequences will follow with regard to cost accounting as well as railway rates. When it is said that the cost of carriage for one ton or ton-kilometer is of this or that amount, and fixed charges are included in this so-called cost, every figure is dependent upon a particular volume and a particular character of the total traffic. Except under the supposition of a carefully circumscribed sort of traffic, it will be impossible to say, on the lines of such a reasoning, how great a part of so-called costs are of a fixed or variable character; for in almost every case an increase of traffic will "distribute" some of the fixed charges over a greater number of items, and consequently diminish the part played by fixed costs in the whole.

It is clearly desirable, from a pure transportation point of view, that the cost once sunk in a railway should be brought to as much use as possible, in so far as no new cost is incurred by it. Just as an urban site or a waterfall is not left unused because it does not bring in as much as had once been hoped for, it cannot be rational to deny new traffic the use of an already existing railway because the traffic is unable to contribute new traffic which do not increase through that use. Fixed charges belong to the past and must never be considered when deciding the question of taking or leaving new traffic. Instead, the deciding factor will in these cases have to be the *additional* cost incurred by that traffic. If the question at hand is not that of accepting or declining a particular sort of traffic but a choice between different forms or routes or methods of transportation for a given purpose, the deciding factor will in the same way be the additional cost created through the different methods.

If this test is applied to the present enquiry, it will be possible to give a distinct meaning to the expression of "unfair", or "too high" or "too low" rates, of "too little" or "too great" use being made of the river, and so on. A too high rate is one which deters traffic which pays its additional cost of carriage; a too low rate is one which does not cover additional expense created by the traffic — if the question refers to accepting or declining traffic. If it is concerned, instead, with a choice between different routes or means of transportation, a rate is too high or too low which makes the traffic incur greater additional expense than is necessary for reaching a given result. Too little use is made of a river if goods are made to leave that river when additional cost is smaller by going by river than by going by an all-rail route — supposing the river service to be equivalent in quality to the railway service. If river navigation is considered inferior to railway traffic from the point of view of the shippers, this difference will have to be taken into account, so that river freights would have to be lower than railway rates with more than the difference in order to be preferred. In the opposite case of river navigation being considered superior to railway traffic — *e.g.*, on account of the advantages of the maritime terminal of the river route — this reasoning will have to be reversed.

It must now be asked under which conditions a railway might be expected to act in its own interests against such principles. If we first consider the case of a railway having to take up a certain sort of traffic or leaving it altogether to a competing system of transportation — either another railway, or navigation by sea, or on an internal waterway, or motor road traffic — it would be against the interests of the first-named railway to accept goods (or passengers) at the rate below that which would cover additional cost of carriage, but in its interests to take them on at or above such a rate. So long as traffic was not deterred by the rate quoted, the railway would be able to reap a surplus above the additional cost, but even if no — or at least only an insignificant — surplus were to be gained by taking on a particular sort of traffic, it would not be turned off; this would be the case only with regard to traffic which was unable or unwilling to pay for additional cost of carriage. A railway governed purely and simply by its own interests would consequently act in accordance with the principle laid down just now, *i.e.*, that the cost sunk for all time in a railway should be put to as much use as possible. The case would become a different one only if the railway should want to ruin or buy up its competitors, in order to create or to strengthen a monopoly of its own; in that case it might in its own interests go below additional costs.

The competing railway, navigation company or motor company might be expected to act in the same way; and, so far, no interference from the outside would appear to be necessary. If any greater part of the traffic were competitive, the result might be, however, that all or some of these transport concerns would be unable to pay interest upon more or less of their fixed capital.

The situation becomes only slightly more complicated in the case of different routes, some of which belonging entirely to the railway and some only in part, such as competition between all-rail routes and combined rail-river routes; this is the case before the Committee.

As before, the railway would decline to take on traffic which did not pay additional cost; but if rates which covered that cost were possible as to both routes, the railway would prefer that one which gave the greatest surplus over and above additional cost. The railway would, however, stand to lose nothing by giving the public a choice between the different routes, and this would be particularly important in the present case, on account of the possibility or probability of a difference in the quality of service by all-rail and by rail-river. The railway would simply have to quote such rates for both routes as gave it the same surplus for either. There is clearly nothing in this at variance with the principles laid down before.

In so far as the different routes are considered equivalent in quality, the owners of goods will then prefer the route for which the lowest rates are quoted, and as the railway, in fixing the rate, had added the same surplus in both cases, this would mean that route which created the lowest additional cost; the amount of traffic handled would consequently create a minimum of additional cost. If there were, on the other hand, a difference in quality of

service by all-rail and by rail-river, the consignors would choose the route which gave them the best value for their money, taking into account the cost to them through loss of time, deterioration of goods, advantages of the maritime terminals, etc., on the one route as compared with the other, and setting this against the difference with regard to the price which they had to pay in either case. Under these circumstances, the lowest additional cost of carriage would still be the deciding factor, though only after considering the difference in value between the different services of transportation.

There does not appear to be more than one drawback to the railways giving the owners of goods an option of different routes. Additional cost of carriage always pre-supposes a particular amount of traffic; and if the rates for both routes, based on additional cost, are given on the supposition that all traffic would go by either of them, not partly by the one and partly by the other, additional cost would be changed if some traffic went one way and some another. It is therefore not unnatural for a railway to try to influence the public, in order to make it choose one route in preference to another, by quoting prohibitive rates on some of the routes. It is clear, however, that the free choice on the part of the public is in that case, as a matter of fact, taken away; and this is an important consideration when the character of the service is as different as it is with regard to the all-rail route on the one side and the rail-river route on the other. It would, however, appear to be possible — though not quite easy, it must be admitted — as well as greatly desirable, for the railway to quote its rates for the different routes subject to such conditions as to the amount of consignments, etc., which would make it possible strictly to maintain equality of surplus in all cases; this would make it a question of indifference to the railway which route was taken and at the same time leave the owners of goods perfect freedom of choice.

So far, however, only the position of the railways has been considered. It might be thought that, even if the railway in its own interests would act in accordance with the principles here stated, trying to reap the same surplus on different routes, the situation would be changed if the waterway entering into one of the alternatives of the routes were also taken into account. This, however, is not, or at least not necessarily, the fact.

It is true that fixed costs play a much smaller part in Rhine navigation than in railway traffic; but the principle is the same. In so far as, *e.g.*, tugs and barges could be taken off the river in question and transferred to other places, their upkeep or deterioration and interest on capital sunk in them would have to be considered as variable or additional costs; but quite fixed charges, like warehouses and machinery, would not have to be taken into account even if not fully covered by the already existing traffic. This policy would be in the interests of the navigation companies themselves, as well as in agreement with the point of view of making the plant do as much service as possible. This, of course, does not at all necessarily prevent water traffic as a whole from paying interest upon all the fixed capital which has been sunk in it, no more than this is the case with regard to the railways; it only means that a regard to the interest on fixed capital must not be the deciding factor when accepting or declining new traffic or turning away old. And if these principles are followed, river navigation is subject to the same reasoning which has been made use of with regard to the railways. That route will in every case be followed which creates transportation service of a certain quality in return for the minimum of additional cost.

This must not be understood to mean that the solution here given is without its difficulties, and some of them may be pointed out here.

As fixed costs are a much smaller part of the whole in river navigation than in railway traffic, the principle here laid down will mean that the all-rail route would take on a certain sort of traffic in such cases also where the total cost, past and present added together, is the same in both cases or even greater for the railways. Suppose, for the sake of argument, that 40 per cent of the total costs on the railways are fixed, but only 20 per cent of the river. Then the railway, when deciding about taking or leaving a certain sort of traffic, would not take into account more than 60 per cent of this total cost, while the navigation companies would have to consider 80 per cent; if the cost, including interest on fixed capital, etc., were the same in both cases, then that particular sort of traffic would clearly go to the railway.

In so far as it is not a question of the total or even the principal part of the traffic of either of these concerns of transportation, it may be looked upon in the light of a sort of by-product, which falls from a service which is interest-bearing as a whole. When this situation is changed and most or all traffic takes on this character, the situation becomes much more complicated, and a simple or even an altogether satisfactory solution may become impossible. But as this latter supposition does not at all hold good with regard to the railways in question, they are able to deliver "by-products" through their unused capacity, besides having a large interest-bearing traffic, the Committee does not consider itself justified in entering more deeply upon these difficult problems.

The whole discussion so far has taken for granted that the transportation system has no object besides that of transportation. In that case, everyone would prefer to have the work done at the smallest possible extra cost. But there is nothing to prevent the means of transportation from doing other service also — for instance, that of favouring a particular port or ports. If that is the intention, the deciding factor will not be the cheapest route; a sort of bounty will be given to the route taking the goods to the favoured port in order to enable it to compete, and the cost will fall either to the railway or directly to the consumer of the goods in question.

Some simple figures will show this. Say that on the cheapest route the additional cost of carriage is 7, and that it is possible to quote a rate of 12; this would give the railway a surplus of 5. On the competing route the additional cost may be given as 8; and if the surplus should be the same, the rate would consequently have to be 13, so that traffic would follow the first-named route. If the more expensive route is to be favoured, the railway will, however, have either to lower the rate for that route or increase it for the other (or both). If, in order to make the favoured route able to compete, the rate upon it is lowered to 11.50, the surplus would become only 3.50, and the railway would lose 1.50 of what it was able to receive. If, instead of that, the rate for the other route is increased to 13.50, that route is ruled out; the public will have to pay 13 for the transportation of the goods, while they only paid 12 before, the railway, however, receiving only the same amount, 5, as before. The loss to the railway in the one case and to the consumer in the other must be considered as compensated for by the stimulus given to the seaport in question, if there shall be any reason for that policy.

It follows from this that a policy of such a character is in marked contrast to that economy in railway administration which is to be considered to be of first importance in most countries and has led to very remarkable results in Germany. Dr. Tecklenburg in an article in the weekly paper, *Die Reichsbahn* (volume for 1926, pages 235-6), says, *e.g.* :

"A greater celerity in the circulation of wagons puts them after a short period at the disposal of new traffic and increases thereby the efficiency of the rolling-stock — or, which is the same thing — diminishes the need for rolling-stock, so that an improvement of the circulation is identical with a corresponding increase of the rolling-stock."

And further he says :

"It is the object to derive the greatest possible usefulness to the traffic from the technical services of the goods wagons. This holds good for each particular service, *i.e.*, for each particular loaded car, and also for the service as a whole."

Now, there can be no doubt that the use of rolling-stock upon a longer journey than is necessary to the object in view does not conform with these requirements. That self-cost on one route is higher than upon another means exactly that the celerity of circulation of the goods-wagons is smaller there, or that the transport services are less efficient in other respects. As the distance traversed to and from the seaports is in the most important cases twice or thrice that to the river-ports, this is a serious consideration from the point of view stressed by Dr. Tecklenburg.

Great burdens are imposed upon all the large railway systems, and are often believed to necessitate their keeping hold of as much traffic as possible. But it is quite clear that the

taking-on of traffic which brings in no surplus above additional cost, or which even falls below it, is useless, or worse than useless, for that purpose. And it is no less clear that taking traffic along more expensive routes than necessary is of the same detrimental character, from a pure railway point of view, even if it does bring in a surplus. Measures of that sort, instead of making it easier to the railway to bear the burdens imposed upon it, mean a new burden to the railway, or, if not, at least no gain to the railway and at the same time a new burden to the consumers, as has just been shown.

* * *

What has now been said is no more than an attempt at showing the general working of rate-making. So far, no facts have been given with regard to the question whether the rate policy actually pursued by the railways is in accordance with the principles laid down. When approaching this final part of the investigation, it must be said that available materials do not give all the information necessary for unequivocal conclusions.

There are, however, not a few indications in public utterances on the part of officials representing the German railways which make it at least doubtful whether the economy of rate-making has always been attended to in the case of competition with waterways and foreign seaports. Particular attention ought to be called to a sentence quoted already in the previous section of the present report from the report of the Commissioner of the German Railways, on December 2nd, 1927, to the effect that "it is not certain that, with such low rates, the Company can make any real profit; it is the German seaports which benefit most in their competition with foreign seaports."

Now, first, the tentative form of this utterance makes it doubtful whether the rates introduced have been brought to the test of cost-accounting. If not, there is clearly no guarantee against traffic having been taken on at less than additional cost of carriage. And, secondly, this consideration does not appear to have deterred the railway authorities from introducing the rates in question. It ought to be added, however, that the rates to which these comments of the Commissioner apply react only in rather an indirect way upon the Rhine, being the so-called SD transit rates from the south frontier of Germany to the seaports. But, thirdly, it is quite clear that the railways or the consumers would stand to lose also by rates far above additional cost of carriage, if a cheaper route could have been chosen, which might either have brought the railways a larger surplus or have meant a less expensive service of transportation to the consumers.

Lastly, it must be remembered, as has been shown in the third section of this report, that a number of new reductions in favour of the German seaports have been introduced after the delivering of the Commissioner's report just now quoted, and that, on the other hand, the exceptional rates for the river-ports previously granted have been abolished altogether for one sort of traffic and, when retained, have been increased even more than the increase in the general tariff of rates — from which latter increase the seaport rates have again been generally exempted altogether. There can therefore be hardly any doubt that the situation has, since the end of 1927, moved further away from pure railway considerations in the framing of such railway rates as influence competition with waterways and foreign seaports.

So far, there is in these cases *prima facie* evidence against equality of treatment of different sorts of traffic on the basis of pure railway considerations.

It would, however, be highly desirable to bring this tentative conclusion to the test of figures. Unfortunately, this cannot be done conclusively without an intimate knowledge of the inner service of the respective systems. What can be known to the public are only figures for the different systems as a whole, and it might always be argued that exceptional conditions have occurred in the particular cases complained of. But it ought then to be shown in what these conditions consist, and at least the system of cost-accounting established in Germany ought to give sufficient indications.

What has now been said is not meant to imply that the meaning of additional cost is unequivocal. For it is clear that additional cost must be a relative and not an absolute category. As a rule, the greater the new traffic to be accounted for, as well as the longer

the period, the more numerous will be the items of cost influenced. As it is altogether a question of used and unused capacity on the part of the railway, the important consideration is the relation of unused capacity to the new traffic. If a line is already approaching the limits of its power in one or several aspects, even a small increase in traffic might create a strong increase in additional cost. However, generally speaking, it may be taken for granted that, if only quite accidental loads are added, most of the cost of carriage upon a railway is given beforehand, but that a greater number of factors will have to be increased in cases of considerable additions to the existing traffic.

In computing additional cost of carriage in a railway, it has therefore been proposed by M. Colson to take as a basis with regard to goods traffic, and particularly in cases like those here under consideration, the addition of one fully loaded goods train. On principle, it would have been even better to take into account the factors actually existing, by showing the decrease in cost on the one route and the increase upon the other, as a consequence of a transference of traffic from the one to the other, if such figures could be found.

As to river navigation, it would perhaps be no great mistake in considering the freights actually quoted as approximating self-cost; in Rhine navigation circles it is at least affirmed that these freights are even below self-cost at the present moment, which probably means that they are not much over "out-of-pocket expenses". By adding to these river freights the additional cost on that part of the railway which belongs to the combined route and setting against that sum the additional cost on the all-rail route, the comparison would appear to be correct for the purposes of the present enquiry (ocean freights not being taken into account).

It goes without saying that interest or debt charges would not enter into consideration. If entered with the same absolute amounts in both cases, they would not influence the result, it is true; but if computed on a mileage or distance basis (the same amount for one ton-kilometer), they would handicap the longer distances in a way which would have nothing at all to do with additional cost of carriage and would consequently create a misleading result.

The system of cost-accounting introduced in Germany would undoubtedly be able to answer all the questions of this character, as has already been said. But unfortunately it has not been accessible to the Committee in such a form as would make the necessary computations possible without a risk of errors which the Committee desires to avoid. It has therefore been considered far safer to take a couple of isolated instances, which ought to be considered fair to both parties, as they have from the beginning been brought forward in a Memorandum of the Mannheim Chamber of Commerce and afterwards criticised by Dr. W. Spiess, a director of the German Reichsbahn, in another Memorandum, both annexed to the present report under D 1. The rates which the Committee is quoting are on the authority of Dr. Spiess, but it wants to point out that his figures refer to the beginning of 1928.

The first case considered refers to paper transports from Albrück, on the Baden-Swiss frontier, either to Bremen by an all-rail route or to a Rhine port, either Mannheim or Kehl, to be forwarded to Rotterdam or Antwerp. Per ton the railway rate would be RM. 22.10 for Bremen, over a distance of no less than 836 kilometers, as against RM. 22.70 for Mannheim. Not only in relative but in absolute amount, this is actually greater for Mannheim, though in that case the distance is only 305 kilometers, not much more than one-third of the previous journey. For Kehl it would be RM. 13.80. That the Mannheim rate altogether excludes the possibility of competition with the all-rail route is clear beforehand, as river freights and transhipment cost would have to be added to the railway rate on the combined route. According to Dr. Spiess, the rate upon Mannheim would have to be lowered to the same amount as that upon Kehl, or to RM. 13.80, in order to make the two routes able to compete. This is probably meant to say that the river freight from Mannheim to Rotterdam, plus transhipment cost, would amount to RM. 22.10 less RM. 13.80, or RM. 8.30.

It will be seen from the figures for river freights and transhipment costs given for the Rhine in Annex E 1 that this figure appears to be in accordance with facts, at least in some instances. Freights for goods in parcel (*Stückgüter*) have been found to vary during 1927 between 3 and 4 florins, or RM. 5 and 6.75, according to one source, and somewhat less according to another, to which will have to be added from RM. 2.70 to RM. 3.50 for

transshipment, making in all between RM. 7 and RM. 9.50. Dr. Spiess now shows that, if the Mannheim rate is put as low as RM. 13.80 per ton, the surplus above cost of carriage accruing to the Reichsbahn would be only RM. 8.33, as against a surplus of RM. 9.06 at the present rate for Bremen, consequently a loss to the Reichsbahn amounting to RM. 0.73 by admitting a rate for the Mannheim route which would make it able to compete. The computation would work out in the following way:

	Albbruck-Bremen (836 km.)		Albbruck-Mannheim (305 km.)
	RM.		RM.
Railway freight	(actual) 22.10		(hypothetical) 13.80
Self-cost	13.04		5.47
	<hr/>		<hr/>
Surplus	9.06		8.33

The self-cost is based upon that computed by Dr. Tecklenburg, representing 1.56 pfennig for one ton-kilometer at the distance of 836 kilometers, and 1.793 pfennig for one ton-kilometer at the distance of 305 kilometers.

It is now, first, quite clear that these figures have no relation to the rate actually quoted for the route Albbruck-Mannheim. This rate, RM. 22.70, would, according to the figures of self-cost used in the previous instance, work out into a surplus of no less than RM. 17.23 per ton, or not far from double that actually secured on the alternative route to Bremen. If the principles laid down in this report were adhered to, the rate would have to be lowered to that amount which would give the same surplus in both cases, or a rate of RM. 14.53 for the Mannheim route. As will be seen, this is less than two-thirds of the rate actually quoted. If it be objected that that rate also would place the combined route outside the possibility of competition, it must be said that no harm would be done by allowing it. All such freedom of choice to owners of goods would then be retained as did not go against the railway's own interest.

But, secondly, the figures just quoted for river freights and transshipment costs make it at least questionable whether the combined route would be unable to compete. At the lowest of these figures, according to one of the sources, RM. 7.00 in all, the total cost of the combined route would be only RM. 14.53 + RM. 7.00 or RM. 21.53, as against RM. 22.10 on the all-rail route to Bremen; and even lower freights on the river appear to occur according to another source.

If the only motive of the railway for quoting the rates it does is to secure the surplus which it receives now on the route to Bremen, there would consequently not appear to exist a sufficient reason for the prohibitive rate now quoted for Mannheim.

The other case discussed between the Mannheim Chamber of Commerce and Dr. Spiess, referring to rice, is of the same character, though the difference is not so great as in the one now discussed, and it does not therefore appear to be necessary to repeat the analysis. There can be no doubt that the same reasoning holds good with regard to a considerable number of cases.

To this ought to be added, what has been pointed out several times already, that, since the writing of the Memorandum of Dr. Spiess, rates have moved in a direction even more favourable to the all-rail routes to the seaports and unfavourable to the routes to the river-ports than before. What held good at the time of that paper will consequently be found to do so to an even greater extent at the present moment.

In this discussion it has been taken for granted that self-cost in the examples given is equivalent to additional cost of carriage. If this is not the case, the conclusions will have to be altered. But as the reasoning of a leading functionary of the German railways has been made the basis of what has now been said, this has been thought to be a safe inference. No doubt it would have been preferable to have the actual basis for the computations of self-cost at the disposal of the Committee.

It is to be hoped that these points of view would meet with favour in competent places. Dr. Tecklenburg has repeatedly pointed out the use of cost-accounting for the purposes of rate-making. *Inter alia*, in an article in the paper, "Güterumschlag", already quoted, he says (page 26):

“ Still, for the railway, as well as for every other industrial undertaking, a knowledge of its self-cost is indispensable ; it needs it in the first place for judging its internal efficiency . . . And it needs it as a basis for its rate policy. A solution must consequently be found, and can also be found, in spite of all difficulties, if that principle is taken as a guide that there is no question of computing the self-cost of each particular transport service on the basis of mathematically exact figures, but that it amounts to creating a picture which is true to life within reasonable limits and which makes it possible to the administration to base its decisions upon a judgment of facts which corresponds to the realities. ”

It is clear that in all these cases there can be no question other than facing the facts and acting upon a knowledge of them, as has been pointed out by Dr. Tecklenburg in the sentences just quoted. If the result of such considerations is that a certain policy is to be introduced or upheld, the reasons for such a decision ought to be made clear and the best means for carrying it out ought to be chosen. The Committee will come back to that question in its recommendations.

VI. DANUBE PROBLEMS.

The principal method followed in examining questions of competition between the river and the railway in the case of the Rhine cannot be utilised for the Danube. No thorough comparison between the situation before the war and at the present time is possible. Statistics are lacking, and the complete transformation of the territorial situation and of the traffic would in any case make an attempt of this kind useless. The Committee has had to confine itself to asking the interests concerned in river navigation to supply the facts regarding the cases to which attention was drawn during the Hines enquiry, and to giving the railway interests an opportunity of stating their opinion on these cases. A summary of the enquiry carried out, together with copies of the letters received from the railway administrations, will be found in Annexes C 2 and D 5.

The enquiry showed that the cases referred to are relatively few in number compared to the total volume of navigation on the Danube. Moreover, in a certain number of countries, traversed by the Danube, such as the Kingdom of the Serbs, Croats and Slovenes, Roumania and Bulgaria, the railways have not been constructed so as to be able to compete with navigation on the Danube, but rather so as to carry traffic in combination with that river. The lines, as a rule, are not parallel with the river but at right angles to it. It is in the interests of the Czechoslovak and German railways, which compete in this respect, to grant the most favourable conditions they can to the transshipment traffic proceeding between the Danube and Czechoslovakia, as well as certain parts of Germany, to and from the ports in the North Sea in transit through their territories ; hence, as regards these two countries, it is not surprising that they have fixed rates which favour this transshipment traffic. The only concrete cases of competition represented as abusive which deserve attention are the following : (1) as regards the Czechoslovak, Austrian and German railways, the case of the carriage of Czechoslovak sugar to Switzerland, which, owing to an agreement between the railways, now enjoys a reduced rate for through carriage by rail, the exceptional transshipment rates which existed previously having been abolished ; (2) as regards the Austrian and Serb-Croat-Slovene railways, the case of the transport of plums from the Kingdom of the Serbs, Croats and Slovenes to Austria and Germany ; (3) as regards the Austrian railways alone, the case of Ebensee salts proceeding to Germany, which are no longer transhipped by the Danube route, the transshipment rates via Linz having been increased ; (4) the more general case of the increase of the kilometric basis employed in calculating distances from and to Linz ; and (5) the exclusion of the Danube station of Vienna from the benefit of an exceptional Austrian rate of 1926 applicable to all the other Vienna stations.

In all these cases, it is clear that the question is simply one of competition, whether abusive or not, between rail and waterway. The origin and destination of the goods being the same whether the goods are carried entirely by rail or both by rail and water, the railway's only motive is to make the greatest profits it can in its own interests. All that need be examined is whether this competition, which is like that taking place between two industries catering for the same customers, has not led the railways to make an abusive use of their transport monopoly in cases in which the Danube route can only be used when the goods are transhipped.

The Committee has got the impression that the majority of these cases mentioned, which are of very limited importance in relation to the total navigation on the Danube, represent cases of normal competition. In itself a lowering of railway rates can certainly not be regarded as more open to criticism on the part of navigation than a lowering of river freights would be on the part of the railways. The traffic in plums coming from the Kingdom of the Serbs, Croats and Slovenes and of sugar coming from Czechoslovakia are cases of this kind. The lowering of the rates for sugar has been accompanied by the abolition of certain advantages which had temporarily been enjoyed by the transshipment traffic, and the change of circumstances pointed out in the observations of the railways justifies the changes of rate.

There is nothing to show that in these cases the reductions in rates were accompanied by measures not justifiable economically and directly tending to put difficulties in the way of transshipment traffic. Perhaps the same does not apply, however, to the cases mentioned as regards Linz and Vienna, especially the latter. Whether the measures from which the transshipment traffics of these two towns have suffered were introduced in a general form or not, it is difficult to avoid the conclusion that the result was to place the transshipment stations of these towns in an unfavourable situation, giving the perhaps erroneous impression that such was, if not their purpose, at any rate one of the results anticipated by the Austrian railways. It ought to be added that on the other hand, most of the river navigation companies are either wholly or partially owned by the respective Governments or subsidised by them.

Danube freight rates are on an average 25 to 30 per cent lower than railway rates. Hungary has recently reduced her railway rates for grain export to Austria, Germany and the Austrian-Swiss and Italian-Austrian frontier stations, by 20 to 25 per cent. Hungarian agriculturists had been holding up their stocks of grain as they were speculating on the price of overseas grain rising. This did not eventuate, and the rates were reduced to enable the grain to be got out of the country. Danube shipping was at the time closed. Nevertheless, the Danube companies have replied with reductions of about 20 per cent. This means some loss to the Danube shipping companies, but it is not considered serious, as the main grain exporting country is the Kingdom of the Serbs, Croats and Slovenes and not Hungary. Moreover, the railway reductions are dependent on the grain travelling considerable lengths on the Hungarian railways.

This loss to the Danube shipping companies is likely to be countered by the average increase of 10 per cent in the Austrian goods railway rates, which is to take effect early in 1929. It refers mainly to massed goods, such as raw materials, coal, metal, timber, stones and sand, for which the rates were heretofore comparatively low. On certain of these articles the increase will amount to 20 per cent. The new tariff is not yet definitely settled, as the railway is still negotiating with certain interested persons, such as producers of potatoes, etc. This increase will enable the Danube shipping companies to raise their rates correspondingly as they always maintain same 20 to 25 per cent lower than railway rates, this being considered to counter the longer duration of transport by water.

Subject to the previous remarks, no international question therefore seems to arise in connection with the competition between the railways and the Danube. No doubt improvements could be made by a better co-ordination of the water and rail transport services and by better co-operation between the two classes of transporters, as was pointed out by Mr. Hines. These are improvements which might be effected in the organisation of combined transport, but it is not for the Committee to make suggestions in this respect.

The only problem in connection with the Danube which bears some relation to certain

problems on the Rhine is that of the competition between the Danube Black Sea ports and the Adriatic ports. The reduction, if it has taken place or is taking place, in the railway rates for transport to or from the Adriatic ports must have a great effect on the Danube traffic, although, in the absence of statistical data, this effect is difficult to estimate.

VII. SUMMARY AND RECOMMENDATIONS.

The Committee has confined its conclusions altogether to such cases which can be considered to be of an international character, leaving aside, not only all controversies concerning exclusively different interests within the same country, but also such problems of international traffic in which discrimination against international interests would be only of subordinate importance.

The more detailed results are almost altogether confined to the Rhine and the railways competing with the Rhine traffic. As to the Danube, the cases of an international character have been found to be few and of no great importance.

The investigations carried on by the Committee have not shown that there is any general falling-off of river traffic as compared with railway traffic. On the contrary, taken as a whole, river traffic appears to have held its own or, at least, not to have lost ground to any appreciable extent. At the same time, not a few of the more valuable commodities, occurring in small quantities, have gone over to the railway, and the same tendency is observable with regard to upstream traffic to South Germany generally, as to upstream traffic also with regard to such bulky goods as coal, and principally in cases where transshipment would be necessary in river traffic, *i.e.*, on a combined route.

Though several factors have contributed to this result, there is no reason to doubt that the rate policy on the part of the railways has been one of them, and probably the most important. The decreasing distance rates introduced upon the German railways after the war, combined with the numerous exceptional rates for German seaports, which are only to a small and even decreasing extent set off by exceptional rates for river-ports, account for this. Some of these measures are as recent as the last quarter of 1928 and have consequently not yet had time to influence such conditions as can be studied statistically at the present moment, so that the tendencies shown in this report may be expected to become stronger during the course of the present year.

Some measures introduced by French and Belgian railways work in the same direction, but their influence seems to have been of smaller importance. As to the French Customs tariff policy (*surtaxes d'entrepôt et d'origine*), although in its general conception it proceeds from the same idea, there has been no evidence to show that, in the way in which it had been applied in relation to Antwerp and Strasburg, discrimination against river navigation has taken place.

A result which takes away traffic from the river is, however, by no means conclusive against the advisability of the policy pursued. It is impossible to admit an indefeasible right to a position once acquired, and the measures introduced by the railways may be perfectly justified even if unfavourable to river navigation and river-ports. If the means of transportation are to be judged simply as such, *i.e.*, without any motives outside considerations of rail and river transport, the rule which ought to be laid down is that the rate should in all cases cover additional cost of carriage, and that, in a choice between different routes, that one should be chosen which created the minimum of additional cost for a given service. There appears to be a balance of probability against all the favours shown to the national seaports by the railways complying with this test.

Such a policy as has been pursued is certainly not inspired mainly by an ill-will shown to waterways on the part of the railways. The principal aim — at least, in many cases — has been to favour national seaports to the detriment of foreign ones. In some cases, as with regard to traffic from the land frontiers, this is not a question of competition with waterways

at all, or only indirectly so; it is the railways to the other foreign seaports which are in such cases principally discriminated against. But as the most important competitors of Hamburg and Bremen are those North Sea ports which are situated at the mouths of the Rhine, the principal part of the policy becomes, as a matter of fact, undoubtedly, though surely reluctantly, directed against the Rhine traffic. This is, in the first instance, the case with regard to German railway policy; for France and Belgium the temptation of doing the same thing is much smaller, and the whole tendency of the policy of those countries is of secondary importance, though not altogether different from that prevailing in Germany.

It is quite clear that such a policy is not a railway interest. From a railway point of view, nothing is to be gained by it, and a great deal may be lost. It means using the railway for the purposes of a policy of protection to seaports.

* * *

What the Committee recommends in this situation is that all railway rates, general as well as exceptional ones, should be put to the test of figures of actual self-costs.

This does not mean that rate-making ought, in the opinion of the Committee, to be put into a Procrustean bed. Rate-making is certainly an art and not a science, and an exceptionally great number of considerations are brought into play; perhaps no sort of prices are as complicated as railway rates. But this does by no means obviate the necessity of basing the decisions taken upon as intimate a knowledge as possible of the actual facts — in the first place, facts relating to additional cost of carriage.

As a general rule, the principle which ought to apply is, according to the Committee, that no rates should be quoted below additional cost of carriage, and that no route should be preferred to a less expensive one, the value of the service rendered being the basis in both cases.

If, none the less, it should be considered necessary, for political or other reasons, to act otherwise, it is highly to be recommended that such a step should never be taken without full knowledge of the facts and public information about them.

As the railways are in that case deflected from the purposes of transportation, it might even be wished that other means than railway rates were used in the service of such a policy. The Committee thinks that in these cases actual bounties, to the benefit of traffic to or from particular ports, would be preferable to laying the railways under contribution and, consequently, either diminishing their surplus or making use of them as a means of taxing the consumer. Such a policy would make the situation clearer and facilitate international adjustments.

ANNEX A.

Extracts from the Reports of Mr. Walker D. Hines.

COMPETITION BETWEEN RAILWAYS AND WATERWAYS.

1. The Rhine.

(Document C.444.M.164.1925.VIII, page 5.)

RAILWAY COMPETITION.

Representatives of Belgian, Dutch, French and German interests all expressed grave concern as to the unfavourable effect upon Rhine navigation resulting from recent developments of railway competition. These representatives all agreed that serious injury was being caused by such competition, although they were not always in agreement in pointing to the same railways as the source of the injury.

The situation is immensely complicated, and in order to make a complete statement of the factors it would be necessary to conduct a much more searching enquiry than was possible with the time and the means available in the present investigation.

The broad outlines of the situation seem to be as follows : The North German seaports Hamburg and Bremen seem to have been made to an increasing extent the beneficiaries of a policy of exceedingly low rail rates to attract commerce to those ports. On the other hand, the special rail tariffs which before the war had operated to encourage the movement of traffic through Rhine river-ports have been largely discontinued, this being influenced by the fact that, since 1920 (when the State railways were transferred to the Reich), there have been no separate administrations for the Bavarian railways and the Baden railways, which, as separate systems, had a direct interest to encourage the joint movement of traffic by their respective lines and the Rhine.

In addition, the Reich in 1920 introduced a new railway tariff system which operated to make comparatively low rates for long distances and comparatively high rates for short distances. This change has had the effect of making the important rail rates to and from the Rhine river-ports relatively higher than before the war.

Each of these two policies has operated to cut down materially the Rhine navigation's hinterland both for incoming and outgoing traffic. The resulting impairment of Rhine traffic has caused the liveliest concern and the most earnest protests on the part of the Rhine shipping interests and Rhine commercial agencies. The German Government represents that negotiations are now in progress with a view to restoring to the Rhine river-ports the relative situation which they occupied before the war, whether in comparison with the Hamburg and Bremen special rail rates or in comparison with long-distance rail hauls in general.

German interests represent that the French and Belgian railways have established very low rates which have been extremely detrimental to the Rhine in the following respects :

1. Before the war, the Saar Territory, Alsace and Lorraine despatched their raw materials and finished products largely by the Rhine and received their cereals largely by the same route. Now, the French and Belgian railways, in order to obtain this traffic for themselves, have established such low rates as to make it impossible for Rhine navigation to compete.

2. Before the war, the Rhine route was used to a considerable extent for transit traffic from the sea to Switzerland. This traffic has been largely lost by reason of the exceptional tariffs of the Belgian and French railways, which seek to obtain this traffic by the rail route from Antwerp to Switzerland.

3. The German Rhine shipping interests say that the extremely low rates made by the German railways for Hamburg and Bremen have been offset by extremely low rates made by the French and Belgian railways for Antwerp (and possibly for French ports), and that the result has been that the German railways have not profited by the policy which they initiated, and at the same time have done a great injury to Rhine shipping.

4. The fact that French and Belgian tariffs are expressed in currencies which are not on a gold basis operates of itself to keep those rates on a lower level, and hence operates to intensify the competition of those railways.

It is insisted by various Rhine shipping interests that many of these post-war rail rates which are detrimental to the Rhine are not remunerative in themselves and that the railways would make a much better profit on the traffic if it were carried by them to or from the Rhine river-ports on a rate adjustment which would admit of the rail and river movement.

These representations make the definite impression that, in the radical rate readjustments which have grown out of the post-war struggle for position and business, the various railway administrations have been adopting policies highly detrimental to the Rhine and to the natural interests of the various States in the success of Rhine navigation. At the same time, it is by no means clear that, on the whole, these policies are beneficial to the railways themselves. Perhaps a re-survey of the situation on the part of State authorities railway authorities and Rhine shipping interests might point to the conclusion that readjustments could and should be made which would promote a sounder State policy through leaving Rhine navigation with its natural status and which at the same time would give the railways as much or more net revenue than at present.

It would certainly seem that the State authorities and the Rhine shipping interests, and it is believed also the railway interests, ought to be able to agree that broad public policy, both from a national standpoint and from an international standpoint, makes it desirable that the Rhine should continue to carry the traffic which it is naturally adapted to carry on an economical basis. Great shipping fleets and port installations have been created on the Rhine because it was adapted to provide the public with an extensive transportation service. Experience has demonstrated the efficiency and economy of transport upon this great channel of commerce. It would be contrary to the permanent interest of each of the riparian States to have this traffic taken away from the Rhine by highly artificial rail-rate adjustments. It therefore seems appropriate to recommend a thoroughgoing re-examination of this broad problem as to the justification for the present rates of the German, French and Belgian railways.

It would seem that the development of this injurious competition has grown out of a mixture of two motives : First, the motive of any railway administration to adjust its rates so as to secure what appears to be an additional volume of traffic (perhaps without weighing with sufficient care the question whether the new traffic will be remunerative and the question whether, at the same time, other remunerative traffic may not be lost) ; second, the motive of State policy to build up its seaports (perhaps without weighing the interests of the country's Rhine river-ports). In any discussion of these problems, it would seem to be helpful to separate these two factors and study each on its merits. For example, there has been some suggestion that the requirements of the Dawes plan tend to interfere with an adjustment of rail rates which would give the Rhine river-ports an increased share of the traffic. But if on a full survey it should appear that the German railways would make more net revenue by annulling the extremely low rates to the German seaports, thus admitting of carrying a reasonable volume of traffic to Rhine river-ports at much more remunerative rail rates, it would seem that the requirements of the Dawes plan would point to that solution rather than to the maintenance of unduly low (and hence presumably unremunerative) rates to the German seaports. Such an analysis of the elements in the problem might lead to the conclusion that the present adjustment is not prompted by, or even promotive of, the conceptions of the Dawes plan, but is rather a German State policy to favour its seaports as a protective measure, even at the expense of its Rhine river-ports.

The shipping concerns of Belgium, France, Germany and the Netherlands appear to have a common interest to co-operate in the interest of Rhine navigation and to try to secure due consideration therefor by the States and the railway administrations. A careful re-examination of the justification of the rail rates seems to be in order, as well as a serious consideration as to what will be the future effect upon Rhine navigation and the public's obvious interest therein.

2. The Danube.

(Document C.444 (a).M.164 (a).1925.VIII, pages 18 and 58).

Again, rail competition, or rail-water competition, may have an increasing adverse effect upon Danube traffic. It is understood that Czechoslovakia and Italy, acting in conjunction with the other States interested in the railway from Czechoslovakia to Trieste, have put into effect extremely low rates calculated to encourage the movement of traffic via Trieste which would otherwise move via the Danube. It is understood that, prior to the war, in some of the States, notably in Hungary, the railway policy definitely sought to take away traffic from the Danube. What the policy of Hungary and other States will be in this direction in the future remains to be seen. It is evident, however, that Danube navigation may suffer substantial injury from railway competition. In any particular Danube State there is danger that the railways will receive more sympathetic consideration than will the transportation on the Danube, as the railways are State owned and operated.

As will be pointed out more fully below, the establishment of rail-Danube through freight tariffs and provision for through rail-Danube bills of lading are very greatly in the interest of Danube navigation and, it is believed, in the interest of the various Danube countries.

GREATER CO-OPERATION BETWEEN RAILWAYS AND DANUBE NAVIGATION.

It is believed that this is a subject of great importance to Danube navigation. Such a great river can never play a satisfactory rôle as a transportation agency unless it can be articulated with the railways, so as to receive traffic from them and supply traffic to them more completely than is now the case.

The difficulty appears to be that the State railway administration in each of the Danube States is much more disposed to co-operate with other railways than it is with Danube navigation. Through bills of lading are issued for through rail transportation to points in other countries, but not for rail and river transportation. Through rates are established with other railways, but not with the river. Yet in many instances the State in which the traffic originates would really have its interests better promoted if traffic by its own railway and the Danube could be encouraged rather than by its own railway and the railways of other countries. When the traffic moves by the railway of the State in which the traffic originates, and beyond its frontier by the other railways, the only revenue received by the State of origin is the revenue to the frontier. But if the traffic moves by railway to the Danube and thence by the Danube, the strong probability is that the traffic will move on the Danube in the vessels of the domestic navigation company, and in this way the State and its nationals will get the entire revenue on the traffic from the point of origin to destination; first a substantial rail revenue to the river, and then also the revenue for the river transport.

Up to the present time, not only has there not been a satisfactory co-operation of the railways with the Danube, but, on the contrary, the railways have established extremely low special rates for the benefit of trade routes competitive with the Danube, the result being to take traffic away from the Danube altogether. The German railways appear to have encouraged the rail movement of traffic away from the Danube instead of to it. The Czechoslovak, Austrian and S. H. S. railways are understood to have co-operated in making very low rates to Trieste, which have taken the traffic away from the Danube, causing it to move instead by sea and rail.

It is believed the navigation companies are justified in the efforts which they are making to secure much greater consideration in the adjustment of railway rates and policies so as to be favourable to the Danube rather than unfavourable to it, and it is believed that the respective Danube States would be justified in giving sympathetic consideration to these efforts of the Danube navigation companies.

Czechoslovakia has already made some efforts to co-operate. It has established special rates on its railways in favour of its Danube ports, but through rail-Danube rates or through bills of lading have not yet been provided.

ANNEX B.

STATISTICAL ENQUIRY INTO RAIL AND RIVER TRAFFIC
WITH PARTICULAR REGARD TO THE RHINE

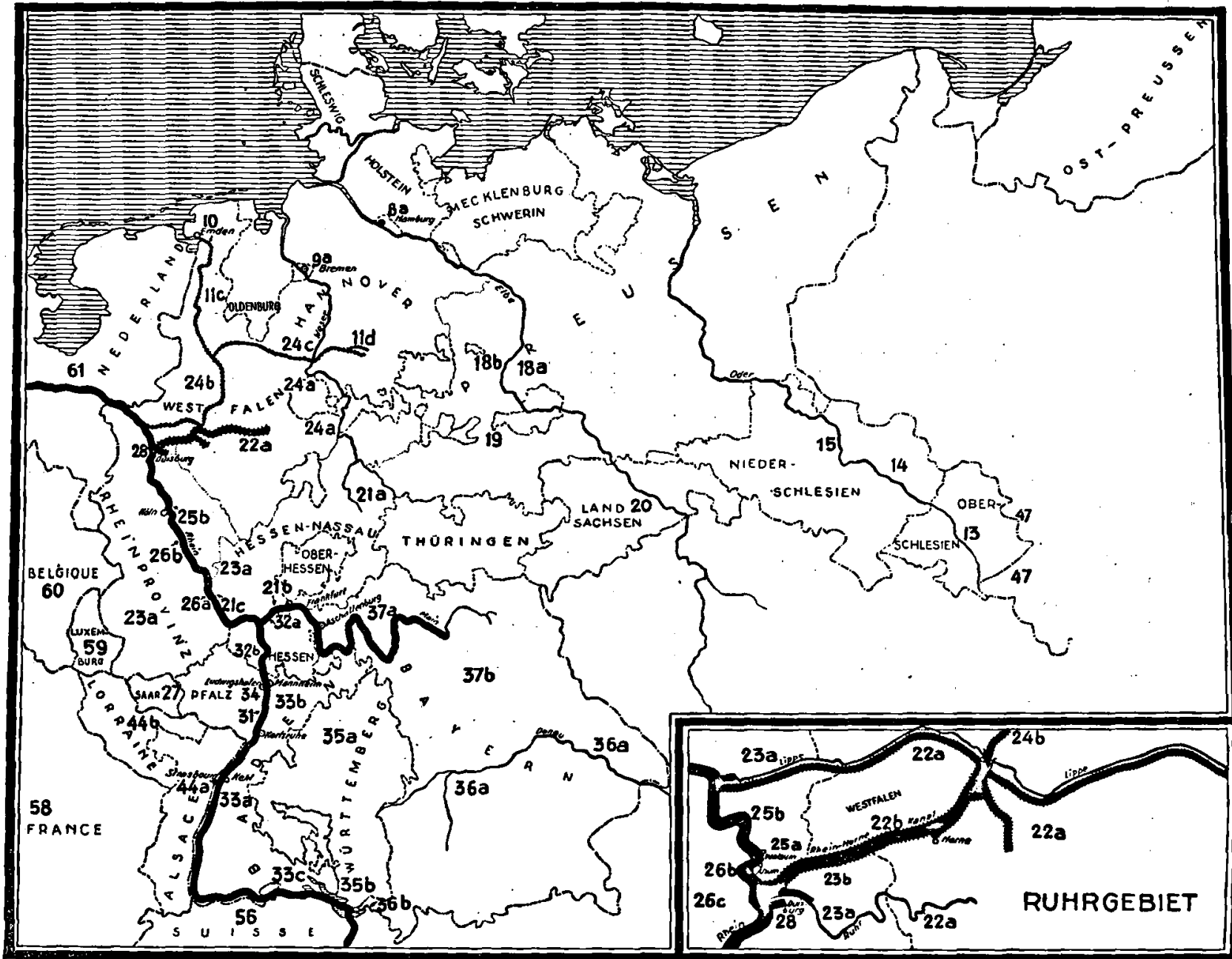
BY G. FRUMKIN.

TABLE OF CONTENTS.

	Page
Map showing Main Districts	50
List of Districts referred to	51
List of Main Sources used	52
Preface	53
 CHAPTER I. — <i>General Survey of German Traffic by Rail and River in 1912-1913 and 1925-1928</i>	 55
 CHAPTER II. — <i>Maritime and Non-maritime Traffic of German Seaports and Traffic with Belgium and the Netherlands in 1912-1913 and 1925-1928 :</i>	
Introductory Remarks	72
I. <i>Maritime Traffic :</i>	
A. Hamburg	74
B. Bremen	77
C. All German Seaports.	80
II. <i>Non-maritime Traffic :</i>	
A. German Seaports :	
(a) Hamburg and other Elbe Seaports.	82
(b) Bremen and other Weser Seaports.	89
(c) Ems Seaports	92
(d) Summary for Elbe, Weser and Ems Seaports.	94
B. Traffic with the Netherlands and Belgium.	96
C. Summary :	
(a) Consignments from Seaports (Inward Movement).	103
(b) Receipts by Seaports (Outward Movement).	104
 CHAPTER III. — <i>Analysis of the Pre-war and Post-war Traffic of Individual Commodities by Rail and River, particularly in connection with Rhine Navigation</i>	
Introductory Remarks	107

	Page		Page
Coal	108	Oils and fats.	128
Ores	123	Cotton	128
Iron and steel	123	Wool	129
Other metals	125	Jute, hemp, etc..	130
Cereals	125	Porcelain, pottery, etc.	130
Flour	126	Glassware	131
Rice	126	Paper and cardboard	131
Coffee, tea, cocoa	127	Fertilisers	132
Sugar	127	Hides, skins, furs.	133
Salt	127	Mineral oils	133
Tobacco	128	Cement	134
Seeds	128		

MAP SHOWING SOME DISTRICTS USED IN GERMAN TRAFFIC STATISTICS.



SOME OF THE DISTRICTS EMPLOYED IN GERMAN OFFICIAL TRAFFIC STATISTICS.

<i>Waterways.</i>		<i>Railways.</i>	
<i>Number</i>	<i>District</i>	<i>Number</i>	<i>District</i>
8a	Elbe round Hamburg.	8	Elbe seaports (Hamburg, Altona, Harburg, Cuxhaven, etc.).
8b	Elbe from Hamburg downstream.	9	Weser seaports (Bremen, Bremerhaven, Nordenham, Vegesack, etc.).
9a	Weser round Bremen.	11a	Lüneburg, Osnabrück, Oldenburg, etc.
9b	Weser from Bremen downstream.	11b	Hanover, Braunschweig, etc.
11a	Elbe in Hanover.	13	Upper Silesia.
11b	Weser in Hanover, including Ems-Weser Canal.	15	Lower Silesia, excluding Breslau.
13	Upper Silesia.	20	Province Saxony, excluding Leipzig.
15	Lower Silesia, excluding Breslau.	21	Province Hessen-Nassau, Ober-Nessen : including Frankfurt (21a).
20	Province Saxony.	22	Ruhr Territory in Westphalia, excluding 28.
21a	Werra and Fulda.	23	Ruhr Territory in Rheinprovinz.
21b	Main in Hessen-Nassau.	24	Westphalia.
21c	Rhine in Hessen-Nassau.	25	Rheinprovinz on the right bank of Rhine, excluding 28.
22a	Westphalia, south of Lippe (excluding 22b).	26	Rheinprovinz on the left bank of Rhine.
22b	Rhine-Herne Canal in Westphalia.	27	Saar Territory.
23a	Tributaries of Rhine in Rheinprovinz.	28	Rhine ports Duisburg, Duisburg-Hochfeld, Ruhrort.
23b	Rhine-Herne Canal in Rheinprovinz.	31	Bavarian Palatinate, excluding 34.
25a	Rhine ports Walsum and Alsum.	32	Province Hessen, excluding Oberhessen (21).
25b	Right bank of Rhine in Rheinprovinz.	33	Baden, excluding 34.
26a	Left bank of Rhine from Bingen to Koblenz.	34	Mannheim, Rheinau, Ludwigshafen.
26b	Left bank of Rhine from Koblenz downstream.	35	Württemberg.
26c	Rhine ports Rheinhausen, Homberg, etc.	36	South Bavaria.
27	Saar in Rheinprovinz.	37	North Bavaria.
28	Duisburg-Ruhrort.	44	Alsace-Lorraine.
31	Rhine in Bavarian Palatinate.	47a	Polish Upper Silesia.
32a	Main in Hessen.	56	Switzerland.
32b	Rhine in Hessen.	58	France.
33a	Rhine in Baden, excluding Mannheim.	60	Belgium.
33b	Neckar and tributaries in Baden and Hessen.	61	Netherlands.
33c	Lake Constance in Baden.		
34	Ludwigshafen, Mannheim.		
35a	Neckar and tributaries in Württemberg.		
35b	Lake Constance in Württemberg.		
36a	Danube and tributaries in Bavaria and Württemberg, excluding 37b.		
36b	Lake Constance in Bavaria.		
37a	Main and tributaries in Bavaria and Baden.		
44a	Alsace.		
44b	Lorraine.		
47	Western Poland.		

LIST OF MAIN SOURCES USED.

- (1) *Güterbewegung auf deutschen Eisenbahnen* 1912, 1913, 1925, 1926 (source reference used G.).
 - (2) *Verkehr der deutschen Binnenwasserstrassen* 1912, 1913, 1925, 1926 (source reference used B.).
 - (3) *Rapports annuels de la Commission Centrale pour la Navigation du Rhin* (source reference used C. C.) 1913, 1925-1927.
 - (4) *Geschäftsbericht der deutschen Reichsbahn.*
 - (5) *Reports of the Commissioner for the German Railways to the Reparation Commission.*
 - (6) *Hamburgs Handel und Schiffahrt* (yearly returns 1913, 1925, 1926, 1927, monthly returns 1926, 1927, 1928).
 - (7) *Statistisches Jahrbuch für die Freie und Hansestadt Hamburg* 1925, 1926.
 - (8) *Die Seeschiffahrt, 1912-1926.*
 - (9) *Der Auswärtige Handel* (yearly returns until 1927, monthly returns for 1927 and 1928).
 - (10) *Bremen: Monatsberichte des statistischen Landesamtes* 1927, 1928.
 - (11) *Statistisches Jahrbuch für das deutsche Reich.*
 - (12) *Wirtschaft und Statistik* (source reference used W. & St.).
 - (13) *Norddeutscher Lloyd: Jahrbuch* 1925.
 - (14) *Schiffahrtsjahrbuch* 1927, 1928.
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PREFACE

In the course of the investigation, it became clear that the conditions which made the Rhine shipping concerns complain of increasing competition by the German railways were far more complex than might at first be imagined. The causes did not lie exclusively in a simple policy of competition by the railways with the waterways by means of special tariffs. The present study is limited to Germany, but it should be borne in mind that the comparatively low level of the French railway tariffs expressed in a depreciated currency has certainly had the effect of competing with the Rhine traffic, though no statistics are available to illustrate the actual extent of this competition. For this reason, it is unfair, whatever the competition of the German railways may be, to make them the scapegoat for all the misfortunes that the Rhine shipping has suffered. Moreover, it became obvious that a mere comparison of the traffic by rail and by water in the Rhine districts only could give no satisfactory results. As the effect of the special railway tariffs could not be expected to be limited to the navigation on the Rhine, it was thought necessary to examine in the first instance the main features of the development of the German traffic by rail and water, in order to bring out the general tendencies which might be obscured by purely local conditions.

As regards the period covered by the investigation, it should be recalled that the complaints of the Rhine shipping concerns were particularly strong during the period of German inflation, when owing to the slump of exchange the low rates charged for by the German State Railways had disastrous effects on the river navigation, which is partly in the hands of small private undertakings. As regards the year 1924, the first year of stable currency conditions, no complete statistics are available on account of the occupation of the Ruhr districts, so that the year 1925 was the first which could be taken into account. The year 1926 was highly abnormal on account of the British coal stoppage, but it would appear that there has been nevertheless since 1925 a radical improvement in the situation of the water traffic, although, as will be shown in the present report, some districts of the Rhine did not share in this general improvement.

No detailed traffic statistics were available for later years except those of the "Commission centrale pour la Navigation du Rhin".

For this reason, no detailed analysis could be made of the years 1927 and 1928, although data were brought up to date whenever possible. As regards the transshipment traffic (rail to river or *vice versa*) on the Upper Rhine, there was not a single year which was really satisfactory for a closer analysis, the year 1926 being abnormal and the data for 1925 being in part incomplete owing to military occupation (for instance, Ludwigshafen).

Special attention has been paid in the present investigation to the following points, which may likewise affect the distribution of the traffic by rail and by river :

- (1) Changes in quantity of foreign trade (changes in home consumption or consumption in foreign countries to or from which goods are carried) ;
- (2) Changes in origin or destination of trade movement ;
- (3) Changes due to progress of industry ;
- (4) Changes in business conditions, at home and abroad ;
- (5) Changes in length of rail or waterways ;
- (6) Influence of territorial changes ;
- (7) Competition of national seaports with foreign seaports ;
- (8) Competition of various inland ports.

The following examples may illustrate the above points :

Re (1). Imports into Germany of fertilisers have decreased and this has resulted in a decrease of the water traffic.

Re (2). Imports of Russian cereals have been replaced in part by imports from overseas. Traffic by rail was affected unfavourably; traffic by water favourably.

Re (3). As a result of new methods for producing liquid fuel from coal, some branches of the German chemical industry moved to the very centre of the Ruhr coal districts.

Re (4). As a result of the British coal dispute, large quantities of coal were shipped abroad, even by routes not used under normal circumstances: for instance, via Hamburg.

Re (5). The opening of the Rhine-Herne Canal in the Ruhr gave a fresh impetus to through shipments of coal by water.

Re (6). The separation of the Saar affected chiefly the traffic by rail, whereas the cession of Alsace affected both the traffic by rail and by water.

Re (7). Any increase in exports via Rotterdam tends to favour the Rhine navigation, whereas, on the contrary, an increase of shipments via Hamburg favours either the railways or the Elbe traffic, but not the traffic on the Rhine.

Re (8). As a result of improvements made on the waterways, traffic with Aschaffenburg (on the Main) and with Karlsruhe developed at the expense of traffic via Mannheim.

Unless all the points referred to above are taken into account, it is often impossible to state whether in a given case the water traffic suffered from the introduction of special railway tariffs or from other causes.

With regard to the main sources used for analysing the inland traffic, a complete list of which is given on page 52, some comments are necessary.

The statistics of the "Commission centrale" (*C.C.*) relate mainly to individual *ports* of the Rhine and its tributaries, whether German or foreign ports. They also give the shipments up and down the Rhine according to the records of the Prussian Customs authorities at Emmerich and of the Dutch authorities at Lobith. The German official statistics of inland navigation (*B.*), which refer to all German waterways, give on the other hand the shipping traffic between different *districts*, each of which may include a number of ports. As a rule, however, ports of primary importance form districts by themselves. The districts are referred to in the present report as "Distr. No. . . ." or by numbers only.

The distribution of districts is the same for the German statistics both of waterways and of railways, the waterways districts being, however, in many cases subdivided into sub-districts. (See map and list of districts given on pages 50 and 51.)

It should be noted that the traffic statistics by districts are never quite complete. Particularly, the records for earlier years were not always satisfactory. This explains in part at least why those statistics do not always agree with corresponding statistics by ports. This more detailed division of districts in the case of waterways makes it impossible to compare figures of the railway districts and of river districts unless special adjustments are made. These adjustments are referred to in detail in the introductory remarks to Chapter II of the present enquiry.

The enquiry has been divided into three chapters, the first dealing with the general development of traffic by rail and river, the second with the relative importance of the German trade movement with German, Dutch and Belgian seaports, particularly as regards goods carried in big quantities ("Massengüter") and, finally, the third dealing with a more detailed analysis of the traffic of individual commodities more specially on the Rhine. Some of the less bulky but more valuable commodities were likewise taken into account in that chapter. Each chapter is preceded by an introductory paragraph giving among other things some technical comments on the method followed, adjustments made, value of the statistical materials, etc.

Chapter I.

GENERAL SURVEY OF GERMAN TRAFFIC BY RAIL AND RIVER
IN 1912-1913 AND 1925-1928.

INTRODUCTORY REMARK.

In Chapter I, the traffic by rail and water is compared with the German imports and exports in general trade, reparation deliveries, statistics for which have been recently published, being included. Special attention has been drawn to consequences of territorial changes. Statistics of traffic by districts were compared with those referring to individual ports and supplemented by statistics of the combined rail-river or river-rail traffic ("Umschlagverkehr"). A detailed comparison between the statistics of traffic by districts and those referring to this direct transshipment traffic leads to the conclusion that the latter do not always represent the actual situation in an adequate way, inasmuch as they refer only to goods which are directly loaded on rail *ex-ship* or *vice versa*. If, for instance, goods are consigned to an inland port by water, stored in this port and re-consigned afterwards by rail, they will not appear in the statistics of the "Umschlagverkehr". Thus the erection of new warehouses in a big commercial centre like Mannheim may give a new impetus to the transshipment traffic, but the statistics would show just the contrary.

The movement of the physical quantities carried on German rail and waterways on the one hand and the German general trade by weight on the other is shown in Table 1. As the bulk of the traffic relates, however, to the internal trade, no close correlation between the various sets of figures may reasonably be expected. As pointed out in the Preface, the traffic figures are somewhat incomplete as regards traffic both by rail and by water.

TABLE 1. — GERMANY'S TRADE AND TRAFFIC.

- (a) *Movement of the German General Trade by Weight (including Reparation Deliveries).*
(b) *Movement of the Traffic by Rail and Inland Water.*

A. ABSOLUTE FIGURES. Tons (000,000's omitted).

	Germany's general trade			Traffic on	
	Imports	Exports	Total	Railways	Waterways
1912	79	73	152	474	93.5
1913	81.4	82.2	163.6	501.1	101.3
1920	24.8	.	.	337	44.7
1921	.	.	.	354	42.1
1922	60.7	.	.	405*	59.3
1923	.	.	.	.	34.6
1924	.	.	.	.	71.6
1925	63.4	62.6	126.0	396.2	86.2
1926	59.6	91.0	150.6	416.5	102.3
1927	82.2	73.5	155.7	467.3	111.3
1928	.	.	.	(473)**	(104)**

* Official estimate.

** Own estimate.

B. INDEX NUMBERS BASED ON 1912-13.

	Germany's General Trade			Traffic on	
	Imports	Exports	Total	Railways	Waterways
1912-13	100	100	100	100	100
1920	30.8	.	.	69.1	45.9
1921	.	.	.	72.6	43.1
1922	75.4	.	.	83.1	60.9
1923	.	.	.	.	35.5
1924	.	.	.	.	73.5
1925	79.5	81.2	80.4	81.3	88.5
1926	74.0	117.3	95.6	85.4	105.0
1927	102.1	94.7	98.5	95.9	114.3
1928	.	.	.	(97.0*)	(106.8*)

* Own estimate.

The estimated figures for the present territory of Germany were, for 1913 : Traffic by rail 445 millions and traffic by water 96 millions. If we calculate index numbers of traffic on the basis of these adjusted figures, we get the following results :

TABLE 2. — GERMANY : TRAFFIC BY RAIL AND WATER IN PRESENT TERRITORY.

Index numbers based on 1913.

	Railways	Waterways
1913	100	100
1920	75.7	46.6
1921	79.6	43.9
1922	91.0	61.8
1923	.	36.0
1924	.	74.6
1925	89.0	89.8
1926	93.6	106.6
1927	104.9	115.9
1928	(106.3*)	(108.3*)

* Own estimate.

The figures for exports are inclusive of reparation deliveries, the statistics for which were published quite recently. Owing to the importance of these deliveries if measured by weight — coal! — the data usually quoted and used hitherto in all previous German official publications in relation to traffic were quite inadequate, as they ignored an export which amounted in 1926, measured by weight, to nearly 20% of the ordinary exports (general trade).

The figures relating to 1928 are rough estimates and should be used with caution. Thus the figure for railways was arrived at by applying to the 1927 figure the approximate percentage increase calculated from the Report of the Commissioner for the Reichsbahn (+1.4%). The figure for water traffic was estimated from the monthly returns referring to some important ports. With these above reservations, the percentage which the traffic on waterways formed of the railway traffic is shown in Table 3.

TABLE 3. — GERMANY : RELATIVE IMPORTANCE, ON THE BASIS OF QUANTITIES, OF THE WATER TRAFFIC AS COMPARED WITH THE TRAFFIC BY RAIL.

	%
1913.....	21.6
1920.....	13.3
1921.....	11.9
1922.....	14.6
1925.....	21.8
1926.....	24.6
1927.....	23.9

If the estimated figures for 1928 be used, the percentage for that year is 22.

The Saar Territory being treated at present in the German statistics like a foreign district, the post-war figures for this territory do not take into account any of its traffic except to and from Germany. The water traffic of the Saar Territory with the present German territory was, however, in 1913 quite insignificant (*B.*, 1913), whereas it was far more important with France.

The German railway traffic has been adversely affected by the change of the political status of the Saar Territory and irrespective of the other territorial changes, as shown in the following statement referring to the railway traffic between the Saar Territory and Germany.

TABLE 4. — SAAR TERRITORY : RAILWAY TRAFFIC WITH GERMANY.

Tons (000's omitted).

	1913		1925		1926	
	Despatched	Received	Despatched	Received	Despatched	Received
Local traffic	5,032		.		.	
Lorraine.	1,076	4,728	.	.	.	.
Alsace	580	89	.	.	.	.
Other German provinces	5,991	2,314	1,787	908	1,799	994
Total Germany	7,647	7,131	1,787	908	1,799	994

Source : (*G.*, 1913, 1925, 1926).

As a consequence of the changes of its frontiers, Germany had lost about 10 per cent of its traffic by rail and only 5 per cent of its traffic by water. It would appear that the railways have tried to make up this loss by intensifying the traffic within the present territory ; this feature will be referred to on several occasions in the present study. Inland navigation being by its very nature less able to develop in new directions, increased, as might be expected, its relations with other countries. The table below gives (*a*) the inland traffic, (*b*) the foreign traffic, and (*c*) the transit traffic expressed as percentages of the total traffic by rail and water respectively :

TABLE 5. — NATURE OF THE TRAFFIC BY RAIL AND BY WATER
(expressed as percentages of the respective total Traffic).

Railways	Inland	Foreign	Transit	Total
1913	85.6	14.2	0.2	100
1925	89.5	9.8	0.7	100
1926	88.1	11.3	0.6	100
1927	89.8	9.7	0.5	100
Waterways				
1913	56.0	44.0	—	100
1925	48.5	50.5	1.0	100
1926	43.3	55.8	0.9	100
1927	45.7	52.8	1.5	100

Sources : (G. ; B.).

The preceding tables 1-3 suggest that, as regards the physical quantities carried, the water traffic, after a severe crisis in the years immediately following the war, made considerable progress which was even more pronounced than in the case of the railways. It exceeded the pre-war level in 1926, and, although the favourable effects of the British coal stoppage no longer obtained after that year, it has since remained above the pre-war level. The relative importance of the volume of goods carried by water, as compared with the rail traffic, is as high as — and sometimes even higher than — before the war.

The above refers exclusively to quantities, irrespective of length of haul. When this second point of view is considered also, *i.e.* tons exchanged for ton-kilometres, the results are partially different. Table 6 shows the actual and relative traffic in German territory measured in ton-kilometres. Over half of this traffic by water refers to the Rhine, and if the Ems-Weser Basin is included, the proportion reaches nearly 70 per cent. The percentage figures have been calculated on the basis of the 1913 figures for the old and for the present territory respectively :

TABLE 6. — TRAFFIC (EXPRESSED IN TON-KILOMETRES).

	Absolute Figures Ton-km. 000,000's		Index Numbers based on 1913			
			Old Territory		Present Territory	
	Rail	River	Rail	River	Rail	River
1913	67,135	21,482	100	100	—	—
1913*	(57,282)	(20,883)	—	—	100	100
1925	59,629	18,905	89	88	104	91
1926	64,783	21,459	96	100	113	103
1927	72,614	23,970	108	112	126	115
1928	73,180	.	109	.	128	.

* Present territory.

Sources : (B. ; W. & St.).

The increase in the ton-kilometre of the waterways was smaller than the corresponding figures for the traffic by rail. This is chiefly explained, as will be treated at length below, by the decrease in the navigation with the Upper Rhine and the increasing shipments from the Ruhr downstream, the distance between the Ruhr and the frontier being comparatively short. For the same reason, the average length of haul of water traffic tended, in contrast to the rail traffic, to decrease, as shown in Table 7 :

TABLE 7. — AVERAGE LENGTH OF HAUL BY RAIL AND WATER
(expressed in kilometres).

	Rail	Water
1913	128	216
1913*	(123)	(218)
1925	146	220
1926	147.7	210
1927	148.5	215
1928	152	.

Sources : (B. 1926 ; W. & St.).

* Present territory.

Table 8 shows the nature of goods carried either by rail or by water, as well as a number of percentages calculated in order to show the changes in the relative importance of water and rail transport for various goods. The figures for 1913 refer to the pre-war territory.

TABLE 8. — GERMANY : KIND OF GOODS CARRIED BY RAILWAYS AND WATERWAYS (QUANTITIES).

A. Absolute figures. Tons (000's omitted).

	1913 (pre-war territory)		1925		1926		1927	
	Railways	Waterw.	Railways	Waterw.	Railways	Waterw.	Railways	Waterw.
Coal	160,564	29,886	107,427	33,593	125,836	45,263	119,663	39,129
Lignite	38,314	1,823	52,435	2,096	51,632	2,690	55,895	2,465
Earths	46,636	14,121	36,886	8,986	39,589	10,025	51,558	12,013
Stones, cement plates . .	50,787	5,624	43,843	3,325	47,971	3,936	60,519	4,498
Ore	25,113	14,209	9,189	13,613	7,755	12,154	10,981	19,382
Pig iron	15,336	1,484	11,270	737	10,766	1,283	14,503	1,665
Iron and steel products .	24,283	2,129	20,462	2,936	20,478	3,740	26,132	3,707
Timber, wood	23,081	5,679	22,229	2,845	20,646	2,750	25,115	3,678
Cereals	15,630	7,058	7,915	4,231	8,105	5,301	8,675	7,443
Sugar	3,366	2,245	2,092	1,136	2,294	1,604	2,149	1,032
Salt	2,177	562	2,020	977	2,267	1,018	2,528	1,195
Mineral oils	2,419	1,169	2,461	953	2,612	1,125	3,078	1,400
Drugs, chemicals	4,570	960	3,900	995	3,794	1,150	4,683	1,196
Fertilisers	16,353	2,838	14,893	2,316	14,571	2,452	16,331	3,245
Other	73,489	9,832	58,404	6,984	58,245	7,868	65,528	9,381
Total	501,118	99,619	395,426	85,723	416,561	102,359	467,338	111,429

Sources : (G. B.).

B. *Relative Figures.*
(1) Percentages of total.

	1913		1925		1926		1927	
	Railways	Waterways	Railways	Waterways	Railways	Waterways	Railways	Waterways
Coal	32.0	30.0	27.2	39.2	30.2	44.2	25.6	35.1
Lignite	7.6	1.8	13.3	2.5	12.4	2.6	12.0	2.2
Earths	9.3	14.2	9.3	10.5	9.5	9.8	11.0	10.7
Stones, cement plates . .	10.1	5.6	11.1	3.9	11.5	3.9	13.0	4.0
Ore	5.0	14.3	2.3	15.9	1.9	11.9	2.3	17.4
Pig iron	3.1	1.5	2.8	0.9	2.6	1.3	3.1	1.5
Iron and steel products .	4.9	2.1	5.2	3.4	4.9	3.7	5.6	3.3
Timber, wood	4.6	5.7	5.6	3.3	5.0	2.7	5.4	3.3
Cereals	3.1	7.1	2.0	4.9	2.0	5.2	1.9	6.7
Sugar	0.7	2.2	0.5	1.3	0.5	1.6	0.5	0.9
Salt	0.4	0.6	0.5	1.1	0.5	1.0	0.5	1.1
Mineral oils	0.5	1.2	0.6	1.1	0.6	1.1	0.7	1.3
Drugs, chemicals	0.9	1.0	1.0	1.2	0.9	1.1	1.0	1.1
Fertilisers	3.3	2.8	3.8	2.7	3.5	2.4	3.5	2.9
Other	14.5	9.9	14.8	8.1	14.0	7.5	13.9	8.5
Total	100	100	100	100	100	100	100	100

(2) Waterways as Percentage of Railways.

	1913	1925	1926	1927
Coal	18.6	31.3	36.0	32.7
Lignite	4.8	4.0	5.2	14.4
Earths	30.3	24.4	25.3	23.3
Stones, cement plates . .	11.1	7.6	8.2	7.4
Ore	56.6	148.1	156.7	176.5
Pig iron	9.7	6.5	11.2	11.5
Iron and steel products .	8.8	14.3	18.3	14.2
Timber, wood	24.6	12.8	13.3	14.6
Cereals	45.2	53.5	65.4	85.8
Sugar	66.7	54.3	69.9	48.0
Salt	25.8	48.4	44.9	47.3
Mineral oils	48.3	38.7	43.1	45.5
Drugs, chemicals	21.0	25.5	30.3	25.5
Fertilisers	17.4	15.6	16.8	19.9
Other	13.6	12.0	13.5	14.3
Total	19.9*	21.7	24.6	23.8

* The revised figure is 20.2. The percentage for the present territory is (as shown in Table 3) : 21.8.

The most important item — coal — is being carried at present by ship in greater quantities than before. This actual increase, combined with the reduction of coal traffic by rail, makes the relative importance of the coal traffic by ship go up from less than 19 per cent in 1913 to over 31 per cent in 1925, to 36 per cent in 1926, and to nearly 33 per cent in 1927. It should be remembered in this connection that the Saar Territory is excluded from the post-war data. As shown above, its direct water traffic was, however, of no importance, whilst its railway traffic with Germany amounted in 1913 to over 7 million tons in each direction. If we include the traffic within its own territory ("Lokalverkehr"), we get for all goods despatched from the Saar to Germany

and abroad nearly 15 million tons, of which about 10 millions were coal. This omission of the Saar Territory is not the only cause of the decrease in the rail traffic of coal, which was greatly diminished also by the cession of Upper Silesia.

The rail transport of ore has necessarily been unfavourably influenced by the cession of Lorraine, which despatched in 1913 by rail nearly 9 million tons of ore.

The relative importance of the water traffic has diminished as regards earths, stones, timber and sugar. It has increased, as referred to above, in the case of coal, lignite and ores, but also in the case of iron and its products, chemicals, cereals and salt. In some cases, the changes are undoubtedly due to changes in the foreign markets, *e.g.*, oversea imports of cereals replacing Russian cereals.

The turnover of traffic of the German railways by some important districts is shown in Table 9.¹

As the considerable reduction since 1913 is obviously due in part to territorial changes, the table should be supplemented by a more detailed analysis by districts as laid down in Table 10, showing the international railway traffic of various countries with some German districts. In order to make the tables easier to follow and owing to the exceptional character of the year 1926, the data of Table 10 are confined to 1913 and 1925.

Most of the German districts given in Table 9, other than actual coal districts, and particularly South Germany, show in 1925 and 1926 higher figures as regards traffic by rail than in 1913. But, as shown in Table 10, there was a decrease in the railway traffic to Switzerland, Belgium and Netherlands.

TABLE 9. — GERMANY: RAILWAY TRAFFIC (NATIONAL AND FOREIGN) BY DISTRICTS.
Tons (000's omitted).

Districts :	1913		1925		1926		
	Despatched	Received	Despatched	Received	Despatched	Received	
8 (Elbe)	4,268	6,854	4,620	5,844	4,224	11,534	
9 (Weser)	3,335	3,371	2,335	2,929	2,306	5,166	
21 (Hessen-Nassau)	14,280	13,736	14,781	13,144	14,927	12,350	
22 (Ruhr, Westphalia)	78,938	35,321	61,757	26,560	67,001	26,840	
23 (Ruhr Rheinprovinz)	39,881	26,954	29,144	20,736	32,839	19,684	
24 (Westphalia)	11,563	16,920	12,245	15,865	11,811	11,512	
25 (Rheinprovinz, right)	10,256	10,866	8,567	8,521	7,449	6,594	
26 (Rheinprovinz, left)	25,397	27,134	28,881	27,222	33,041	29,301	
28 (Duisburg)	9,399	26,489	6,336	23,492	6,013	27,997	
33 (Baden)	6,869	8,393	8,912	9,118	9,075	9,432	
34 (Mannheim)	6,180	3,158	5,973	4,014	5,502	3,337	
36 (Southern Bavaria)	7,982	10,468	8,894	11,898	9,281	12,468	
37 (Northern Bavaria)	8,183	11,380	9,151	12,797	9,408	12,393	
Saar Territory	14,673	12,849	.	.	.	.
Other	235,169	237,752	172,592	189,916	212,877	188,608	
Total	Excluding Saar Territ.	461,700	438,796	374,188	372,056	390,445	386,532
	Including Saar Territ.	476,373	451,645				

Sources : 1913 calculated from detailed tables in G.
1925-1926 : Summary Tables in G.

¹ In order to make the figures for 1913 comparable with those for later years, the local traffic, which is excluded from the statistics published for 1913, but included in later statistics, has been entered equally on both sides as goods despatched and goods received.

TABLE 10. — INTERNATIONAL RAILWAY TRAFFIC WITH VARIOUS GERMAN DISTRICTS.

Despatch to and Receipt from Germany.

Tons (000's omitted).

German Districts.	Alsace-Lorraine				France (excl. Alsace-Lorraine)				Switzerland	
	1913		1925		1913		1925		1913	1925
	Desp.	Rec.	Desp.	Rec.	Desp.	Rec.	Desp.	Rec.	Rec.	Rec.
22 (Ruhr, Westphalia) .	1,727	2,696	358	338	234	2,005	32	2,660	285	248
23 (Ruhr, Rheinprovinz).	661	809	50	479	25	951	29	788	209	132
26 (Rheinprovinz, left) .	749	582	150	78	69	124	63	655	204	263
33 (Baden)	634	356	144	106	50	63	72	100	632	533
34 (Mannheim)	210	146	24	109	21	20	19	39	865	272
Other					190	467	240	100	530	329
Total, excluding Saar and Alsace-Lorraine					589	3,630	455	4,342	2,725	1,777
Saar	4,817	1,656	.	.	371	436	.	.	815	.
Alsace					178	346	.	.	699	.
Lorraine					2,359	1,223	.	.	342	.
Grand total					3,497	5,635	.	.	4,581	.

	Belgium and Luxemburg				Netherlands			
	1913		1925		1913		1925	
	Desp.	Rec.	Desp.	Rec.	Desp.	Rec.	Desp.	Rec.
22 (Ruhr, Westphalia) .	640	3,183	72	1,585	188	3,093	119	747
23 (Ruhr, Rheinprovinz).	743	1,983	159	697	241	1,838	180	732
26 (Rheinprovinz, left) .	1,453	1,632	573	1,159	711	709	493	225
24 (Westphalia).	210	75	33	18	71	184	56	134
Other	1,110	811	607	214	301	585	362	524
Total, excluding Saar and Alsace-Lorraine	4,156	7,684	1,444	3,673	1,512	6,409	1,210	2,362
Saar	295	389	.	.	6	25	.	.
Alsace	111	42	.	.	9	4	.	.
Lorraine	1,169	2,069	.	.	26	97	.	.
Grand Total.	5,731	10,184	.	.	1,553	6,535	.	.

Source : (G.).

As regards water traffic, the movement on some German waterways is given in Table 11, which shows inland and international traffic separately.

In connection with the reduction of the traffic on the Elbe waterways as compared with 1913, it should be mentioned that, according to the statistics of the "Umschlagverkehr", the direct transshipment traffic in most of their ports was in 1925 and 1926 much lower than in 1913. There may possibly be a connection between these two facts and the considerable increase of the foreign traffic by rail originating in the seaports of the Elbe and the Weser on one hand, and the existence of special transit tariffs between German seaports and Czechoslovakia and Austria on the other. The figures for the Ems-Weser system include the Ems-Weser Canal and Rhein-Herne Canal, both of which did not exist in 1913.¹

¹ The increase in the traffic of this waterway system is to be explained chiefly by the addition of these two waterways, but, to a lesser extent, also to changes in the method used for recording the traffic in some districts.

TABLE 11. — GERMANY : TRAFFIC (INLAND AND INTERNATIONAL, EXCLUDING TRANSIT) ON GERMAN WATERWAYS BY BASINS.

Tons (000's omitted).

	1913 (Pre-war territory)			1925			1926		
	Des-patched	Received	Total	Des-patched	Received	Total	Des-patched	Received	Total
Rhine Basin :									
Inland	22,756	22,718	45,474	14,652	16,751	31,403	13,245	15,472	28,717
International . . .	18,461	19,979	38,440	22,359	14,260	36,619	32,551	13,478	46,029
Total	41,217	42,697	83,914	37,011	31,011	68,022	45,796	28,950	74,746
Ems-Weser Basin :									
Inland	5,201	5,168	10,369	9,716	7,569	17,285	10,267	8,028	18,295
International . . .	126	155	281	2,928	907	3,835	6,602	877	7,479
Total	5,327	5,323	10,650	12,644	8,476	21,120	16,869	8,905	25,774
Elbe Basin :									
Inland	12,613	10,416	23,029	7,079	6,026	13,105	8,163	7,457	15,620
International . . .	785	1,692	2,477	636	971	1,607	553	1,598	2,151
Total	13,398	12,108	25,506	7,715	6,997	14,712	8,716	9,055	17,771
Danube Basin :									
Inland	134	118	252	78	80	158	68	70	138
International . . .	163	144	307	219	202	421	279	298	577
Total	297	262	559	297	282	579	347	368	715
Other Basins :									
Inland	15,953	18,237	34,190	10,241	11,340	21,581	12,594	13,310	25,904
International . . .	182	1,263	1,445	82	511	593	84	739	823
Total	16,135	19,500	35,635	10,323	11,851	22,174	12,678	14,049	26,727
All waterways :									
Inland traffic counted twice :	76,374	79,890	156,264	67,990	58,617	126,607	84,406	61,327	145,733
Inland traffic counted once :			99,607			84,841			101,396

Source : (B., 1926.).

The total traffic of the Rhine and the Ems-Weser Basin (Table 11) compared with 1913 shows a decrease of about 6 per cent for 1925 and an increase of 6 per cent for 1926. A more detailed analysis of the Rhine traffic by districts as set out in Table 12 shows, however, that there was a far more serious decrease in traffic of the German districts on the Upper Rhine, irrespective of the loss of water traffic of the ceded territories, than on the Lower Rhine.

The traffic on the Upper Main, on the contrary, shows against 1913 an increase due to the opening of new districts for navigation.

TABLE 12. — GERMANY : WATER TRAFFIC IN THE GERMAN RHINE DISTRICTS.
Tons (000's omitted).

Districts :	1913			1925			1926		
	Des-patched	Received	Total	Des-patched	Received	Total	Des-patched	Received	Total
<i>Rhine:</i>									
21c. (Hessen-Nassau) . . .	696	464	1,160	462	267	729	519	253	772
25a.b. (Rheinprovinz, right; Ruhr)	3,708	7,748	11,456	5,652	6,049	11,701	6,114	6,018	12,132
26a.b.c. (Rheinprovinz, left)	5,575	4,452	10,027	5,406	3,836	9,242	6,533	3,560	10,093
28 (Duisburg)	21,877	9,071	30,948	20,689	5,699	26,388	26,944	4,989	31,933
31 (BavarianPalatinate)	408	124	532	178	62	240	376	33	409
32b. (Hessen)	1,466	3,225	4,691	1,400	2,105	3,505	1,357	1,960	3,317
33a. (Baden)	415	1,702	2,117	272	1,625	1,897	376	1,901	2,277
34 (Mannheim-Ludw.)	2,366	8,563	10,929	1,421	7,976	9,397	2,052	7,056	9,108
Total	36,511	35,349	71,860	35,480	27,619	63,099	44,271	25,770	70,041
30b. (Alsace)	209	1,961	2,170						
Total	36,720	37,310	74,030						
<i>Tributaries of the Rhine and Lake Constance :</i>									
21b. { (Lower Main) . . .	1,160	2,930	4,090	764	2,020	2,784	762	2,069	2,831
32a. {									
37a. (Main, Bavaria) . .	645	314	959	431	1,093	1,524	422	796	1,218
23a. {									
33b.c. { (Other and									
35a.b. { Lake Constance)	558	434	992	333	280	613	339	315	654
Total, excluding Saar, Alsace-Lorraine	2,363	3,678	6,041	1,528	3,393	4,921	1,523	3,180	4,703
Saar, Alsace-Lorraine . .	2,135	1,709	3,844						
Total, including Saar, Alsace-Lorraine	4,498	5,387	9,885						
Grand total, <i>excluding</i> Saar, Alsace, Lorraine	38,874	39,027	77,901	37,008	31,012	68,020	45,794	28,950	74,744
Grand total, <i>including</i> Saar, Alsace, Lorraine	41,218	42,697	83,915						

(Sources : B., 1913, 1925, 1926.).

The distribution of the Rhine traffic by ports for the years 1913 and 1925 to 1927 is shown in Table 13, prepared from the Yearly Reports of the Rhine Central Commission. In contrast to the preceding table, this table refers exclusively to the Rhine ports. It excludes, therefore, among other, the traffic via the Rhine-Herne Canal, but it includes ports other than German.

With a few exceptions like Strasburg (which no longer belongs to Germany), Kehl, Ludwigshafen, Wesseling, Alsum and Wesel, the German Rhine ports show as a whole a smaller traffic in 1925 than in 1913. Apart from Duisburg-Ruhrort, which lost between

1913 and 1925 as much as 18 per cent of its pre-war Rhine traffic, the reduction applies chiefly to the German ports of the Upper Rhine, the traffic of which decreased, according to the detailed *C.C.* statistics, by some 14 per cent. But, as pointed out further above, the decrease of the traffic of Duisburg is the natural consequence of the opening of the Rhine-Herne Canal. The ports of the Lower Rhine other than Duisburg practically maintained their pre-war traffic, whilst, on the Middle Rhine, Wesseling shows a considerable increase due to the increased shipments of lignite. The economic importance of lignite for Germany is growing steadily and its production, as well as the traffic on both water and railways, shows a marked increase over 1913. In 1926, the ports connected with the Ruhr exports showed, as to be expected, a greater traffic than in 1925, whereas the inward movement was lower; Mannheim's traffic fell between 1925 and 1926 by nearly 8 per cent, whilst Ludwigshafen showed again an increase. There was also a striking increase for Karlsruhe and Strasburg.

The traffic on the Rhine in 1927 shows an important increase which was shared by all ports, except Duisburg-Ruhrort and Homberg. The arrivals in Mannheim show an increase, whilst its consignments show a big decrease.

From provisional data, such as are available for 1928, it would appear that, whilst most of the Rhine ports maintained their 1927 level or even exceeded it — like Strasburg, Ludwigshafen, Düsseldorf, Wesseling — Mannheim's traffic fell by nearly 14 per cent.

TABLE 13. — RHINE TRAFFIC IN MERCHANDISE IN RHINE PORTS (GERMAN, FRENCH, SWISS) AND BELGIAN AND DUTCH PORTS.
Tons (000's omitted).

	1913			1925			1926			1927		
	Despatched	Received	Total	Despatched	Received	Total	Despatched	Received	Total	Despatched	Received	Total
<i>Rhine Ports :</i>												
Strasburg	333	1,656	1,988	687	1,455	2,142	1,311	1,783	3,094	2,003	2,116	4,119
Kehl	71	439	510	64	658	722	184	579	763	202	790	992
Karlsruhe	266	1,211	1,478	193	944	1,137	208	1,307	1,515	261	1,839	2,100
Mannheim	834	6,563	7,397	906	5,325	6,231	1,349	4,373	5,722	800	5,689	6,489
Ludwigshafen.	872	2,001	2,873	783	2,482	3,265	850	2,514	3,364	984	3,019	4,003
Gustavsburg	41	1,086	1,127	10	354	364	40	259	299	8	314	322
Mainz	597	1,214	1,811	298	935	1,233	315	917	1,232	428	1,201	1,629
Wesseling	683	16	699	1,664	133	1,797	1,824	67	1,891	2,016	69	2,085
Cologne	340	1,072	1,412	441	983	1,424	932	888	1,820	1,076	1,344	2,420
Düsseldorf	294	1,273	1,567	278	581	859	361	673	1,034	340	784	1,124
Rheinhausen	217	1,770	1,987	348	1,484	1,832	495	1,357	1,852	461	2,180	2,641
Duisburg-Ruhrort	19,843	9,070	28,913	18,242*	5,456*	23,698*	24,235	4,721	28,956	18,653	8,054	26,707
Homberg.	1,178	118	1,296	1,041	33	1,074	1,068	28	1,096	1,002	43	1,045
Alsum	1,447	2,856	4,303	2,088	2,627	4,715	2,231	2,550	4,781	2,085	4,369	6,454
Walsum	1,199	1,061	2,260	977	1,026	2,003	1,337	1,044	2,381	1,112	1,878	2,990
Wesel	11	489	500	15	552	567	14	671	685	2	772	774
Other ports	1,824	5,443	7,267	2,010	3,268	5,278	2,369	3,298	5,667	2,344	4,559	6,903
Total	30,050	37,338	67,388	30,045	28,296	58,341	39,123	27,029	66,152	33,777	39,020	72,797
<i>Dutch ports :</i>												
Rotterdam	15,740	7,024	22,764	11,253	11,591	22,845	10,321	22,081	32,402	18,002	15,266	33,268
Amsterdam.	557	975	1,532	318	1,644	1,962	389	2,015	2,404	553	1,747	2,300
Other ports	394	2,805	3,199	218	3,889	4,107	1,514	5,679	7,193	2,732	5,207	7,939
Total Dutch	16,691	10,804	27,495	11,789	17,124	28,914	12,224	29,775	41,999	21,287	22,220	43,507
<i>Belgian ports :</i>												
Antwerp				1,601	3,127	4,728	1,682	4,346	6,028	2,246	3,491	5,737
Ghent				123	1,156	1,279	223	1,340	1,563	528	1,065	1,593
Other ports				295	1,959	2,254	173	1,973	2,146	413	2,567	2,980
Total Belgian.	2,893	6,180	9,073	2,019	6,242	8,261	2,078	7,659	9,737	3,187	7,123	10,310

* Different figures are given in the various tables of the original sources.

Source : (C.C., 1913, 1925-1927.).

One of the most striking features in the traffic of the Upper Rhine is the growing importance of Strasburg and Kehl, of Karlsruhe and of Ludwigshafen. The movement of traffic of Mannheim and Ludwigshafen tends to go in an opposite direction, so that those two twin ports no longer partake of the character of one single entity.

The traffic of some ports is shown in Table 14, giving the figures of the preceding table expressed as index numbers on the 1913 base. The figures calculated for 1928 are provisional estimates.

TABLE 14. — RHINE TRAFFIC IN SOME RHINE PORTS.
(Index numbers based on 1913.)

	Cologne	Düsseldorf	Strasburg ¹ and Kehl	Karlsruhe	Mannheim	Ludwigshafen
<i>A. Cargo despatched.</i>						
1913	100	100	100	100	100	100
1925	130	95	206	73	109	90
1926	274	123	394	78	162	97
1927	316	116	602	98	96	113
1928	372	210	741	93	91	133
<i>B. Cargo received.</i>						
1913	100	100	100	100	100	100
1925	92	46	88	78	81	124
1926	83	53	108	108	67	126
1927	125	62	128	152	87	151
1928	117	86	142	149	74	148
<i>C. Total traffic.</i>						
1913	100	100	100	100	100	100
1925	101	55	108	77	84	114
1926	129	66	156	103	77	117
1927	171	72	207	142	88	139
1928	178	108	242	139	76	143

¹ The data for Strasburg differ very much according to various sources, but all figures point to an important increase.

In connection with the extreme importance of the Ruhr traffic, a special analysis of the traffic of Ruhr coal will be made in Chapter III below. As pointed out above, the figures for Duisburg-Ruhrort are no longer as representative of the Ruhr traffic as in 1913, important quantities of coal being shipped from the ports on the Rhein-Herne Canal. This explains the general reduction of the Duisburg-Ruhrort traffic. The figures for 1926 are greatly influenced by shipments of coal abroad, on account of the British coal stoppage.

* * *

The degree in which rail and waterways co-operate ought to be reflected in the statistics of the so-called "Umschlagverkehr" (transshipment or combined traffic).

As pointed out in the introductory note to this chapter, the value of those statistics appears unfortunately to be rather limited, however. Table 15 shows for some important inland ports the relative statistical importance of this direct transshipment traffic as compared with the total traffic by water. The direct transshipment traffic in 1925, compared

with that in 1913, having as a whole decreased slightly less than the total traffic, its relative importance has increased in the majority of cases. It maintained its relative importance in 1926 as well, owing to an increase parallel with the increase of the total traffic. Owing to the occupation of the Rhine territories, no complete records are available for Ludwigshafen.

TABLE 15. — GERMANY : RELATIVE IMPORTANCE OF THE " UMSCHLAGVERKEHR " IN SOME GERMAN PORTS AS COMPARED WITH THE TOTAL WATER TRAFFIC OF THESE GOODS.

Tons (000's omitted).

	Total " Umschlag "			Total water traffic of goods			Percent. importance of " Umschlag "		
	1913	1925	1926	1913	1925	1926	1913	1925	1926
<i>Oder Basin :</i>									
Kosel	3,589	2,860	3,032	3,699	2,991	3,123	97.0	95.6	97.1
Breslau	995	427	744	1,565	498	749**	63.6	85.7	99.3
<i>Ems-Weser Canal :</i>									
	—	1,123	1,125	—	1,626	1,604	—	69.0	70.1
<i>Ems Basin :</i>									
Dortmund	677	1,147	1,327	2,104	3,114	3,304	32.2	36.8	40.2
<i>Rhine Basin :</i>									
Kehl	235	324	265	510	723	763	46.1	44.9	34.7
Karlsruhe	680	688	923	1,477	1,138	1,516	46.0	60.5	60.9
Mannheim	1,345	804	524	7,397	6,448*	5,937	18.2	12.5	8.8
Ludwigshafen	796	394*	651*	2,873	3,265	3,365	27.7	.	19.3
Gustavsburg	878	308	258	1,127	364	299	77.9	84.6	86.3
Wesseling	660	1,753	1,873	698	1,796	1,892	94.6	97.6	99.0
Cologne	417	268	625	.	1,425	1,820	.	.	.
Düsseldorf	332	131	76	1,567	859	1,034	21.2	15.3	7.4
Duisburg-Ruhrort	20,942	21,118	25,870	28,914	24,102	29,319	72.4	87.6	88.2
Walsum	2,253	2,001	2,376	2,260	2,003	2,381	99.7	99.9	99.8
Wesel	32	304	616	500	568	685	6.4	53.5	89.9
Aschaffenburg	6	836	527	45	1,097	737	13.3	76.2	71.5
Frankfurt a/M.	477	265	245	2,268	1,398	1,432	21.0	19.0	17.1
Strasburg	557	.	.	1,989	(2,142)	(3,094)	28.0	.	.
<i>Danube Basin :</i>									
Regensburg	122	138	252	238	279	408	51.3	49.5	61.8

Sources : B., : 1913, 1925, 1926.

For Strasburg 1925 and 1926: C.C., 1925, 1926.

* Mannheim including Neckar traffic ; if excluding, the figure becomes 6,231.

** Record incomplete.

As regards the Rhine Basin, the most striking changes are :

(1) The direct transshipment traffic of Duisburg-Ruhrort is at present comparatively more important than in 1913.

(2) Mannheim has lost in part its previous importance as " Umschlaghafen ". In the case of Ludwigshafen, the decrease was less pronounced.

(3) The transshipment traffic of Aschaffenburg (Upper Main) has been much more important than in 1913 (opening of the navigation on the Upper Main).

The slump in the traffic of this port in 1926 was temporary, the figures for 1927 and 1928 being again near the 1925 level.

(4) Although no figures for the transshipment traffic of Strasburg are available, it may be presumed that the big increase in its traffic was accompanied by an increase in the transshipment traffic.

There might possibly be a direct relation between (2) on one hand and (3) and (4) on the other.

The data given in the preceding table are further analysed in Table 16, showing the cargo discharged and shipped by water (the total of which gives the "total traffic" of the preceding table) and the components of the direct transshipment traffic, viz., goods reloaded from ship on rail and *vice versa*.

TABLE 16. — GERMANY. THE NATURE OF THE DIRECT TRANSHIPMENT ("UMSCHLAG") TRAFFIC.
Tons (000's omitted)

	1913				1925				1926			
	(a) Total Ship Cargo dis- charged	(b) Of which re- loaded on rail	(a) Total Cargo shipped by water	(b) Of which re- loaded ex-rail	(a) Total Ship Cargo dis- charged	(b) Of which re- loaded on rail	(a) Total Cargo shipped by water	(b) Of which re- loaded ex-rail	(a) Total Ship Cargo dis- charged	(b) Of which re- loaded on rail	(a) Total Cargo shipped by water	(b) Of which re- loaded ex-rail
<i>Oder Basin :</i>												
Kosel	1,368	1,330	2,331	2,259	1,007	944	1,964	1,916	729	688	2,394	2,343
<i>Ems Basin :</i>												
Dortmund	1,401	153	703	524	2,500	791	614	356	2,246	761	1,058	566
<i>Rhine Basin :</i>												
Kehl	439	198	71	37	658	315	64	9	579	245	184	20
Karlsruhe	1,211	490	266	190	944	557	193	131	1,307	796	209	127
Mannheim	6,563	1,262	834	83	5,491	608	957	196	4,540	457	1,397	67
Ludwigshafen	2,001	324	872	472					2,540	615*	850	36*
Gustavsburg	1,086	870	41	8	354	302	10	6	259	254	40	4
Wesseling	16	5	682	655	133	96	1,664	1,657	67	55	1,824	1,818
Düsseldorf	1,273	332	294		581	54	278	77	673	45	361	30
Duisburg-Ruhrort	9,071	2,680	19,843	18,262	5,700	3,096	18,402	18,022	4,989	2,153	24,330	3,718
Walsum	1,061	1,061	1,199	1,192	1,026	1,026	977	975	1,044	1,043	1,337	1,333
Wesel	489	30	11	2	553	304	15	0.7	671	612	14	4
Aschaffenburg	34	5	11	0.7	987	788	110	48	644	484	93	43
Frankfurt a/M.	1,781	316	487	162	1,283	195	115	70	1,308	204	124	40
Strasburg	1,656	334	333	223								
<i>Danube Basin :</i>												
Regensburg	85	33	153	89	146	62	133	76	219	134	189	117

* Occupied territory, incomplete records.

Source : (B. 1913, 1925, 1926.).

As regards the decrease of the traffic in Mannheim, it might be worth noting that Aschaffenburg has certainly taken over some of the traffic which would otherwise have gone via Mannheim. The following statement shows the deficit or surplus of the Mannheim traffic in 1925 and 1926 as compared with 1913, together with the corresponding data for Aschaffenburg.

Deficit (—) or Surplus (+).

	Mannheim		Aschaffenburg	
	1925	1926	1925	1926
Total cargo discharged	—1,072	—2,023	+953	+610
Of which reloaded on rail	— 654	— 805	+783	+479
Total cargo shipped	+ 123	+ 563	+ 99	+ 82
Of which reloaded <i>ex-rail</i>	+ 113	— 16	+ 47	+ 42

Unfortunately, no corresponding complete data are available for Ludwigshafen. But taking into account that (1) Ludwigshafen appears to develop more favourably than Mannheim, (2) that Aschaffenburg carries an important traffic which did not exist in 1913, (3) that Strasburg developed its traffic to a considerable extent, it may be stated that, whether Mannheim has or has not suffered from a competition on account of the railways, it appears to have at any rate suffered from the competition of some other river ports.

The actual and relative distribution of the direct transshipment traffic by groups of commodities is given in Table 17. Although the total quantity of goods transloaded in 1925 has decreased, the transshipment traffic of lignite, earths and cement, of stones, iron products, salt and mineral oils was both actually and relatively bigger than in 1913. The 1926 figures which are inflated by consignments of coal show, however, an increase as regards most other commodities.

TABLE 17. — GERMANY : DIRECT TRANSHIPMENT TRAFFIC (" UMSCHLAGVERKEHR ") BY GROUPS OF COMMODITIES, 1913, 1925 AND 1926.

(A) *Absolute Figures.*

Tons (000's omitted).

	1913			1925			1926		
	Rail to ship	Ship to rail	Total	Rail to ship	Ship to rail	Total	Rail to ship	Ship to rail	Total
Coal, coke, briquettes . . .	24,277	3,215	27,492	21,056	3,089	24,145	28,460	2,831	31,291
Lignite	776	298	1,074	2,057	464	2,521	2,398	593	2,991
Earths	361	1,119	1,480	367	1,652	2,019	533	1,640	2,173
Stones, cement plates . . .	189	143	332	312	95	407	332	95	427
Ore	264	5,538	5,802	609	4,695	5,304	441	3,771	4,212
Pig iron	373	309	682	219	266	485	401	246	647
Iron products	437	53	490	932	56	988	1,223	64	1,287
Timber, wood	686	434	1,120	384	416	800	279	350	629
Cereals	452	1,046	1,498	191	770	961	270	957	1,227
Sugar	519	71	590	266	69	335	330	78	408
Salt	188	35	223	610	147	757	509	51	560
Mineral oils	17	60	77	78	118	196	61	133	194
Fertilisers	1,328	444	1,772	955	154	1,109	1,083	153	1,236
Other	392	1,016	1,408	414	554	968	455	565	1,020
Total	30,259	13,781	44,040	28,450	12,545	40,995	36,775	11,527	48,302

(B) *Relative Figures.*

	Relative importance of transhipment of various goods			Index numbers based on 1913	
	1913	1925	1926	1925	1926
Coal, coke, briquettes . . .	62.4	58.9	64.8	87.8	113.8
Lignite	2.4	6.1	6.2	234.7	278.5
Earths	3.4	4.9	4.5	136.4	146.8
Stones, cement plates. . .	0.8	1.0	0.9	122.6	128.6
Ore.	13.2	12.9	8.7	91.4	72.6
Pig iron	1.6	1.2	1.3	71.1	94.9
Iron products	1.1	2.4	2.7	201.6	262.7
Timber, wood	2.5	2.0	1.3	71.4	56.2
Cereals	3.4	2.3	2.5	64.2	81.9
Sugar	1.3	0.8	0.8	56.8	69.2
Salt	0.5	1.9	1.2	339.5	251.1
Mineral oils	0.2	0.5	0.4	254.5	251.9
Fertilisers	4.0	2.7	2.6	62.6	69.8
Other	3.2	2.4	2.1	68.8	72.4
Total	100	100	100	93.1	109.7

Source : (B., 1913, 1925, 1926).

Tables 18 and 19 give the direct transhipment traffic for Mannheim, Ludwigshafen and Aschaffenburg by commodities, the former representing *grosso modo* traffic in downstream direction and the latter the traffic upstream. A more detailed analysis of this traffic is made in Chapter III, dealing more especially with the traffic of individual commodities. It should be emphasised that such an analysis of the traffic of single commodities to and from the various districts does not always disclose the reasons for the changes occurring in the direct transhipment traffic as given in the two tables. Whereas there is no doubt that in several cases Mannheim has suffered from the growing competition of Aschaffenburg, it would be misleading to judge the economic importance of the various ports only from the "Umschlag" statistics. In fact, it happened that increased general traffic of a port was accompanied by a decrease of its direct transhipment traffic — and similarly an increase in its transhipment traffic was caused by an increase in local traffic, *e. g.*, goods being unloaded from the ship and carried by rail for a very short distance near the port. In other cases, an analysis of the traffic with various districts showed that there has been both an increase in the arrivals by water from some districts, accompanied by an increase in the consignments by rail to other districts, but that the statistics showed quite an unexpected decrease of the transhipment traffic. As already mentioned above, this may be due to the fact that goods unloaded were not directly reloaded on rail, but kept in store-houses before being re-consigned. Such a practice is more likely to occur in Mannheim than in new or secondary ports, but the "Umschlag" statistics will fail in showing such a transhipment traffic in a broad sense.

TABLE 18. — DIRECT TRANSHIPMENT TRAFFIC FROM RAIL TO RIVER (tons).
Downstream Direction.

	Mannheim (including Rheinau)			Ludwigshafen		Aschaffenburg	
	1913	1925	1926	1913	1926	1925	1926
Cement	12,090	4,860	4,309	90	×	520	105
Fertilisers	×	×	—	32,099	×	182	—
Iron, pig	123	788	762	184,304	17,125	20	1,239
Ironware	837	736	211	154,959	9,999	616	900
Earths	×	×	×	55,099	4,127	1,996	3,514
Cereals	×	—	—	355	—	135	3,119
Timber, wood	2,047	—	—	1,710	—	32,579	20,997
Flour, bran	714	—	25	1,017	—	—	—
Mineral oils	375	—	—	290	—	—	—
Salt	19,465	186,831	60,819	—	—	—	152
Coal	81	—	—	8,412	—	—	134
Beer	6,225	—	—	—	—	—	—
Pyrites	27,700	—	—	1,009	—	8,141	7,295
Wool	24	—	—	481	—	—	—
Other	13,291	3,109	599	32,398	4,754	3,477	5,432
Total	82,972	196,324	66,725	472,223	36,005	47,666	42,887

N.B. A “—” means nil, a “×” means unimportant.

Source : (B.).

TABLE 19. — DIRECT TRANSHIPMENT TRAFFIC FROM RIVER TO RAIL (tons).
Upstream Direction.

	Mannheim (incl. Rheinau)			Ludwigshafen		Aschaffenburg	
	1913	1925	1926	1913	1926	1925	1926
Cotton	782	719	68	5	—	—	—
Cement	62,394	12,632	8,492	4,850	1,900	—	—
Fertilisers	5,063	2,987	1,418	1,852	565	—	16,019
Iron, ware	13,732	9,154	569	538	7,030	2,812	203
Iron, pig	8,017	828	791	53,300	9,159	7,305	7,297
Earths	4,638	7,963	674	64	101	620	6,919
Cereals	94,115	48,412	43,017	16,002	10,104	1,336	1,156
Oilseeds	4,208	3,244	3,897	120	—	—	—
Timber, wood	3,461	4,313	4,543	5,018	5,137	40,272	24,217
Coffee, tea, cocoa	753	50	22	224	74	47	—
Flour, bran	30,066	7,664	4,521	4,215	1,261	—	355
Mineral oils	2,415	596	170	82	45,081	—	—
Salt	—	—	—	—	—	—	—
Lignite	47,832	19,827	37,387	60	222,151	1,286	—
Coal	930,859	468,159	326,506	161,583	276,399	731,167	423,801
Sugar	66	14,089	18,182	57,178	34,075	—	71
Paper	—	—	—	—	—	—	—
Beer	—	—	—	—	—	—	—
Pyrites	20,096	—	—	3,358	—	1,702	1,243
Manganese ores	—	—	—	5,219	—	—	—
Oilcake	4,519	—	—	10	—	—	373
Rice	3,128	75	203	1,056	339	—	—
Wool	3,477	683	849	1,916	929	—	—
Other	22,754	6,426	5,726	7,269	876	1,599	2,700
Total	1,262,375	607,821	457,035	323,919	615,181	788,146	484,354

Source : (B.).

Chapter II.

MARITIME AND NON-MARITIME TRAFFIC OF GERMAN SEAPORTS AND TRAFFIC WITH BELGIUM AND THE NETHERLANDS, 1912-1913 and 1925-1928.

INTRODUCTORY REMARKS.

This chapter contains a study of the traffic by rail and inland water of German seaports compared with the corresponding traffic to and from Belgium and the Netherlands. This study has been preceded by an analysis of the German sea-borne traffic in connection with the changes in the magnitude of the German foreign trade. Special emphasis is laid on this analysis, which throws some light on the changes in the volume and distribution of the traffic which otherwise would remain unexplained.

Particular attention has been paid to the following factors, which may affect the magnitude or the nature of the traffic to and from any seaport :

- (1) Fluctuations in the volume of foreign trade, actual or apparent (as a result of territorial changes).
- (2) Changing importance of the transit trade. (For some commodities, this trade via Germany is superior to the German special trade.)
- (3) Competition of foreign seaports.
- (4) Substitution of traffic by rail for traffic by water or *vice versa*.

All these items are necessarily in close connection with the tariff policy of the railways in a given country and the neighbouring countries. Changes in the geographical distribution of an industry may likewise have an important effect upon the direction and the nature of traffic.

Sea-borne traffic : The enquiry covers the role of the German seaports, particularly Hamburg, Bremen and Emden, in the German foreign trade before the war and at present. For this purpose, we had to take into account the general trade and not, as is usually done, the special trade, which ignores the important transit and improvement trade. As no statistics exist of general trade by commodities, such figures had to be worked out especially for this purpose from the detailed returns. The following statement shows the method used for this computation :

Imports :

- Special trade (Spezialhandel) : Einfuhr.
- + (plus) Einfuhr zur Veredelung für ausländische Rechnung.
- + (plus) Einfuhr nach Veredelung im Auslande.
- + (plus) Einfuhr auf Niederlager.
- + (plus) Durchfuhr.
- (less) Einfuhr von Niederlager auf freien Verkehr.

Exports :

- Special trade (Spezialhandel) : Ausfuhr
- + (plus) Ausfuhr zur Veredelung im Auslande.
- + (plus) Ausfuhr nach Veredelung für ausländische Rechnung.
- + (plus) Ausfuhr von Niederlager.
- + (plus) Durchfuhr.

This laborious computation could not be carried out in an entirely satisfactory manner, because :

- (a) In some cases the classification of goods used in 1913 was not the same as in subsequent years. In particular, the Customs tariff changes in October 1925 made necessary special adjustments, involving the use of monthly trade returns ;

(b) Statistics for transit traffic are published in a summarised form. In several cases there was therefore no alternative to adopting this summarised grouping ;

(c) The grouping used in the transit statistics in 1913 is not always the same as in subsequent years.

Similar difficulties were met with when computing the corresponding *sea-borne* trade of Hamburg by individual commodities :

(a) The German official statistics (*Seeschiffahrt*) for 1913 do not contain the movement of goods (*Güterverkehr*).

(b) It proved impossible to use the *Seeschiffahrt* for the more recent years and the special Hamburg statistic for 1913, in view of the fact that Hamburg is not dealt with separately in the *Seeschiffahrt* statistics, but together with other Elbe seaports ;

(c) Not only is the classification of goods used in the Hamburg statistics (*Hamburgs Handel und Schiffahrt*) different from that used in the German trade and traffic statistics, but it is also at present different from that used in 1913 ;

(d) The Hamburg statistics include the traffic with other German districts. In order to get net figures of Hamburg's trade with foreign countries, it was necessary to deduct the trade with these German districts. But here, again, the list of goods in the tables giving data by countries of origin and destination is not always the same as in the other tables ; and

(e) It is, moreover, different from that used in 1913.

In the light of the above explanations, it is obvious that it proved extremely difficult to make a choice of commodities and to adopt a grouping which :

(a) Would be more or less representative ;

(b) Would be sufficiently comparable between 1913 and the more recent years ; and

(c) Would allow for a comparison between the statistics for Hamburg and those for the German general trade.

The Tables 21 and 22, showing Hamburg's share in German foreign trade, should therefore not be considered as being more than a rough attempt at such an analysis.

Non-maritime traffic : The analysis is based on the assumption that the goods carried toward the German seaports or to Belgium and the Netherlands are being exported. In fact, however, some of the commodities are entirely, some in part, destined for local consumption ; e.g., coal sent to Hamburg is generally consumed on the spot or used as bunker coal.

The statistics of goods carried to and from Hamburg by rail are not uniform. In the German official railway statistics (*Statistik der Güterbewegung*), Hamburg is not dealt with separately, but included with other Elbe seaports under "District 8". The statistics computed by the Hamburg Statistical Department do not always refer to the same territory, "Hamburg" being taken sometimes in a broader and sometimes in a narrower sense. Whereas the Elbe seaports are given in the official railway statistics under the single heading "District 8", the corresponding statistics for the inland water traffic are subdivided into 8a and 8b. Similarly, the figures for the non-maritime traffic of Bremen refer to the Weser seaports, "District 9" for railway traffic and 9a and 9b for water traffic. The corresponding figures representing Emden refer in reality to the Ems seaports ("District 10" in both cases).

The "local" traffic — i.e., the traffic within each district — was ignored in every case. As in the case of Hamburg and Bremen, the statistics of inland navigation consider as "local traffic" the traffic within each of the four districts 8a, 8b, 9a and 9b, their total figures are not comparable with those for railway traffic, where the subdivisions of these districts do not exist. They had therefore to be "corrected" by omitting in each case the traffic between 8a and 8b and the traffic between 9a and 9b. E.g., in order to calculate the quantity of a given commodity received by water by District 8 it was necessary to make five calculations : (1) find the quantity received by District 8a from other districts ; (2) deduct from the figure the receipts from District 8b ; (3) find the quantity received by 8b ; (4) Deduct the goods received from 8a ; and, finally, (5) add the net figures of 8a and 8b.

The traffic with Belgium and the Netherlands was considered as being representative of the traffic with Antwerp and Rotterdam.

Two uniform lists of articles were drawn up — one for goods going towards seaports, whether German or foreign, and the other for goods coming from seaports, so as to include the most important items of the following twenty currents of traffic :

Goods received from :
Goods despatched to :

Elbe seaports		Weser seaports		Ems seaports		Netherlands		Belgium	
By rail	By river	By rail	By river	By rail	By river	By rail	By river	By rail	By river

In all cases, transit traffic has been included in the data shown. In the case of non-maritime consignments to the German seaports, the figures include, in addition to consignments originating in Germany, those coming from abroad. As regards consignments to Belgium or the Netherlands, the figures represent the total of consignments from Germany and of the transit traffic through Germany. A similar method has been utilised for calculating receipts.

* * *

I. MARITIME TRAFFIC.

A. HAMBURG.

Post-war statistics of the shipping movement in German seaports are to some extent misleading, it being evident from a comparison between the movement of ships and the quantities of goods loaded and unloaded that the proportion among ships "with cargo" of those which are not fully loaded is much greater than before the war. Judging from tonnage statistics, the movement in the port of Hamburg appears to be much in excess of pre-war years, ships "with cargo" entered having increased from 13.1 million N.R. tons in 1913 to over 20 millions in 1928, and ships "with cargo" cleared having increased from 10.3 millions to 16.7 millions. But Table 20 shows that the movement of goods was less favourable :

TABLE 20. — HAMBURG : SEA-BORNE CARGO RECEIVED AND DESPATCHED (INCLUDING TRAFFIC WITH GERMANY) *

	Actual figures. Net tons (000's omitted).			Index numbers on the basis 1910-1913.		
	Received	Despatched	Total	Rec.	Desp.	Total
1910	15,079	7,044	22,123	100	100	100
1911	15,717	7,569	23,286			
1912	16,648	8,109	24,757			
1913	16,548	8,910	25,458			
1919	1,837	506	2,343	12	6	10
1920	3,907	1,891	5,798	24	24	24
1921	7,502	3,599	11,101	47	46	46
1922	10,972	5,615	16,587	69	71	69
1923	14,158	6,774	20,932	88	86	88
1924	12,984	6,545	19,529	81	83	82
1925	12,429	6,962	19,391	78	88	81
1926	10,670	10,636	21,306	67	134	89
1927	16,652	8,126	24,778	104	103	104
1928	17,374	9,078	26,400	109	115	111

* The figures, which have been taken from Hamburg statistics, do not exactly agree with the German official figures published in *Seeschiffahrt*.

Owing to a remarkable increase in the quantities of goods received in 1927 and 1928, the figures for those two years exceeded the average pre-war level. Before 1926, the traffic was, however, much below that level.

Reference was made in the introductory remarks to the difficulties of an enquiry into the relative importance of the traffic of various commodities via Hamburg¹. The reservations necessitated by the intricate character of this part of the enquiry should be borne in mind when interpreting the tables below, in which the results for the years 1913 and 1925 to 1927 are set out in parallel columns : (a) Hamburg's seaborne trade with foreign countries ; (b) German general trade, including reparation deliveries. The original figures for Hamburg had to be "corrected" by deducting the traffic with other German districts, which makes them more comparable with the trade figures than those of the preceding table. The figures for general imports and exports have been calculated in the manner described in the introductory remarks. Special attention should be paid to those tables in view of the fact that it is necessary to know the general movement of imports and exports into and from Germany before expressing any judgment on the Rhine navigation and the traffic on rail.

TABLE 21. — HAMBURG : IMPORTS BY SEA OF VARIOUS COMMODITIES COMPARED WITH GERMAN GENERAL IMPORTS.

(a) Imports into Germany via Hamburg (from Abroad).
 (b) Total German Imports (General Trade).
 Tons (000's omitted).

	1913		1925		1926		1927		1913	1925	1926	1927
	(a) Hamburg	(b) Germany	(a) Hamburg	(b) Germany	(a) Hamburg	(b) Germany	(a) Hamburg	(b) Germany	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)
Rye	16	374	322	728	35	334	557	963	4	14	10	58
Wheat	686	2,967	604	2,259	759	2,746	1,151	3,526	23	27	28	33
Barley	1,239	3,368	375	1,100	587	1,882	633	2,223	37	34	31	28
Oats	47	626	192	652	61	420	76	428	8	29	15	18
Maize	544	1,257	359	710	519	878	1,525	2,691	43	51	59	57
Rice	329	499	455	567	286	434	353	479	66	80	66	74
Flour (rye, wheat)	79	127	316	653	231	336	200	232	62	48	69	86
Oranges	141	181	131	263	91	225	92	239	78	50	40	38
Cocoa, coffee, tea	280	391	219	298	211	328	273	378	72	73	64	72
Tobacco, raw	49	150	60	172	54	154	50	172	33	35	35	29
Fats, animal	158	306	165	274	185	310	194	340	52	60	60	57
Nuts and seeds	1,066	*1,821	1,001	*1,549	1,081	*1,696	1,330	1,957	59	65	64	68
Cotton (and waste)	174	873	117	685	65	515	147	856	20	17	13	17
Wool	128	246	81	208	87	206	120	288	52	39	42	42
Skins and hides	174	355	166	246	148	222	206	325	49	57	67	63
Mineral oils	531	1,690	905	1,560	1,015	1,817	1,388	2,119	31	58	56	66
Coal	4,224	10,869	2,252	9,510	820	9,274	2,047	7,725	39	24	9	26
Pyrites	247	1,126	64	819	126	872	172	1,060	22	8	14	16
Other ores	246	17,442	214	14,088	263	11,401	258	19,769	1	2	2	1
Iron products and machines	295	1,336	191	1,905	132	1,753	272	3,856	22	10	8	7
Timber, wood	**526	7,972	**386	8,073	**259	6,734	**451	10,090	7	5	4	5
Pulp	149	215	96	237	72	238	93	240	69	41	30	39
Paper and cardboard	77	153	151	206	160	246	227	247	50	73	65	92
Oil cakes, bran, etc.	817	2,762	477	814	555	1,148	821	1,564	30	59	48	52
Chemicals, fertilisers	1,255	2,735	287	1,845	238	2,227	344	2,860	16	16	11	12
Others	2,558	21,578	2,138	14,015	2,007	13,226	3,090	17,592	12	15	15	18
All goods	16,035	81,419	11,724	63,436	10,047	59,622	16,080	82,219	19.7	18.5	16.9	19.6
Excluding coal	11,811	70,550	9,472	53,928	9,227	50,348	14,033	74,494	16.7	17.6	18.3	18.8

* Excluding transit traffic.

** Including imports from other German districts.

¹ Since the report was drafted, the volume of Hamburg's *Handel und Schiffahrt* for 1927 was published. This volume contains, in addition to data for 1927, the corresponding figures for 1913. There is thus at present more uniformity in these statistics. But as the traffic with the various German districts for 1913 has not been published according to the present classification, the calculated data for 1913, exclusive of traffic with German districts, could not be checked with those new figures. It would, however, appear that the figures given in Table 21 for iron products imported via Hamburg is too high.

TABLE 22. — HAMBURG : EXPORTS BY SEA OF VARIOUS COMMODITIES COMPARED WITH GERMAN EXPORTS
(GENERAL TRADE, INCLUDING REPARATION DELIVERIES).

(a) Exports from Germany via Hamburg (to Foreign Countries).
(b) Total German Exports (General Trade, including Reparation Deliveries).

Tons (000's omitted).

	1913		1925		1926		1927		1913	1925	1926	1927
	(a) Ham- burg	(b) Ger- many	(a) Ham- burg	(b) Ger- many	(a) Ham- burg	(b) Ger- many	(a) Ham- burg	(b) Ger- many	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)
Rye	44	946	186	549	32	371	166	288	5	34	9	58
Wheat	319	946	244	775	244	868	198	934	34	31	28	21
Barley	60	111	43	148	33	113	87	143	54	29	29	61
Maize and malt	173	348	127	214	147	243	339	618	50	59	60	55
Rice	191	253	211	271	171	194	152	181	75	78	88	84
Sugar	1,006	1,614	468	682	626	880	339	647	62	69	71	52
Flour (rye, wheat)	205	631	89	441	53	323	53	271	32	20	16	20
Cotton (and waste)	28	366	13	233	13	239	12	321	8	6	5	4
Skins and hides	68	157	39	83	47	117	53	127	43	47	40	42
Mineral oils	125	332	82	331	80	430	95	457	38	25	19	21
Coal	28	34,870	5	24,369	2,564	44,269	6	29,228	—	—	6	—
Coke	167	6,526	7	7,622	24	10,429	1	8,891	3	0.1	0.2	—
Lignite	—	139	2	488	259	901	11	98	—	0.4	29	11
Iron products and machines	791	7,744	622	4,438	800	6,334	753	5,882	10	14	13	13
Timber	*203	1,302	*222	1,568	*183	2,094	*249	1,987	16	14	9	13
Cement	497	1,242	342	873	295	1,032	347	1,255	40	39	29	28
Glass	101	322	118	238	144	287	128	274	31	50	50	47
Pulp	*187	347	134	306	125	378	103	304	54	44	33	34
Paper and cardboard	203	451	403	611	503	872	451	686	45	66	58	66
Oilcakes, bran, etc.	62	387	300	691	348	757	312	592	16	43	46	53
Chemicals, fertilisers, etc.	*1,265	4,212	999	3,602	1,254	3,775	1,112	4,400	30	28	33	25
Others	2,058	18,950	1,704	14,113	1,841	16,102	2,067	15,931	11	12	11	13
All goods	7,781	82,196	6,360	62,646	9,786	91,008	7,034	73,515	9.5	10.2	10.8	9.6
Less coal and coke	7,586	40,800	6,348	30,655	7,198	36,310	7,027	35,396	18.6	20.7	19.8	19.9

* Including exports to other parts of Germany.

The changes in the trade movement via Hamburg compared with those of German general trade are given in the form of index numbers on the basis of 1913 in Table 23 :

TABLE 23. — COMPARISON BETWEEN THE FOREIGN TRADE VIA HAMBURG AND THE GERMAN GENERAL TRADE
(INCLUDING REPARATIONS DELIVERIES).

Index Numbers based on 1913.

	Imports		Exports	
	via Hamburg	Total Germany	via Hamburg	Total Germany
1913	100	100	100	100
1925	73	78	82	76
1926	63	73	126	111
1927	100	101	90	89
(1928)	(104)	(98)	(100)	(85)

No figures are yet available for the German general trade in 1928. The figures for that year, given in Table 23, were calculated from the fluctuations of the special trade, which showed, as compared with the preceding year, a decrease of 3.1 per cent for imports and 4 per cent for exports; but this special trade is not necessarily representative of the general trade.

Data for Hamburg's trade with foreign countries in 1927 are not available either, but the data given in Table 20, including the traffic with other German provinces, show for the inward movement an increase of 4 per cent. and for the outward movement an increase of 11.1 per cent. The figures for 1928 entered in the table above represent rough estimates.

As the slump in the relative figure for imports via Hamburg in 1926 was due to the falling-off of coal imports during the British coal stoppage, it might be stated that, as regards the import trade, Hamburg has maintained the relative importance it had in 1913.

The export movement via Hamburg has had the tendency of outstripping the movement of the German exports, particularly when taking into account that these German exports include big quantities of reparation deliveries — chiefly coal — which do not enter into exports via Hamburg.

As a whole, Hamburg has maintained its relative importance as Germany's chief seaport and, if we take the estimated 1928 data, it may be stated with some caution that its relative importance has possibly increased in 1928.

As regards the inward movement via Hamburg of some more important commodities given in Table 21, there was an increase in the relative importance of cereals, animal fats, oil, nuts and seeds, skins and hides, mineral oils, paper and fodder, and a decrease in the case of oranges, cotton, wool, coal, ores, iron products (although, as pointed out above, the figure given for 1913 may be exaggerated), pulp and fertilisers.

In the case of exports — Table 22 — there was an increase in the case of some cereals, iron products, glass, paper and fodder, and a decrease for sugar, flour, cotton, skins and hides, cement and pulp. The other commodities remained constant or showed an irregular movement.

B. BREMEN AND OTHER WESER SEAPORTS.¹

As in the case of Hamburg, statistics of shipping movement in the various Weser seaports are not representative of their commercial movement. Whilst the tonnage of all ships which entered the various Weser seaports increased from 5.3 millions in 1913 to 8.1 millions in 1927, the cargo received was in that year smaller than in 1913.

Table 24 shows for the three Bremen ports — Bremen, Bremerhaven and Vegesack — the sea-borne cargo received and despatched. The figures for 1927 and 1928 represent our estimates, 1927 being calculated approximately from monthly returns covering only the most important commodities, and 1928 from preliminary monthly statistics of two ports, Bremen and Bremerhaven.

¹ This chapter refers, in addition to the actual port of Bremen, also to other ports, such as Bremerhaven, Vegesack, Brake, Nordenham, etc., important quantities of goods entering into Bremen's foreign trade being loaded and unloaded in those ports.

TABLE 24. — BREMEN PORTS : OVERSEA CARGO RECEIVED AND DESPATCHED
(INCLUDING TRAFFIC WITH GERMANY).

	(a) Tons (000's omitted)			(b) Percentages of 1913.		
	Received	Despatched	Total	Received	Despatched	Total
1913	4,368	2,799	7,167	100	100	100
1920	948	420	1,368	22	15	19
1921	1,964	567	2,531	45	20	35
1922	3,099	1,080	4,179	71	39	58
1923	4,328	1,143	5,471	99	41	76
1924	2,775	1,469	4,244	64	52	59
1925	2,838	1,460	4,298	65	52	60
1926	2,476	2,959	5,435	57	106	76
1927	(3,960)	(1,630)	(5,590)	(91)	(58)	(78)
1928	(4,000)	(1,950)	(5,950)	(92)	(70)	(83)

The above figures show that the recovery of traffic of the Bremen ports was less pronounced than in the case of Hamburg. A marked improvement took place in the quantities received in 1927 and 1928, but this improvement did not keep pace with the increase in German import trade. On the whole, it may therefore be stated that the rôle of Bremen in German foreign trade is at present smaller than before the war.

Tables 25 and 26 show the oversea trade of Bremen for some important articles compared with German general foreign trade. The figures for Bremen include the traffic with other German districts ; those for Germany are the same as used in the Section on Hamburg. As detailed Bremen statistics were not available, the tables below are not sufficiently complete to give an adequate idea of the relative changes which occurred in the traffic of commodities.

TABLE 25. — BREMEN : IMPORTS BY SEA OF VARIOUS COMMODITIES COMPARED WITH GERMAN IMPORTS
(GENERAL TRADE).

(a) Imports into Germany via Bremen (including Receipts from other German Districts).
(b) Total German Imports (General Trade).

A. Absolute Figures. Tons (000's omitted).

	1913		1925		1926		1927	
	(a) Bremen	(b) Germany	(a) Bremen	(b) Germany	(a) Bremen	(b) Germany	(a) Bremen	(b) Germany
Cotton	514	873	482	685	381	515	632	856
Wool	83	246	47	208	57	206	94	288
Cereals	1,062	8,592	729	5,449	805	6,260	1,268	9,831
Timber	—	7,972	376	8,073	335	6,734	561	10,090
Flour	39	127	54	653	49	336	50	232
Rice	152	499	78	567	55	434	71	479
Oilseeds and nuts	211	(1,821)	127	(1,549)	119	(1,696)	130	1,957
Iron ore	220	14,734	146	11,630	78	9,608	197	17,890
Tobacco	50	150	36	172	31	154	49	172
Pulp	—	215	39	237	44	238	69	240
Coal . . . . .	.	.	221	9,510	79	9,274	216	7,725
Mineral oils . . . . .	.	.	42	1,560	47	1,817	45	2,119
Oilcakes, bran . . . . .	.	.	43	814	42	1,148	87	1,564
Total imports	4,368	81,419	2,838	63,436	2,476	59,622	(3,960)	82,219
of which from Germany	654		176		.		.	

B. Percentages.

	1913	1925	1926	1927
	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)
Cotton	58.9	70.4	74.0	73.8
Wool	33.7	22.6	27.7	32.6
Cereals	12.4	13.4	12.9	12.9
Timber, wood	—	4.7	5.0	5.6
Flour	30.7	8.3	14.6	21.6
Rice	30.5	13.8	12.7	14.8
Oilseeds and nuts	11.6	8.2	7.0	6.6
Iron ore	1.5	1.3	0.8	1.1
Tobacco	33.3	20.9	20.1	28.5
Pulp	—	16.5	18.5	28.8
Coal . . . . .	.	2.3	0.9	2.8
Mineral oils . . . . .	.	2.7	2.6	2.1
Oilcakes, bran . . . . .	.	5.3	3.7	5.6
Total imports	5.4	4.5	4.2	4.8

TABLE 26. — BREMEN : EXPORTS BY SEA OF VARIOUS COMMODITIES COMPARED WITH GERMAN EXPORTS. (GENERAL TRADE, INCLUDING REPARATION DELIVERIES).

(a) Exports via Bremen.
 (b) Total German Exports (General Trade).

A. Absolute figures. Tons (000's omitted).

	1913		1925		1926		1927	
	(a) Bremen	(b) Germany	(a) Bremen	(b) Germany	(a) Bremen	(b) Germany	(a) Bremen	(b) Germany
Metals	236		215					
Fertilisers	315	4,212	110	3,602	83	3,775	72	4,400
Coal	705	34,870	254	24,369	1,114	44,269	436	29,228
Cotton	61	366	15	233	22	239	28	321
Glass	40	322	20	238	—	287	—	274
Cement	—	1,242	117	873	165	1,032	180	1,255
Pulp	—	347	27	306	44	378	44	304
Total exports	2,799	82,196	1,460	62,646	2,959	91,008	1,630	73,515
of which to Germany	542		104		.		.	
Total exports, less Coal	2,094	47,326	1,206	38,277	1,845	46,739	1,194	44,287

B. Percentages.

	1913	1925	1926	1927
	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)	(a) as % of (b)
Fertilisers	7.5	3.1	2.2	1.6
Coal	2.0	1.0	2.5	1.5
Cotton	16.7	6.4	9.2	8.7
Glass	12.4	8.4	—	—
Cement	—	13.4	16.0	14.3
Pulp	—	8.8	11.6	14.5
Total exports	3.4	2.3	3.3	2.2
Total, less Coal	4.4	3.2	3.9	2.7

C. ALL GERMAN SEAPORTS.

The traffic of the ports of Hamburg and Bremen, analysed in the preceding paragraphs, constitutes about three-quarters of the total traffic of all German North Sea ports and over 60 per cent. of all German seaports. Their relative importance was somewhat reduced in 1926, owing to the exceptional shipments of coal from some secondary ports of the North Sea and from ports of the Baltic Sea, as shown in Table 27 which gives the percentages of the receipts and consignments in the different ports or groups of ports as compared with the total.

TABLE 27. — RELATIVE IMPORTANCE OF THE SEA-BORNE TRAFFIC OF HAMBURG, BREMEN, AND EMDEN AS COMPARED WITH TOTAL TRAFFIC.

	Receipts			Consignments		
	1925	1926	1927	1925	1926	1927
Hamburg	50	50	51	57	43	54
Bremen	11	12	12	10	11	11
Emden	8	9	8	9	8	8
Other North Sea ports	8	8	} 29	4	10	} 37
Other	23	21		20	28	
Total	100%	100%	100%	100%	100%	100%

The importance of all the German seaports in the general trade of Germany is given in Table 28.

TABLE 28. — FOREIGN SEA-BORNE TRADE OF GERMAN SEAPORTS COMPARED WITH GERMAN GENERAL TRADE (INCLUDING REPARATIONS DELIVERIES).

A. *Absolute figures. Tons (000,000's omitted).*

	<i>Imports</i>		<i>Exports</i>		<i>Total</i>	
	(a) German seaports	(b) Total Germany	(a) German seaports	(b) Total Germany	(a) German seaports	(b) Total Germany
1913	37	82	19	82	56	164
1913 (*)	35		19		54	
1922	.	61	.	.	34	.
1923	31	.	10	.	41	.
1924	25	.	12	.	37	.
1925	25	64	13	63	39	127
1926	22	60	24	91	46	151
1927	32	82	15	74	47	156

(*) Present territory.

B. *Relative Figures : Traffic of the German Seaports as Percentage of German General Trade.*

	<i>Imports</i>	<i>Exports</i>	<i>Total</i>
1913	45.1	23.2	34.1
1925	39.1	20.6	30.7
1926	36.7	26.4	30.5
1927	39.0	20.3	30.1

The calculations above show that, when taking into account the changes in the magnitude of the German imports, the relative importance of the German seaports has been in the last couple of years somewhat less than in 1913. As regards export trade, its relative importance is likewise somewhat lower, but if the reparations deliveries — chiefly coal — which do not affect the German seaports were ignored, the figures would be somewhat higher than in 1913. As regards total traffic, the relative importance of the seaports is at present somewhat lower than in 1913, but, if reparations deliveries are ignored, the share of these ports in Germany's foreign trade is about the same as in 1913.

II. NON-MARITIME TRAFFIC.

A. GERMAN SEAPORTS.

(a) *Hamburg and Other Elbe Seaports.*

The amount of goods despatched and received from Hamburg by rail was, according to Hamburg statistics, in 1913 and in 1925-1928 as follows :

TABLE 29. — HAMBURG : CONSIGNMENTS AND RECEIPTS BY RAIL.
Tons (000's omitted).

	Despatched (Inward Movement)			Received (Outward Movement)		
	"Stück- güter"	Other	Total	"Stück- güter"	Other	Total
1913	.	.	2,615	.	.	5,245
1925	373	2,946	3,319	425	3,578	4,003
1926	331	2,479	2,810	381	8,201	8,582
1927	(404)	(3,454)	3,879*	(740)	(5,110)	5,542*
1928	378	3,512	3,890	552	4,745	5,297

* Revised figures.

The reduction of consignments in 1926 and the exceptional rise in arrivals were due chiefly to the falling-off of imports of coal and to exports of coal resulting from the British coal dispute.

Table 30 gives the corresponding traffic by water :

TABLE 30. — HAMBURG : CONSIGNMENTS AND RECEIPTS BY INLAND WATERS.
Gross tons (000's omitted).

	Despatched			Received		
	To Upper Elbe	To Lower Elbe	Total	From Upper Elbe	From Lower Elbe	Total
1910	6,256	1,251	7,507	4,113	966	5,079
1911	4,456	1,399	5,855	2,908	906	3,814
1912	5,794	1,339	7,133	4,254	832	5,086
1913	5,762	1,486	7,248	4,650	732	5,382
1922	2,157	261	2,418	2,177	261	2,438
1923	2,061	161	2,222	2,364	210	2,574
1924	2,786	242	3,028	2,847	243	3,090
1925	3,091	214	3,305	3,169	265	3,434
1926	3,118	225	3,343	4,594	373	4,967
1927	4,633	477	5,110	3,478	428	3,906
1928	4,419	324	4,743	3,226	419	3,645

The "Lower Elbe" referred to in this table represents districts north of Hamburg. Its river traffic shows a heavy fall as compared with pre-war years. The figures for the "Upper Elbe" include the whole water traffic passing through the Elbe to other basins.

The data may be summarised in Table 31, which contains also figures for rail traffic for several years not given in the preceding tables :

TABLE 31. — HAMBURG : CONSIGNMENTS AND RECEIPTS BY RAIL AND BY INLAND WATERS.
Tons (000's omitted).

	Despatched (inward)		Received (outward)		Total		Grand Total
	Rail	River	Rail	River	Rail	River	
1910 . . .	2,252	7,507	4,463	5,079	6,715	12,586	19,301
1911 . . .	3,007	5,855	4,912	3,814	7,919	9,669	17,588
1912 . . .	3,145	7,133	5,292	5,086	8,437	12,219	20,656
1913 . . .	2,615	7,248	5,245	5,382	7,860	12,630	20,490
1922 . . .	.	2,418	.	2,438	.	4,856	.
1923 . . .	.	2,222	.	2,574	.	4,796	.
1924 . . .	.	3,028	.	3,090	.	6,118	.
1925 . . .	3,319	3,305	4,003	3,434	7,322	6,739	14,061
1926 . . .	2,810	3,343	8,582	4,967	11,391	8,310	19,701
1927 . . .	3,879	5,110	5,542	3,906	9,708	9,016	18,724
1928 . . .	3,890	4,743	5,297	3,645	9,187	8,388	17,575

It would appear from the above tables that the inland water traffic of Hamburg has suffered greatly as compared with the rail traffic ; on the other hand, there seems to have been a marked, although possibly temporary, improvement in 1927. As all the figures above include traffic in any direction, the traffic with places downstream is included. If one considers the district of the Elbe seaports as a unit, this traffic partakes of a local character. This local traffic was, as shown in Table 30 above, very high in the case of the pre-war water traffic (Lower Elbe) but has decreased considerably since. The water traffic excluding this local traffic has thus decreased less than Table 31 might have suggested.

Table 32, calculated from the actual figures given in Tables 29 and 31, shows the changes since 1910 in (a) Hamburg's sea-borne trade, (b) Hamburg's non-maritime trade by rail, and (c) its non-maritime trade by water, the figures being expressed as percentages of the average of the years 1910-1913.

TABLE 32. — HAMBURG'S TRADE BY SEA AND BY LAND.
(Index numbers based on 1910-1913.)

	Sea-borne Trade.			Non-maritime Trade.					
	Received (inward)	Despatched (outward)	Total	By rail			By water.		
				Despatched (inward)	Received (outward)	Total	Despatched (inward)	Received (outward)	Total
1910-1913 .	100	100	100	100	100	100	100	100	100
1919 .	12	6	10	.	.	.	.	.	.
1920 .	24	24	24	.	.	.	.	.	.
1921 .	47	46	46	.	.	.	.	.	.
1922 .	69	71	69	.	.	.	35	50	41
1923 .	88	86	88	.	.	.	32	53	41
1924 .	81	83	82	.	.	.	44	64	52
1925 .	78	88	81	120	80	95	48	71	57
1926 .	67	134	89	102	172	147	48	103	71
1927 .	104	103	104	141	111	122	74	81	77
1928 .	109	115	111	141	106	119	68	75	71

The table shows in a striking way that, as regards both import and export movements, the traffic by rail has increased at the expense of the water traffic.

Whereas the preceding tables were worked out from Hamburg statistics and referred to Hamburg only, the tables below refer to all the Elbe seaports, among which Hamburg is, however, by far the most important.

Table 33 shows for the Elbe seaports consignments and receipts according to the German official statistics (*G.* and *B.*), *i.e.*, District 8 in the case of railways and "corrected" figures for the total of Districts *8a* and *8b* in the case of waterways. (For the meaning of this "correction", see Introductory remarks.)

TABLE 33. — ELBE SEAPORTS.
Consignments and Receipts by Rail and River.
Tons (000's omitted).

	Despatched (Inward Movement)		Received (Outward Movement)		Total	
	Rail	River	Rail	River	Rail	River
1911	4,330	.	5,916	.	10,246	.
1912	4,523	6,315	6,488	5,858	11,011	12,173
1913	3,916	6,674	6,502	5,694	10,418	12,368
1922	5,973	2,308	6,191	2,667	12,164	4,975
1923	8,151	2,324	4,200	2,728	12,351	5,052
1924	4,721	3,436	4,106	3,269	8,827	6,705
1925	4,075	4,004	5,300	3,710	9,375	7,714
1926	3,771	4,166	11,080	5,472	14,851	9,638
1927	4,985	.	7,200	.	12,185	.

(Sources : *G.* ; *B.*)

The above table, although it differs from the preceding tables inasmuch as it refers to all Elbe seaports and excludes the local traffic between these ports, agrees well with them as regards the general trend. It suggests that, whereas the consignments by rail showed no decrease, the consignments by water fell by some 40 per cent. As regards receipts, the traffic by rail decreased, from 1913 to 1925, by a little less than 20 per cent., but the reduction in the water traffic was much more considerable, amounting to 35 per cent. In 1926, the railway traffic shared to a much greater extent than the water traffic in the exceptional shipments of coal.

Tables 34 and 35, computed from *B.* and *G.* show for the years 1913, 1925 and 1926 the direction of traffic by rail and river between the Elbe seaports and a selected number of other districts. The figures for water traffic have been "corrected" by excluding the local traffic between the two Sub-Districts *8a* and *8b*. In addition to the most important districts, the tables contain South German provinces.

TABLE 34. — NON-MARITIME TRAFFIC OF THE ELBE SEAPORTS.
Consignments of Goods by Rail and River according to Destination (Inward Movement).

Excluding local traffic. Tons (000's omitted).

Despatched to :	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Schleswig-Holstein	989	803	963	944	848	318	805	353
Oldenburg	1,067	134	918	141	619	56	615	56
Berlin	162	2,239	160	2,251	189	1,316	160	1,372
Brandenburg	192	252	160	383	112	136	113	204
Upper Silesia (excluding Breslau).	28	105	22	142	34	132	23	112
Breslau	18	225	17	223	28	56	25	82
Lower Silesia	62	25	43	32	61	35	43	36
Magdeburg	225	498	125	517	111	671	86	745
Thüringen	168	153	105	169	147	74	128	88
Saxony	225	915	157	923	256	551	196	540
Hessen-Nassau, Frankfurt	58	—	54	—	62	—	55	—
Ruhr in Westphalia	44	5	44	1	80	—	61	1
Ruhr in Rhineland	48	—	49	—	62	—	56	—
Westphalia	75	2	68	2	87	—	75	—
Baden (incl. Mannheim) . .	16	—	17	—	47	2	39	—
Württemberg	18	—	16	—	61	—	49	—
South Bavaria	29	—	27	—	94	—	132	—
North Bavaria	40	—	35	—	73	—	54	—
Other German districts . . .	853	180	758	255	522	92	538	113
Total Germany	4,317	5,536	3,738	5,983	3,493	3,439	3,253	3,702
Upper Silesia, Polish	—	—	—	—	31	—	21	—
Czechoslovakia	*43	*779	*42	*691	293	564	249	463
Other foreign countries . . .	163	—	136	—	258	1	248	1
Grand Total	4,523	6,315	3,916	6,674	4,075	4,004	3,771	4,166

* Bohemia.

(Sources : G ; B).

TABLE 35. — NON-MARITIME TRAFFIC OF THE ELBE SEAPORTS.
Receipts of Goods by Rail and River according to Origin (Outward Movement).
 Excluding Local Traffic. Tons (000's omitted).

Received from :	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Schleswig-Holstein	427	1,074	445	658	278	460	318	549
Oldenburg	908	290	818	233	1,096	119	1,007	118
Berlin	119	251	118	234	75	245	73	354
Brandenburg	88	239	82	275	224	218	235	351
Upper Silesia (excluding Breslau).	107	9	36	12	30	72	409	159
Breslau	4	136	4	144	7	53	6	145
Lower Silesia	44	52	38	76	73	27	238	70
Magdeburg	176	2,224	143	2,385	159	1,164	150	1,442
Thüringen	129	191	139	208	256	115	394	126
Saxony	150	464	147	461	196	441	502	642
Hessen-Nassau, Frankfurt.	62	—	57	—	76	—	98	—
Ruhr in Westphalia	2,587	—	2,824	—	1,329	—	2,871	1
Ruhr in Rhineland	620	—	550	—	288	—	468	—
Westphalia	113	—	143	—	202	—	342	—
Baden (incl. Mannheim) . .	31	—	31	—	38	1	38	—
Württemberg	21	—	22	—	33	—	36	—
South Bavaria	18	—	18	—	64	—	138	—
North Bavaria	62	—	61	—	88	—	92	—
Other German districts . . .	643	229	666	237	508	137	589	151
Total Germany	6,309	5,159	6,342	4,923	5,020	3,052	8,004	4,108
Upper Silesia, Polish	—	—	—	—	25	—	1,826	—
Czechoslovakia	* 47	* 699	* 48	* 771	118	655	976	1,351
Others	132	—	112	—	137	3	274	13
Grand Total	6,488	5,858	6,502	5,694	5,300	3,710	11,080	5,472

* Bohemia.

(Sources : G. ; B.)

Tables 34 and 35 show that the railway traffic between Elbe seaports and South Germany, although still not very important, is increasing.

Table 36 shows the corresponding figures for traffic between the Elbe seaports and foreign countries according to the boundaries of 1913, the traffic from or to former German territories having been deducted. This table may be considered as representing in a more or less comparable manner the transit traffic of Hamburg before and after the war.

TABLE 36. — NON-MARITIME TRANSIT TRAFFIC OF THE ELBE SEAPORTS.
Consignments to and Receipts from Foreign Countries according to the 1913 Boundaries (Transit Traffic).
 Tons (000's omitted).

	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Consignments	207	779	178	691	533	564	482	463
Receipts	179	699	159	771	244	655	1,238	1,351
Total traffic	386	1,478	337	1,462	777	1,219	1,720	1,814

The table shows that, while the river before the war carried about four-fifths of the transit traffic of Hamburg, this proportion had in 1925 fallen to about three-fifths and in 1926 to little more than half.

The tables below show the non-maritime traffic from and to the Elbe seaports according to commodities. (For the choice of commodities, see Introductory remarks.)

TABLE 37. — NON-MARITIME TRADE OF THE ELBE SEAPORTS.
*Consignments of Various Goods by Rail and River to and across Germany (Inward Movement).*¹
 Tons (000's omitted).

Despatched	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Cotton	66	57	72	61	79	25	54	15
Wool	64	26	67	22	42	12	39	15
Iron goods :								
Pig-iron	6	143	5	78	27	50	15	30
Iron bars and sheets scrap	55	124	50	91	111	30	82	36
Rails and sleepers . . .	9	3	17	3	35	3	105	5
Machinery	68	19	65	26	44	4	44	7
Other	29	10	30	10	25	3	21	1
Total iron.	167	299	167	208	242	90	267	79
Iron ore	13	9	6	9	12	30	2	16
Pyrites	—	229	—	233	19	213	18	220
Other ores	77	81	71	102	39	76	23	79
Total ores	90	319	77	344	70	319	43	315
Earths	69	96	93	83	128	103	149	127
Rye	2	22	2	11	40	125	2	16
Wheat	3	202	4	205	34	232	62	316
Barley	221	354	201	467	39	166	61	270
Oats	8	45	5	15	41	114	7	37
Maize	85	257	53	230	43	101	47	149
Flour	76	112	80	115	143	156	109	198
Rice and rice flour . . .	99	72	51	86	79	48	53	40
Potatoes	10	—	6	—	8	—	8	—
Sugar	1	23	2	38	6	18	4	11
Coffee, cocoa, tea . . .	28	62	33	71	58	29	44	29
Animal fats and oils . . .	125	174	118	173	258	108	250	134
Tobacco	11	7	9	12	19	12	17	16
Oilseeds	7	207	5	253	11	100	17	142
Skins and hides	62	30	75	34	94	20	75	18
Oilcakes, bran	857	101	617	179	412	57	502	61
Timber, wood	131	165	155	165	161	83	108	46
Mineral Oils	101	264	88	225	228	250	278	368
Chemicals	30	69	33	72	29	28	26	26
Fertilisers	575	365	474	409	111	202	88	205
Stones	142	90	141	85	57	27	41	31
Coal and coke	341	1,997	282	2,185	346	807	205	707
Peat and charcoal	1	—	1	—	1	—	—	—
Tar and asphalt	29	131	30	119	34	65	51	76
Other goods	1,122	769	975	807	1,262	707	1,164	719
All goods	4,523	6,315	3,916	6,674	4,075	4,004	3,771	4,166

¹ The corresponding figures for Bremen are given in Table 42 below.

TABLE 38. — NON-MARITIME TRADE OF THE ELBE SEAPORTS.

Receipts of Various Goods by Rail and River from and across Germany (Outward Movement).¹

Tons (000's omitted).

Received	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Iron :								
Pig-iron	15	1	19	3	9	11	10	29
Iron bars and sheets . . .	367	12	362	15	158	47	165	85
Rails and sleepers	60	2	73	3	107	5	84	6
Machinery	179	9	185	9	183	39	160	43
Other	320	37	339	35	262	59	292	64
Total iron	941	61	978	65	719	161	711	227
Zinc, crude	17	7	17	6	10	11	21	24
Earths	180	1,312	203	800	196	421	174	472
Earthenware, China	47	23	51	25	64	15	71	17
Cement	179	444	100	410	113	245	110	215
Rye	13	107	12	124	13	24	14	83
Wheat	3	172	8	257	22	91	8	106
Flour	43	86	41	120	17	66	13	122
Potatoes	133	2	199	7	240	3	161	3
Sugar	84	642	79	1,066	11	492	19	817
Salt	60	123	46	139	88	126	117	162
Animal fats and oils	40	28	38	18	57	7	62	9
Timber, wood	154	197	139	196	169	209	198	159
Glass and glassware	95	54	81	55	76	85	93	103
Paper	52	135	47	165	90	213	93	263
Mineral oils	43	127	28	96	41	7	28	8
Sulphuric acid	7	7	7	7	7	12	4	13
Other chemicals	63	127	66	135	90	151	111	155
Fertilisers	102	911	83	967	213	526	294	631
Stones	168	573	170	411	234	183	299	240
Coal and coke	2,944	32	3,065	10	1,591	68	6,808	534
Lignite	110	152	95	122	296	188	604	590
Peat and charcoal	73	6	14	5	22	1	13	1
Tar and asphalt	31	11	30	10	20	5	17	6
Other goods	906	519	905	478	901	400	1,037	512
All goods	6,488	5,858	6,502	5,694	5,300	3,710	11,080	5,472

¹ Corresponding figures for Bremen are given in Table 43 below.

In the case of goods despatched from the Elbe seaports to and across Germany, there was a marked increase in the relative importance of the quantities of fertilisers and of barley carried by inland waters, although the absolute figures show a reduction. In practically all other cases, the importance of the water traffic has gone down (ironware, timber, fats and oils, mineral oils and coal).

As regards goods received, conditions were less uniform : there was a marked decrease in the water traffic of cement, fertilisers, earths, timber, mineral oils, salt and stones, but an increase in the case of ironware and glass. As in some other cases, the quantities carried either by rail or water are unimportant, it is difficult to draw any definite conclusion

with regard to them. It would, however, appear that there was in most cases a relative fall in the water traffic.

A further analysis of the statistics by districts and by commodities, which it would have been impossible to reproduce in sufficient detail, has been made in order to show whether the respective changes in the traffic by rail and water from and to the Elbe seaports were due to changes relating to certain districts or whether there has been a more or less uniform tendency in any direction.

An analysis of the consignments from Hamburg shows that, whereas the consignments by rail increased at the expense of waterways, as compared with the previous years, there was no uniform tendency, as might have been expected. Consignments by rail of pig-iron and of scrap-iron have become more important, not only owing to an increase of consignments into districts which used to receive important quantities of iron before the war, but also owing to consignments to a number of new districts, both German and foreign. On the other hand, the consignments by rail of boilers and machinery, which constitute an important item, show a heavy general reduction. As regards fats and oils, the tendency was uniform: a general increase of consignments by rail, both to Germany and abroad, and a corresponding decrease of consignments by water. In 1926, the water traffic recovered in part, but its importance remains much smaller than previously. The important rail traffic of fats and oils to South Germany is worth noting. As regards mineral oils, there was a general increase in the rail traffic, particularly to South Germany and foreign countries, such as Switzerland, Austria, Czechoslovakia. Finally, the decrease of water traffic of timber was likewise general.

An analysis of the receipts of goods by Hamburg shows that, whereas there was no uniform tendency in the falling-off of the water traffic of cement, there was, in the case of fertilisers and stones, a definite general tendency for an increase in the rail traffic and a decrease in the water traffic. Here, again, the situation of the water traffic was slightly better in 1926 than in 1925. There was also a general increase in the quantities of salt and of paper carried by rail, the latter being sent to Hamburg by rail even from South Germany, while no such consignments were made before the war. On the other hand, the quantities of ironware carried to Hamburg by water showed a uniform tendency to increase, whereas the rail traffic showed a corresponding uniform decrease. Moreover, the consignments of ironware from the Ruhr districts to Hamburg by water show an important increase, with a corresponding decrease in the rail traffic.

The above analysis leads to the conclusion that the relative loss of the direct water traffic to and from Hamburg is as a rule not due to territorial changes or to changes affecting one single district. It appears, on the contrary, to be general, affecting the majority of districts. It should, however, not be forgotten that a certain proportion of the rail traffic is undoubtedly the result of a transshipment traffic. Thus the increase in the rail traffic of certain commodities between Hamburg and the Hanover-Oldenburg districts points towards the probability of some changes in the combined traffic.

(3) BREMEN AND OTHER WESER SEAPORTS.

Tables 39 and 40 (computed from *B.* and *G.*) show, for the years 1912, 1913, 1925 and 1926, the direction of traffic by rail and river between the Weser seaports and a selected number of districts.

The figures for the water traffic have been "corrected" in the same way as those for Hamburg.

TABLE 39. — NON-MARITIME TRADE OF THE WESER SEAPORTS.

Consignments of Goods by Rail and River according to Destination (Inward Movement).

Tons (000's omitted).

Goods despatched to :	1912		1913		1925		1926	
	By rail	By river	By rail	By river	By rail	By river	By rail	By river
Oldenburg, Hanover	1,583	215	1,675	237	914	111	1,004	115
Upper Silesia excl. Breslau	3	—	6	—	—	—	—	—
Thuringen, etc.	56	—	51	—	34	—	30	—
Ruhr in Westphalia	44	5	54	2	44	50	35	41
Ruhr in Rhineland	24	—	27	—	49	—	32	—
Westphalia	292	130	297	151	233	111	197	130
Rhine, left side	70	6	80	5	45	8	46	16
Baden, Mannheim	24	—	25	—	27	—	23	1
Württemberg	34	—	33	—	33	—	30	—
South Bavaria	45	—	44	—	47	—	49	—
North Bavaria	43	—	38	—	44	—	37	—
Other German districts . . .	497	26	519	20	374	33	343	28
Total Germany	2,715	382	2,849	415	1,844	313	1,826	331
Upper Silesia, Polish	—	—	—	—	3	—	3	—
Czechoslovakia.	* 92	—	* 83	—	103	—	102	—
Others	115	—	113	—	109	—	140	—
Grand Total.	2,922	382	3,045	415	2,059	313	2,071	331
Index numbers based on 1913 :			100	100	68	75	72	80

* Bohemia.

TABLE 40. — NON-MARITIME TRAFFIC OF THE WESER SEAPORTS.

Receipts of Goods by Rail and River according to Origin. (Outward Movement).

Receipts by District 9 from other Districts.

Tons (000's omitted).

Received from	1912		1913		1925		1926	
	By rail	By river	By rail	By river	By rail	By river	By rail	By river
Oldenburg.	671	525	571	640	784	630	985	546
Upper Silesia (excluding Breslau)	6	—	2	—	—	—	—	—
Thuringen	70	—	64	—	136	—	149	—
Ruhr in Westphalia.	1,494	—	1,420	—	776	520	1,766	618
Ruhr in Rhineland	239	—	252	—	154	80	399	81
Westphalia	142	100	245	82	200	100	317	112
Rhine, left side	76	3	86	3	103	5	145	8
Baden, Mannheim	5	—	5	—	10	—	17	1
Württemberg	8	—	5	—	9	—	10	—
South Bavaria	6	—	8	—	13	—	61	—
North Bavaria	18	—	19	—	36	—	35	—
Other German districts	360	30	355	34	355	43	413	21
Total Germany	3,095	658	3,032	759	2,576	1,378	4,297	1,387
Upper Silesia, Polish	—	—	—	—	—	—	493	—
Czechoslovakia.	* 20	—	* 23	—	43	—	78	—
Others	27	—	27	—	33	—	63	—
Grand Total.	3,142	658	3,082	759	2,652	1,378	4,931	1,387
Index numbers based on 1913.			100	100	86	182	160	180

* Bohemia.

The tables show that, as regards goods despatched from the Weser seaports, there was a tendency towards an increase of the relative importance of water traffic. Nor was there any increase in the consignments by rail to South Germany as in the case of Hamburg. If the total consignments by rail and water are compared with the movement of the German imports (general trade), it will be found that Bremen's share has in recent years been slightly less than before the war. The contrary obtains in the case of goods received (export movement), when the percentage which the non-maritime traffic of Bremen constituted of German exports rose from 4.7 in 1913 as a result of the opening of the Rhine-Herne canal in the year 1915, to 6.4 in 1925 and to 6.9 in 1926. Goods received by water appear, moreover, to have increased at the expense of the rail traffic. As shown in Table 43, coal is being shipped by water towards Bremen in considerable quantities, while no such shipment took place in 1913.

The table below shows the corresponding figures of railway traffic between the Weser seaports and foreign countries according to the boundaries in 1913, traffic with the former German territories having been deducted. There was no water traffic with these countries. The table suggests that the Weser seaports do not attract more transit traffic than before the war, as is the case with Hamburg, the figures for 1926 being exceptional.

TABLE 41. — BREMEN AND OTHER WESER SEAPORTS.

Consignments by Rail to and Receipts from Foreign Countries according to the Pre-war Boundaries.

Tons (000's omitted).

	1912	1913	1925	1926
Consignments	207	197	175	204
Receipts	47	50	72	137
Total	254	247	247	341

Tables 42 and 43 show the inland traffic by rail and by river from and to the Weser seaports for some important commodities. The figures for the water traffic have been "corrected" as regards the local traffic. (The corresponding data for Hamburg were given in Tables 37 and 38 above.)

(c) EMS SEAPORTS.

As the traffic of Emden and the other Ems seaports consists of only a few staple commodities, no detailed tables are given of its traffic as for the Elbe and Weser seaports. The importance of the Ems seaports seems, however, to have grown. The consignments by rail, which were of little importance before the war, have fallen further, whereas the consignments by water, chiefly iron ore, increased in spite of a reduction in the German general imports of ores (from 1,648,000 tons in 1913 to 1,769,000 in 1925 and 1,937,000 in 1926).

As regards receipts (outward movement), mainly coal, the figures appear to point to a reduction of the rail traffic and a corresponding increase in the water traffic, the year 1926 being exceptional.

TABLE 42. — NON-MARITIME TRADE OF THE WESER SEAPORTS.

Consignments of Various Goods by Rail and River to and across Germany (German Inward Movement).
Tons (000's omitted).

	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Cotton	543	—	523	—	425	—	390	—
Wool	45	4	39	1	30	—	35	—
Iron goods :								
Pig-iron	49	—	75	—	55	3	47	1
Iron bars and sheets	36	1	44	—	35	10	21	6
Rails and sleepers	2	—	3	—	2	—	7	—
Machinery	18	—	20	2	11	—	7	—
Other	14	—	12	—	10	—	11	—
Total iron	119	1	154	2	113	13	93	7
Iron ore	1	—	2	—	3	11	1	4
Pyrites	—	27	—	26	10	19	1	2
Other ores	16	—	19	—	4	2	4	2
Earths	19	33	19	32	18	2	20	3
Rye	10	3	8	6	23	18	9	15
Wheat	5	30	4	34	19	33	14	37
Barley	662	94	844	110	303	42	503	91
Oats	29	22	13	11	46	18	18	13
Maize	110	28	98	23	44	7	54	14
Flour	60	18	64	18	53	44	43	64
Rice and rice flour	48	21	45	23	36	13	32	14
Potatoes	2	—	1	—	1	—	1	—
Sugar	1	—	1	—	3	1	2	1
Coffee, cocoa, tea	6	1	7	1	8	—	8	—
Animal fats and oils	51	3	54	4	70	4	62	6
Tobacco	27	2	26	2	24	—	17	—
Oilseeds	1	—	—	1	1	1	1	1
Hides and skins	5	—	6	—	4	—	3	—
Oilcakes, bran	302	3	265	9	88	1	106	4
Timber, wood	206	37	225	46	158	29	131	17
Mineral oils	60	1	56	1	34	5	46	5
Chemicals	4	2	5	2	5	—	4	—
Fertilisers	* 104	6	* 80	11	48	6	32	7
Stones	23	2	38	3	19	—	4	—
Coal and coke	108	9	109	7	83	4	48	1
Peat and charcoal	—	—	—	—	—	—	—	—
Tar and asphalt	22	7	31	6	13	—	15	1
Other goods	333	28	309	36	373	40	374	22
All goods	2,922	382	3,045	415	2,059	313	2,071	331

* Figures somewhat too high.

TABLE 43. — NON-MARITIME TRADE OF THE WESER SEAPORTS.
Receipts of Goods by Rail and River from and across Germany (German Outward Movement).
 Tons (000's omitted).

	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Iron :								
Pig-iron	2	—	3	—	3	1	2	—
Iron, bars and sheets	235	—	214	—	156	2	230	5
Rails and sleepers	14	—	25	—	25	—	35	1
Machinery	44	—	36	—	38	—	36	—
Other	195	1	201	1	207	3	222	1
Total iron	490	1	479	1	429	6	525	7
Zinc, crude	2	—	4	—	2	—	2	—
Earths	138	192	127	226	139	312	294	183
Earthenware, China	10	2	11	2	17	—	19	—
Cement	133	46	95	46	110	42	123	88
Rye	5	5	8	—	11	1	7	1
Wheat	4	9	4	9	8	14	4	8
Flour	9	9	8	8	8	4	9	9
Potatoes	21	—	31	2	27	—	29	—
Sugar	12	12	14	23	10	1	5	5
Salt	14	—	18	—	42	10	44	15
Animal fats and oils	12	—	14	1	14	1	13	1
Timber, wood	74	4	67	3	107	1	98	3
Glass and glassware	50	16	43	16	51	5	57	6
Paper	15	3	14	4	24	3	22	4
Mineral oils	23	43	22	39	15	—	41	—
Sulphuric acid	2	—	1	—	2	—	1	—
Other chemicals	20	1	21	1	23	1	26	1
Fertilisers	* 51	125	* 27	139	137	166	138	154
Stones	153	138	166	175	265	55	211	98
Coal and coke	1,456	—	1,460	4	726	630	2,641	686
Lignite	61	—	63	—	108	—	202	12
Peat and charcoal	10	22	11	20	44	4	37	4
Tar and asphalt	12	16	16	25	6	8	8	11
Other goods	365	14	358	15	327	114	375	91
All goods	3,142	658	3,082	759	2,652	1,378	4,931	1,387

* Figures somewhat too high.

(d) SUMMARY FOR ELBE, WESER AND EMS SEAPORTS.

Tables 44 and 45, referring to the total of Elbe, Weser and Ems seaports, give the totals calculated from the separate tables referring to the Elbe and Weser seaports (Tables 37 and 42 for consignments and 38 and 43 for receipts), and from the corresponding data referring to the Ems seaports. According to these combined tables, the relative importance of the consignments by river as compared with consignments by rail fell from 114 per cent in 1912-13 to 96 per cent in 1925 and rose again to 107 per cent in 1926. The total consignments of these ports expressed as percentages of the total German imports (general trade) remained practically unchanged at about 20-21 per cent. The corresponding percentages for receipts calculated on the base of German exports, which were 23 in the year 1912-13, stood at the same level in 1925 and rose to 35 in 1926. If traffic of coal be deducted, the percentages for receipts rise from 29 in 1913 to 34 in 1925 and 38 in 1926. The situation is more fully summarised in relation with Tables 52-56.

TABLE 44. — NON-MARITIME TRADE OF THE ELBE, WESER AND EMS SEAPORTS.
Consignments of Various Goods by Rail and River to or across Germany (German Inward Movement).¹
 Tons (000's omitted).

	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Cotton	609	57	595	61	504	25	444	15
Wool	109	30	106	23	72	12	74	15
Iron goods :								
Pig-iron	55	143	80	78	82	53	62	32
Bars and sheets	94	128	97	96	151	42	109	47
Rails and sleepers	11	3	20	3	39	3	123	5
Machinery	86	19	85	28	56	4	52	7
Other	45	15	45	15	37	3	34	1
Total iron	291	308	327	220	365	105	380	92
Iron ore	15	1,190	9	1,347	18	1,732	6	1,733
Pyrites	—	256	—	259	29	232	19	222
Other ores	93	83	90	102	43	78	27	81
Total	108	1,529	99	1,708	90	2,042	52	2,036
Earths	89	129	121	116	150	107	170	131
Rye	19	36	17	27	64	144	14	40
Wheat	8	253	8	271	53	266	76	357
Barley	904	504	1,067	673	343	213	569	442
Oats	39	74	19	31	89	137	26	59
Maize	197	288	155	253	87	108	101	169
Flour	138	142	146	162	198	203	153	271
Rice and rice flour	147	93	96	109	115	62	85	54
Potatoes	15	1	9	1	9	—	10	—
Sugar	3	30	4	78	10	26	6	21
Coffee, cocoa, tea	34	63	40	72	66	29	52	29
Animal fats and oils	176	178	174	180	328	112	312	140
Tobacco	38	9	35	14	43	12	34	16
Oilseeds	8	207	5	255	12	101	20	143
Hides and skins	67	30	81	34	98	20	78	18
Oilcakes, bran	1,159	107	882	188	500	58	609	65
Timber	397	295	442	236	351	133	247	86
Mineral oils	161	271	144	234	262	256	324	374
Chemicals	34	71	38	74	34	28	30	26
Fertilisers	679	372	555	421	160	208	120	212
Stones	169	113	181	108	101	45	55	44
Coal and coke	452	2,009	393	2,195	435	814	262	733
Peat and charcoal	79	—	36	—	72	—	62	—
Tar and asphalt	51	139	61	125	47	66	67	78
Other goods	1,496	822	1,324	867	1,673	754	1,591	768
All goods	7,676	8,160	7,160	8,737	6,331	6,086	6,023	6,434
Index numbers based on 1913			100	100	88	70	84	74

¹ The corresponding data for traffic with the Netherlands and Belgium are given in Table 50 below.

TABLE 45. — NON-MARITIME TRADE OF THE ELBE, WESER AND EMS SEAPORTS.

Receipts of Various Goods from or across Germany (Outward Movement).¹

Tons (000's omitted).

	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Iron :								
Pig-iron	20	2	26	3	14	12	14	36
Bars and sheets	619	21	598	29	322	55	439	117
Rails and sleepers	83	36	101	11	136	12	124	18
Machinery	226	9	223	9	225	39	199	43
Other	527	42	552	41	475	64	523	70
Total iron	1,475	110	1,500	93	1,172	182	1,299	284
Zinc, crude	19	7	21	6	12	11	23	24
Earths	331	1,535	337	1,046	348	740	496	689
Earthenware, China	58	25	63	27	83	15	93	18
Cement	322	493	204	456	232	290	244	304
Rye	19	112	21	124	27	25	23	88
Wheat	8	181	14	266	32	105	12	114
Flour	58	97	50	131	28	73	26	134
Potatoes	159	4	235	11	270	3	194	3
Sugar	96	654	93	1,089	25	493	28	823
Salt	76	123	67	139	132	137	163	177
Animal fats and oils	54	33	53	21	73	8	77	10
Timber	242	211	218	221	303	211	312	165
Glass	146	70	125	71	128	90	151	109
Paper	69	140	63	170	117	216	117	267
Mineral oils	68	190	52	173	58	7	72	8
Sulphuric acid	9	7	9	7	9	12	5	13
Other chemicals	84	128	88	136	114	152	139	156
Fertilisers	173	1,036	129	1,106	367	703	455	789
Stones	345	719	370	601	554	244	573	353
Coal and coke	4,877	1,084	4,924	1,227	2,391	2,087	10,211	2,905
Lignite	206	152	245	122	430	188	833	612
Peat and charcoal	84	43	25	42	66	16	52	17
Tar and asphalt	45	37	47	46	26	23	26	23
Other goods	1,332	560	1,318	504	1,283	523	1,461	609
All goods	10,355	7,751	10,271	7,835	8,280	6,554	17,085	8,694
Index numbers based on 1913			100	100	81	84	166	111
Coal and coke deducted	5,478	6,667	5,347	6,608	5,889	4,467	6,874	5,789

¹ The corresponding data for traffic with the Netherlands and Belgium are given in Table 51 below.

B. TRAFFIC WITH THE NETHERLANDS AND BELGIUM.

Tables 46 and 47 show the consignments of various goods to Germany by rail and water from the Netherlands and Belgium respectively. Tables 48 and 49 show the corresponding data for receipts by these two countries from Germany. In order to make the tables more comparable with those referring to the German seaports, it was necessary to add to the original data the transit traffic via Germany from and to the Netherlands and Belgium.

TABLE 46. — CONSIGNMENTS OF VARIOUS GOODS FROM THE NETHERLANDS TO AND ACROSS GERMANY.

(German Inward Movement.)

Tons (000's omitted).

Despatched by the Netherlands	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Cotton	8	2	12	3	22	7	13	1
Wool	6	7	6	5	5	4	1	6
Iron goods :								
Pig-iron	4	82	11	73	—	29	—	11
Bars and sheets	48	75	26	68	31	131	30	91
Rails and sleepers	3	4	—	2	1	1	—	—
Machinery	8	12	9	17	16	5	7	5
Other	4	8	3	7	4	3	1	4
Total iron	67	181	49	167	52	169	38	111
Iron ore	3	7,480	3	8,132	1	7,984	—	6,408
Pyrites	—	584	—	563	2	751	—	625
Other ores	36	261	25	395	2	159	1	203
Earths	22	94	30	90	2	252	1	197
Rye	6	245	4	312	8	182	1	198
Wheat	3	1,330	3	1,603	2	871	1	1,257
Barley	1	487	2	614	—	79	—	159
Oats	4	565	3	454	—	196	—	165
Maize	4	286	3	271	1	73	—	117
Flour	3	80	3	94	12	127	2	107
Rice and rice flour	5	37	6	41	4	26	4	23
Potatoes	224	49	156	24	183	2	215	5
Sugar	1	158	1	167	2	149	—	159
Coffee, cocoa, tea	13	40	14	41	14	24	17	28
Animal fats and oils	23	125	25	115	36	134	40	254
Tobacco	11	20	10	19	22	13	15	16
Oilseeds	16	190	17	250	16	239	29	299
Hides and skins	6	11	6	15	4	23	3	19
Oilcakes, bran	83	69	88	64	5	33	9	40
Timber	41	1,388	34	1,386	20	650	8	645
Mineral oils	3	388	3	397	4	344	5	652
Chemicals	8	64	8	62	2	50	3	34
Fertilisers	14	284	10	297	6	110	8	152
Stones	17	119	16	102	3	19	1	2
Coal and coke	510	516	433	406	320	333	143	145
Peat and charcoal	13	12	8	16	4	—	14	1
Tar and asphalt	15	58	4	63	1	67	2	76
Other goods	581	584	578	582	541	454	570	97
All goods	1,747	15,714	1,560	16,750	1,296	13,524	1,144	12,201
	17,461		18,310		14,820		13,345	
Iron ore deducted	1,744	8,234	1,557	8,618	1,295	5,540	1,144	5,793

TABLE 47. — CONSIGNMENTS OF VARIOUS GOODS FROM BELGIUM BY RAIL AND RIVER TO AND ACROSS GERMANY.

(German Inward Movement.)

Tons (000's omitted).

Despatched by Belgium	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Cotton	14	9	24	12	20	2	12	1
Wool	56	8	43	7	17	—	26	—
Iron goods :								
Pig-iron	10	1	12	1	5	8	3	3
Bars and sheets	67	89	60	57	21	21	25	24
Rails and sleepers	2	2	2	—	—	1	2	—
Machinery	17	—	14	—	9	—	10	1
Other	8	7	8	1	2	—	4	1
Total iron	104	99	96	59	37	30	44	29
Iron ore	24	194	293	375	5	89	2	31
Pyrites	?	95	?	71	—	42	2	82
Other ores	244	384	264	362	35	140	27	165
Earths	43	42	52	44	37	15	30	22
Rye	—	10	—	8	2	35	2	27
Wheat	11	540	13	444	23	533	48	524
Barley	12	107	1	50	2	56	3	73
Oats	4	109	2	57	11	95	5	94
Maize	6	118	3	91	5	55	8	78
Flour	1	1	1	1	13	14	3	5
Rice and rice flour	1	8	1	5	—	2	—	2
Potatoes	78	1	38	—	47	—	71	—
Sugar	—	1	—	2	6	19	2	—
Coffee, cocoa, tea	4	4	3	3	5	1	6	—
Animal fats and oils	21	43	17	30	14	11	18	6
Tobacco	—	2	—	1	2	—	1	1
Oilseeds	10	196	5	250	8	83	4	80
Hides and skins	14	6	12	8	6	2	12	2
Oilcakes, bran	30	38	16	23	2	9	3	5
Timber	7	29	10	31	9	14	8	9
Mineral oils	19	40	20	45	61	32	71	44
Chemicals	7	19	10	23	7	14	7	5
Fertilisers	61	167	67	147	114	39	210	88
Stones	52	147	49	15	42	1	33	2
Coal and coke	638	91	604	78	16	4	9	3
Peat and charcoal	1	1	1	—	—	—	—	—
Tar and asphalt	2	21	3	24	1	13	2	8
Other goods	552	338	555	492	247	325	298	212
All goods	2,016	2,868	2,203	2,758	794	1,675	967	1,598
	4,884		4,961		2,469		2,565	

TABLE 48. — RECEIPTS BY THE NETHERLANDS OF VARIOUS GOODS BY RAIL AND RIVER FROM AND ACROSS GERMANY.

(German Outward Movement.)

Tons (000's omitted).

Received by the Netherlands	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Iron :								
Pig-iron	38	149	45	128	2	66	4	125
Bars and sheets	296	555	337	685	42	854	55	1,089
Rails and sleepers	58	193	51	168	26	356	16	328
Machinery	42	17	50	18	29	34	34	37
Other	168	156	208	172	89	383	86	517
Total iron	602	1,070	691	1,171	188	1,693	195	2,096
Zinc, crude	8	11	8	13	106	1	44	32
Earths	38	736	63	785	73	992	74	1,266
Earthenware, China	9	23	10	26	16	9	22	9
Cement	52	179	43	192	49	216	87	341
Rye	27	1	24	—	—	4	—	1
Wheat	8	3	9	1	1	8	1	13
Flour	8	23	9	25	—	43	—	44
Potatoes	4	8	4	32	1	—	2	—
Sugar	1	1	2	1	—	2	—	8
Salt	17	68	18	60	6	80	21	67
Animal fats and oils	6	26	9	38	5	9	7	12
Timber	32	59	24	82	177	137	181	136
Glass	20	11	20	22	15	6	21	12
Paper	19	58	21	76	18	72	19	82
Mineral oils	16	66	15	62	2	131	1	128
Sulphuric acid	9	2	8	4	—	45	3	70
Other chemicals	18	108	15	126	19	160	14	183
Fertilisers	348	277	341	320	108	460	140	482
Stones	70	638	71	618	161	881	180	805
Coal and coke	4,388	5,901	4,661	7,211	1,242	12,998	2,675	23,950
Lignite	217	14	259	20	59	90	53	164
Peat and charcoal	4	39	6	51	5	32	5	35
Tar and asphalt	11	10	9	16	38	8	29	21
Other goods	257	534	280	416	212	340	228	444
All goods	6,189	9,866	6,620	11,368	2,501	18,417	4,002	30,401
	16,055		17,988		20,918		34,403	
Coal and coke deducted	1,801	3,965	1,959	4,157	1,259	5,419	1,327	6,451

TABLE 49. — RECEIPTS BY BELGIUM OF VARIOUS GOODS BY RAIL AND RIVER FROM AND ACROSS GERMANY
(German Outward Movement.)

Tons (000's omitted).

Received by Belgium	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Iron .								
Pig-iron	338	48	213	44	36	11	68	114
Bars and sheets	786	240	992	308	18	280	38	926
Rails and sleepers	122	218	102	279	5	160	8	209
Machinery	64	6	75	5	13	11	16	13
Other	309	52	371	54	63	207	80	256
Total iron	1,619	564	1,753	690	135	669	210	1,518
Zinc, crude	9	1	14	1	2	1	3	2
Earths	60	280	71	98	52	476	76	315
Earthenware, China	9	12	10	13	7	10	17	1
Cement	8	115	17	131	4	88	5	142
Rye	11	—	16	—	—	—	2	—
Wheat	5	2	10	1	3	1	2	1
Flour	—	—	—	1	—	2	—	5
Potatoes	4	—	9	1	23	—	18	—
Sugar	2	—	—	—	—	—	—	—
Salt	35	47	43	56	18	82	61	91
Animal fats and oils	1	1	2	3	—	—	—	2
Timber	14	7	32	7	30	15	71	24
Glass	27	8	38	14	12	3	24	7
Paper	22	13	23	20	8	5	15	8
Mineral oils	21	8	24	4	20	4	26	2
Sulphuric acid	2	1	1	3	—	—	2	—
Other chemicals	69	44	77	72	18	70	18	60
Fertilisers	144	30	144	28	16	344	19	347
Stones	70	54	81	53	32	30	29	26
Coal and coke	2,774	3,885	2,978	4,277	1,588	4,079	2,910	4,791
Lignite	86	4	109	9	75	—	191	3
Peat and charcoal	2	—	3	—	—	—	—	—
Tar and asphalt	8	35	7	42	34	1	43	7
Other goods	343	171	429	195	87	120	152	162
All goods	5,345	5,282	5,891	5,719	2,164	6,000	3,894	7,514
	10,627		11,610		8,164		11,408	
Coal and coke deducted .	2,571	1,397	2,913	1,442	576	1,921	984	2,723

The combined results of the traffic between the Netherlands and Belgium on the one hand and Germany on the other are set out in Tables 50 and 51, which include the German transit traffic.

TABLE 50. — NON-MARITIME TRAFFIC OF THE NETHERLANDS AND BELGIUM WITH GERMANY, INCLUDING THE GERMAN TRANSIT TRAFFIC.¹

Consignments of Goods by Rail and River to or across Germany (German Inward Movement).

Tons (000's omitted).

Consignments to Germany	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Cotton	22	11	36	15	42	9	25	2
Wool	62	15	49	12	22	4	27	6
Iron goods :								
Pig-iron	14	83	23	74	5	37	3	14
Bars and sheets	115	164	86	125	52	152	55	115
Rails and sleepers	5	6	2	2	1	2	2	—
Machinery	25	12	23	17	25	5	17	6
Other	12	15	11	8	6	3	5	5
Total iron	171	280	145	226	89	199	82	140
Iron ore	27	7,674	296	8,507	6	8,073	2	6,439
Pyrites	?	679	?	634	2	793	2	707
Other ores	280	645	289	757	37	299	28	368
Earths	65	136	82	134	39	267	31	219
Rye	6	255	4	320	10	217	3	225
Wheat	14	1,870	16	2,047	25	1,404	49	1,781
Barley	13	594	3	664	2	135	3	232
Oats	8	674	5	511	11	291	5	259
Maize	10	404	6	362	6	128	8	195
Flour	4	81	4	95	25	141	5	112
Rice and rice flour	6	45	7	46	4	28	4	25
Potatoes	302	50	194	24	230	2	286	5
Sugar	1	159	1	169	8	168	2	159
Coffee, cocoa, tea	17	44	17	44	19	25	23	28
Animal fats and oils	44	168	42	145	50	145	58	260
Tobacco	11	22	10	20	24	13	16	17
Oilseeds	26	386	22	500	24	322	33	379
Hides and skins	20	17	18	23	10	25	15	21
Oilcakes, bran	113	107	104	87	7	42	12	45
Timber	48	1,417	44	1,417	29	664	16	654
Mineral oils	22	428	23	442	65	376	76	696
Chemicals	15	83	18	85	9	64	10	39
Fertilisers	75	451	77	444	120	149	218	240
Stones	69	266	65	117	45	20	34	4
Coal and coke	1,148	607	1,037	484	336	337	152	148
Peat and charcoal	14	13	9	16	4	—	14	1
Tar and asphalt	17	79	7	87	2	80	4	84
Other goods	1,133	922	1,133	1,074	788	779	868	309
All goods	3,763	18,582	3,763	19,508	2,090	15,199	2,111	13,799
	22,345		23,271		17,289		15,910	
Index numbers based on 1913			100	100	56	78	56	71
Iron ore deducted	3,736	10,908	3,467	11,001	2,084	7,126	2,109	7,360

¹ The corresponding figures for German seaports were given in Table 44 above.

TABLE 51. — NON-MARITIME TRADE OF THE NETHERLANDS AND BELGIUM WITH GERMANY, INCLUDING THE GERMAN TRANSIT TRAFFIC.

Receipts of Goods by Rail and River from or across Germany (German Outward Movement).¹

Tons (000's omitted).

Received from Germany	1912		1913		1925		1926	
	Rail	River	Rail	River	Rail	River	Rail	River
Iron :								
Pig-iron	376	197	258	172	38	77	72	239
Bars and sheets	1,082	795	1,329	993	60	1,134	93	2,015
Rails and sleepers	180	411	153	447	31	516	24	537
Machinery.	106	23	125	23	42	45	50	50
Other	477	208	579	226	152	590	166	773
Total iron.	2,221	1,634	2,444	1,861	323	2,362	405	3,614
Zinc, crude	17	12	22	14	108	2	47	34
Earths	98	1,016	134	883	125	1,468	150	1,581
Earthenware, China	18	35	20	39	23	19	39	10
Cement	60	294	60	323	53	304	93	483
Rye	38	1	40	—	—	4	2	1
Wheat	13	5	19	2	4	9	3	14
Flour	8	23	9	26	—	45	—	49
Potatoes	8	8	13	33	24	—	20	—
Sugar	3	1	2	1	—	2	—	8
Salt	52	115	61	116	24	162	82	158
Animal fats and oils	7	27	11	41	5	9	7	14
Timber	46	66	56	89	207	152	252	160
Glass	47	19	58	36	27	9	45	19
Paper.	41	71	44	96	26	77	34	90
Mineral oils	37	74	39	66	22	135	27	130
Sulphuric acid	11	3	9	7	—	45	5	70
Other chemicals	87	152	92	198	37	230	32	243
Fertilisers	492	307	485	348	124	804	159	829
Stones	140	692	152	671	193	911	209	831
Coal and coke	7,162	9,786	7,639	11,488	2,830	17,077	5,585	28,741
Lignite	303	18	368	29	134	90	244	167
Peat and charcoal	6	39	9	51	5	32	5	35
Tar and asphalt	19	45	16	58	72	9	72	28
Other goods	600	705	709	611	299	460	380	606
All goods	11,534	15,148	12,511	17,087	4,665	24,417	7,896	37,915
	26,682		29,598		29,082		45,811	
Index numbers based on 1913			100	100	37	143	63	222
Coal and coke deducted .	4,372	5,362	4,872	5,599	1,835	7,340	2,311	9,174

¹ The corresponding figures for German seaports were given in Table 45 above.

C. SUMMARY.

(a) CONSIGNMENTS FROM SEAPORTS (GERMAN INWARD MOVEMENT).

Table 52 shows in a summarised form the total of consignments by rail and river made by the seaports dealt with above to and across Germany. This table is based on the detailed Tables 37, 42, 44, 46, and 47. When comparing the relative importance of the shipments from the different origins with the movement of German imports (general trade), it is found that the relative importance of German as well as foreign seaports remained practically unaltered. The importance of the receipts from Belgium has diminished, but these receipts are far less important than those from the Netherlands.

TABLE 52. — NON-MARITIME TRAFFIC OF VARIOUS SEAPORTS.

Total Consignments of Goods to and across Germany (German Inward Movement I).

Tons (000's omitted).

Despatched to Germany from :	(a) Absolute figures			(b) Percentage which the traffic was of German imports (General trade) ¹		
	Average 1912-13	1925	1926	Average 1912-13	1925	1926
Elbe seaports . . .	10,715	8,709	7,937	13	13	13
Weser „	3,380	2,372	2,402	4.2	3.6	4
Ems „	1,770	1,966	2,118	2	3	4
Total	15,865	12,417	12,457	20	20	21
Netherlands	17,886	14,820	13,345	22	23	22
Belgium	4,923	2,469	2,565	6	4	4
Total	22,809	17,289	15,910	28	27	27
GRAND TOTAL	38,674	29,706	28,367	48	47	48
Imports (General trade)	80,330	63,436	59,622			

¹ As the decimals were ignored, some of the figures do not add up exactly.

Table 53 gives the preceding figures subdivided between rail and river traffic. It shows in a striking way that, as regards the total inward traffic from the German, Dutch and Belgian seaports, the relative importance of the water traffic, as compared with the rail traffic, remained practically stable, water traffic being twice and a-half times the rail traffic. The water traffic has gained in relative importance as regards shipments to Germany from Bremen, Emden, the Netherlands and Belgium. In the case of Hamburg, there has been an important decrease.

TABLE 53. — NON-MARITIME TRAFFIC OF VARIOUS SEAPORTS.
Consignments of Goods by Rail and River to and across Germany (German Inward Movement II).
 Tons (000's omitted).

Despatched to and across Germany from :	Absolute figures						Percentages		
	Average 1912-13		1925		1926		Average 1912-13	1925	1926
	(a) Rail	(b) River	(a) Rail	(b) River	(a) Rail	(b) River	(b) as % of (a)	(b) as % of (a)	(b) as % of (a)
Elbe seaports	4,220	6,495	4,075	4,004	3,771	4,166	154	98	110
Weser „	2,982	398	2,059	313	2,071	331	13	15	16
Ems „	215	1,555	197	1,769	181	1,937	723	898	1,070
Total	7,417	8,448	6,331	6,086	6,023	6,434	114	96	107
Netherlands	1,654	16,232	1,296	13,524	1,144	12,201	981	1,044	1,067
Belgium	2,110	2,813	794	1,675	967	1,598	133	211	165
Total	3,764	19,045	2,090	15,199	2,111	13,799	506	727	654
GRAND TOTAL	11,181	27,493	8,421	21,285	8,134	20,233	246	253	249

The above two tables lead to the conclusion that, as regards imports into or across Germany, there was no important change as compared with pre-war years, either as regards the relative importance of the ports or as regards the relative importance of the total traffic by rail and by water. This conclusion is somewhat more favourable to German seaports than those made with reference to Table 28 (seaborne trade).

(b) RECEIPTS BY SEAPORTS (GERMAN OUTWARD MOVEMENT).

Table 54, computed from Tables 38, 43, 45, 48, and 49, shows in a summarised form the total of consignments made from or via Germany to the various seaports under consideration, compared with the German exports (general trade), including reparation deliveries.

TABLE 54. — NON-MARITIME TRAFFIC OF VARIOUS SEAPORTS.
Total Receipts of Goods from and across Germany (German Outward Movement I).
 Tons (000's omitted).

Received from and across Germany by :	(a) Absolute figures.			(b) Percentages which the traffic was of the German exports.		
	Average 1912-13	1925	1926	Average 1912-13	1925	1926
Elbe seaports	12,271	9,010	16,552	16	14.4	18.2
Weser seaports	3,820	4,031	6,319	5	6.4	6.9
Ems seaports	2,014	1,793	2,908	2.6	2.9	3.2
Total	18,105	14,834	25,779	23	23.7	28.3
Netherlands	17,022	20,918	34,403	22	33.4	37.8
Belgium	11,118	8,164	11,408	14	13.0	12.5
Total	28,140	29,082	45,811	36	46.4	50.3
GRAND TOTAL	46,245	43,916	71,590	59	70.1	78.6
Exports (General trade)	77,848	62,646	91,008			

The relative importance of the outward traffic of the German ports compared with German exports (general trade, including Reparation deliveries) was in 1925 about the same as before the war, but increased in 1926 owing to the exceptional shipments of coal. The consignments to the Netherlands have, however, increased considerably. The share of Belgium has fallen slightly. The combined percentage for the Netherlands and Belgium rose from 36 per cent in 1912-13 to 46 per cent in 1925 and to 50 per cent in 1926.

It appears thus that, whereas there was no definite change in the relative importance of the consignments via German ports, there was a definite increase in the actual and relative importance of the consignments via foreign seaports — Rotterdam. The reference to German seaports is again more favourable than the conclusion drawn with regard to Table 28 (sea-borne trade).

The table below shows the preceding figures subdivided between rail and river traffic :

TABLE 55. — NON-MARITIME TRAFFIC OF VARIOUS SEAPORTS.

Receipts of Goods by Rail and Water from and across Germany (German Outward Movement II).

Tons (000's omitted).

Received from and across Germany by :	Absolute figures						Percentages		
	Average 1912-13		1925		1926		Average 1912-13	1925	1926
	(a) Rail	(b) River	(a) Rail	(b) River	(a) Rail	(b) River	(b) as % of (a)	(b) as % of (a)	(b) as % of (a)
Elbe seaports . . .	6,495	5,776	5,300	3,710	11,080	5,472	89	70	49
Weser „	3,112	708	2,652	1,379	4,931	1,388	23	52	28
Ems „	706	1,308	328	1,465	1,074	1,834	185	447	171
Total	10,313	7,792	8,280	6,554	17,085	8,694	76	79	51
Netherlands	6,405	10,617	2,501	18,417	4,002	30,401	166	736	760
Belgium	5,618	5,500	2,164	6,000	3,894	7,514	98	277	193
Total	12,023	16,117	4,665	24,417	7,896	37,915	134	523	480
GRAND TOTAL	22,336	23,909	12,945	30,971	24,981	46,609	107	239	187
German exports (General trade)	77,848		62,646		91,008				

Whereas, if ignoring the exceptional shipments of coal in 1926, the actual and relative importance of the water traffic towards Hamburg has decreased, the contrary obtains for the other German seaports under consideration. The percentage which the water traffic constituted of the rail traffic of all these ports has even slightly increased from 1913 to 1925. In 1926, this percentage fell again owing to the heavy consignments of coal by rail to Hamburg. If the consignments of coal to Hamburg be ignored, the percentage for all the ports under review becomes 106 per cent in 1913 (instead of 76 per cent), 97 per cent in 1925 (instead of 79 per cent) and 80 per cent in 1926 (instead of 51 per cent). It appears thus that there has been a certain tendency for the water traffic towards the German seaports to become comparatively less important than the railway traffic. The increase in the consignments to German ports referred to above is, therefore, due more to an increase in the rail traffic than to an increase in the water traffic.

As regards traffic with the Netherlands and Belgium, the traffic by rail has decreased in both cases, whereas the consignments by water have increased, being in the case of the Netherlands nearly three times as important in 1926 as in 1913. As shown in Table 56, this movement is not due merely to the increased consignments of coal by water. If these

consignments of coal be deducted, the percentage relation of river traffic to railway traffic rose, in the case of consignments to the Netherlands and Belgium, from 118 per cent in 1913 to about 400 per cent in 1925 and in 1926.

TABLE 56. — NON-MARITIME TRAFFIC OF VARIOUS SEAPORTS.

Receipts of Goods other than Coal by Rail and Water from and across Germany (German Outward Movement).

Tons (000's omitted).

Goods other than coal received from and across Germany by :	Actual figures						Percentages		
	Average 1912-13		1925		1926		Average 1912-13	1925	1926
	(a) Rail	(b) River	(a) Rail	(b) River	(a) Rail	(b) River	(b) as % of (a)	(b) as % of (a)	(b) as % of (a)
Elbe seaports . . .	3,490	5,755	3,709	3,642	4,272	4,938	165	98	116
Weser „ . . .	1,654	706	1,926	749	2,290	702	43	39	31
Ems „ . . .	268	175	254	76	312	149	65	30	48
Total . . .	5,412	6,636	5,889	4,467	6,874	5,789	123	76	84
Netherlands . . .	1,880	4,056	1,259	5,419	1,327	6,451	216	430	486
Belgium	2,742	1,419	576	1,921	984	2,723	52	334	277
Total . . .	4,622	5,475	1,835	7,340	2,311	9,174	118	400	397
GRAND TOTAL.	10,034	12,111	7,724	11,807	9,185	14,963	121	153	163
German exports, excluding coal and coke . . . (General trade)	44,676		30,655		36,310				

The increased importance of the consignments to the Netherlands and Belgium is due to a remarkable general increase in the consignments by water, accompanied by a simultaneous falling-off in the consignments by rail. It would therefore appear that the distribution of traffic between rail and river followed two distinctly opposite tendencies with regard to Dutch and German seaports respectively.

Chapter III.

ANALYSIS OF THE PRE-WAR AND POST-WAR TRAFFIC OF INDIVIDUAL COMMODITIES BY RAIL AND RIVER, PARTICULARLY IN CONNECTION WITH RHINE NAVIGATION.

INTRODUCTORY REMARKS.

The purpose of this more detailed analysis by individual commodities was to find out whether in a given case the waterways lost any traffic in favour of the railways or vice versa and, if so, whether this change could be explained by other causes than deliberate competition by railways. Special attention was paid to consequences of territorial changes and to changes in the distribution of traffic on the railways on the one hand, and on water on the other. In many cases, the results confirm in detail the evidence given in a more general way in the first two chapters. It was found that, as a whole, territorial changes had had a great influence on the distribution of traffic and that it is not sufficient to compare the Rhine traffic with the rail traffic of German seaports. The latter traffic has been substituted, in many cases, for traffic by rail with the ceded territories. It is necessary to take into account in each case all the various currents of traffic before and after the war before making a statement as to the existence or non-existence of an increasing competition by the railways.

A list of commodities reviewed in this chapter is given in the general table of contents.

Owing to the complicated character of the analysis relating to *Coal*, the following remarks, together with a short summary, may facilitate its study :

In Part I — *Shipments of Ruhr coal in the downstream direction* : (a) *Rhine traffic* — the study of the *C.C.* statistics and of the Dutch official trade statistics leads to the conclusion that there was a very considerable increase in the Rhine traffic of coal towards the Netherlands between 1913 and 1925. Owing to the opening in 1915 of the Rhine-Herne Canal it is, however, extremely difficult to ascertain the distribution of shipments of Ruhr coal in 1925. Whilst in 1913 the shipments from Duisburg-Ruhrort afforded a fair index of the total shipments of Ruhr coal, huge quantities of coal are being shipped at present directly from the mines through the Rhine-Herne Canal. As the *C.C.* statistics do not give sufficient information concerning the destination of this coal, it becomes necessary to fill the gap by making some rather doubtful estimates.

Part I (b) — *Traffic by rail downstream* — shows that the increase in water traffic towards Belgium and the Netherlands was accompanied by a heavy fall in rail traffic.

Part II. — *Shipments of Ruhr coal in the upstream direction.*

(a) 1 — *Rhine traffic in 1913* — gives estimates of the traffic by comparing the quantities despatched in the upstream direction with the quantities received by the upstream ports.

2 — *Rhine traffic in 1925* — was calculated by using the detailed estimates of the shipments via the Rhine-Herne Canal set out in Part I (a). Comparison between the figures for 1913 and 1925 shows that there was not much difference between the upstream shipments of Ruhr coal by water in these two years.

(b) — *Rail traffic in 1913 and 1925* — comparison with the transshipment and through water traffic. It is not sufficient to examine the traffic from the Ruhr districts only, as this traffic seems to have in part replaced the pre-war traffic from districts which are no longer under German sovereignty. Any conclusions from Ruhr figures only may therefore be misleading. If we include consignments from all the important mining districts, railway traffic appears to have gained appreciably at the expense of water traffic in the case of Bavaria only. As a whole, there appear to be serious changes in the mode of distribution of coal throughout the country as compared with 1913. These changes may or may not mean an adaptation towards new conditions created by territorial changes.

Coal.

I. SHIPMENTS OF RUHR COAL IN THE DOWNSTREAM DIRECTION.

(a) Rhine Traffic (downstream).

The downstream shipments of coal from the ports of Hochfeld and Duisburg-Ruhrort to the Netherlands, Belgium and France were as follows :

Shipments from Rhine-Ruhr ports of Hochfeld and Duisburg-Ruhrort to :

	1913	1925
	Tons (000's omitted).	
Netherlands	6,087	9,439
Belgium	3,485	2,377
France	219	44
Total	9,791	11,860

Source : C.C., 1913, 1925.

For the ports of Homberg, Alsum and Walsum, figures exactly corresponding to those for the big Rhine-Ruhr ports are not available. According to C.C., the total downstream shipments of coal were as follows :

Shipments (downstream) from Rhine-Ruhr ports of Homberg, Alsum and Walsum :

	1913	1925
	Tons (000's omitted).	
Homberg	714	786
Alsum	689	553
Walsum	595	480
Total	1,998	1,819

In order to arrive at net figures for shipments to the Netherlands, Belgium and France, we must deduct from the above figures the traffic to the German downstream section of the Rhine which may be estimated for 1913 at 48,000 tons (estimate based on the proportion of the corresponding Duisburg traffic which amounted in 1913 to 235,000 tons and in 1925 to 500 tons only). The foreign downstream traffic of these three ports may therefore be estimated for 1913 at 1,950,000 tons. The figure for 1925 remains practically unaltered.

The table should be completed by the insertion of estimated quantities emerging from the Rhine-Herne Canal. Owing to the lack of adequate data, any estimate of this kind is highly hypothetical, and the figures calculated may easily err by a few hundred thousands in either direction.

According to C.C., the total outward coal traffic (coal, briquettes and coke) on this Canal towards the Rhine in 1925 was 6,180,000 tons. This figure is confirmed roughly by the B. statistics (1925 : 6,154,000 tons).

Certain items, such as coal discharged at Duisburg and part of the quantity of bunker coal, must be deducted from this figure, which may therefore be reduced to 6,000,000 tons (C.C., 1925, pp. 269 and 68).

The *C.C.* statistics show the direction taken by goods coming from the Canal only for unspecified totals, however, so that separate figures for coal are not given. Total shipments of all goods in 1925 are there recorded as having been 7,061,000 tons, of which 4,777,000 or 67.7 per cent went downstream and 2,284,000 or 32.3 per cent upstream.

The *B.* statistics give practically the same figure, viz., 7,057,000 tons, for total shipments from the Canal towards the Rhine, but, with the exception of the data published by individual districts (*Bezirksverkehr*), they do not state the direction in which these goods were shipped. The data by districts will be found to yield lower figures in both directions, however. The following were the figures for coal despatched by the Rhine in 1925 from the districts 22*a*, 22*b* and 23*b* downstream (Districts 60 and 61) and upstream (Districts 21*b-c*, 23*a*, 25*b*, 26*a-c*, 28, 31, 32*a-b*, 33*a*, 34, 37*a*).

Coal despatched by the Rhine in 1925 from Districts 22a, 22b and 23b.

Tons (000's omitted).

	Coal	Briquettes	Coke	Total
Downstream	2,395	4.5	12	2,411
Upstream	1,906	0.9	204	2,111
Total	4,301	5.4	216	4,522

Source : *B.*, *Bezirksverkehr*.

It would appear that the figure of 6,000,000 arrived at previously as representing the shipments of coal from the Rhine-Herne Canal is possibly too high, but, on the other hand, the *Bezirksverkehr* statistics certainly err in the opposite direction. The actual figure for those shipments from the Rhine-Herne Canal may consequently be approximately estimated at 5.5 or even 6 millions. According to the *C.C.* statistics, 32.3 per cent of the goods coming from the Rhine-Herne Canal went upstream; the percentage calculated from the actual figures for the *Bezirksverkehr* given above is 46.6 per cent. If an average of 40 per cent is adopted and if the shipments are taken as having been 5.5 millions, we may estimate the upstream traffic at 2,200,000 tons and the downstream traffic at 3,300,000 tons. These are, however, very rough figures which may, as already pointed out, err by several hundred thousands in either direction.

If the shipments from Orsoy and those emerging from the Rhine-Herne Canal as estimated above be added, the total downstream shipments of Ruhr coal by the Rhine to foreign countries may be estimated as follows :

	1913	1925
Shipments from :	Tons (000's omitted).	
Duisburg, Hochfeld	9,791	11,860
Homburg, Alsum, Walsum	1,950	1,819
Orsoy	1*	79
Rhine-Herne Canal	—	3,300
	11,742	17,058

The figures in the above statement disagree in some instances with Dutch foreign trade statistics, but they are more or less confirmed by both the Lobith and the Emmerich frontier records. On the other hand, the figure of 3,300,000 tons for the Rhine-Herne Canal may appear as being too low. In conclusion, it may be said that from 1913 to 1925 there was an increase in the Rhine traffic of coal to places beyond the German-Netherlands frontier of probably not less than 45 per cent and possibly even 50 per cent.

* Estimated figure. From *B.* 1925 it will be seen that the shipments of coal from District 26*b* are practically confined to Orsoy. The 1913 figure has consequently been estimated from the 1913 figures for District 26*b*.

(b) *Traffic by Rail (downstream).*

The consignments of coal from the Ruhr to Belgium and the Netherlands by rail were according to *G.* as follows :

Tons (000's omitted).

Consignments from :	1913		1925	
	to Netherlands	to Belgium	to Netherlands	to Belgium
Districts 22 . . .	2,827	1,444	558	1,117
" 23 . . .	1,595	974	655	187
" 26 . . .	163	482	25	273
" 28 . . .	—	—	4	4
Total . . .	4,585	2,900	1,242	1,581
	7,485		2,823	

The 1925 figures given above for the Netherlands agree fairly well with the corresponding figures published in the Dutch Trade Returns for 1925.

(c) *Summary and Conclusions.*

The foregoing analysis is summarised in the following statement which gives for the Rhine traffic the figures according to Lobith records :

TABLE 57. — COAL CONSIGNED FROM THE RUHR BY WATER AND BY RAIL TO THE NETHERLANDS AND BELGIUM.

Consigned to :		Tons (000's omitted).	
		1913	1925
Netherlands —	Rhine . . .	7,168	12,839
	Rail . . .	4,585	1,242
	Total . .	11,753	14,081
Belgium —	Rhine . . .	4,597	4,281*
	Rail . . .	2,900	1,581
	Total . .	7,497	5,862
Total	Rhine . . .	11,765	17,120
	Rail . . .	7,485	2,823
Grand Total . .		19,250	19,943

It appears from the table above that (a) total downstream traffic was practically unchanged ; (b) there was a considerable reduction in the consignments to Belgium, more than compensated for, however, by a corresponding increase in traffic to the Netherlands ; (c) there was a very heavy decrease in consignments of coal by rail, accompanied by a still larger increase in consignments by water.

The relative changes are brought out more clearly in the following statement showing the net increase or decrease in rail and water traffic from 1913 to 1925 :

* Including 41,000 tons on French traffic via Belgium, the amount of which is not given separately in 1913.

Consignments to :	Tons (000's omitted)		
	Waterways	Railways	Total
Netherlands	+ 5,671	— 3,343	+ 2,328
Belgium	— 316	— 1,319	— 1,635
	+ 5,355	— 4,662	+ 693

The relative importance of Rhine and rail shipments of Ruhr coal in downstream direction in 1913 and 1925 was :

	1913	1925
Rhine	61.1%	85.8%
Rail	38.9%	14.2%
	100%	100%

The relative importance of the traffic of coal by rail in downstream direction has consequently dwindled to something between one-third and one-half of its pre-war volume.

II. SHIPMENTS OF RUHR COAL IN THE UPSTREAM DIRECTION.

(a) Rhine Traffic.

1. Upstream Shipments in 1913.

Table 58, based on *C.C.* statistics, gives, in addition to the quantities of various kinds of coal despatched in 1913 from the Rhine-Ruhr ports, also the consignments of coal from the port of Neuss, and an estimated figure for the port of Orsoy which has been arrived at by taking the ratio for 1925 between the upstream shipments of coal from district 26*b* (*B.* 1925) and the corresponding *C.C.* figures for Orsoy, and applying it to the 1913 figure calculated for District 26*b*.

Omitting some minor ports, we arrive at the following figures :

TABLE 58. — RUHR COAL, COKE AND BRIQUETTES SHIPPED UPSTREAM IN 1913.

Tons (000's omitted).				
Shipments from :	Coal	Briquettes	Coke	Total
Duisburg	7,865	4	367	8,236
Homberg	396	—	17	413
Alsum	398	—	2	400
Walsum	389	0.7	4	394
Total for Rhine-Ruhr Ports	9,048	5	390	9,443
Neuss	199	1	9	209
Orsoy	?	?	?	145
Total	?	?	?	9,797

According to *C.C.* 1913, the quantities received in the upstream direction by the various Rhine ports south of the Ruhr were as follows :

Tons (000's omitted).

	Coal	Briquettes	Coke	Total
Rhine ports	7,718	29	555	8,302
Main ports	1,406	3	125	1,534
Total	9,124	32	680	9,836

These figures, which do not include the receipts by some minor ports, include, however, in addition to Ruhr coal, English coal received from the Netherlands, and this changes the apparent concordance between the two above statements into a serious discrepancy.

The records of the Lobith Administration (*C.C.*) confirmed by the Emmerich records (*B.*) show that 400,000 tons of coal and 7,000 tons of coke passed on the Rhine in the upstream direction. It appears from the receipt of coal from the Netherlands by the various districts (*B.*; *Bezirksverkehr*) that practically the whole amount was shipped to Rhine ports beyond the Ruhr or to Main ports. These amounts should consequently be deducted from the total receipts. Coal transported and recorded twice over should likewise be deducted, but it would appear that this amount did not exceed some 40,000 to 45,000 tons in 1913.

Omitting the minor ports, the statistics of Ruhr coal received in the upstream direction in 1913 may be summarised as follows :

TABLE 59. — RUHR COAL AND COKE AND BRIQUETTES RECEIVED IN UPSTREAM DIRECTION.

Tons (000's omitted).

	Coal	Briquettes	Coke	Total
Total receipts by the Rhine and Main Ports :	9,124	32	680	9,836
Less :				
Coal from the Netherlands	400	—	7	407
Coal transported twice	?	?	?	45
Net receipts of Ruhr coal :	(8,724)	(32)	(673)	9,384

The records for quantities received by the ports south of the Ruhr are thus by 400,000 tons inferior to those for quantities despatched in the upstream direction, as shown in Table 58. If we deduct the consignments made via Orsoy, which may be likewise considered to be a "minor" port, the difference is reduced to something like 260,000 tons. This discrepancy is not explained by the fact that there might possibly be more minor ports in the Upper Rhine which are not covered by the statistics than in the Ruhr districts, because, while coal despatched appears at about 500,000 tons more than coal received, the contrary obtains for coke. The differences in the case of coal are not due to receipts by ports other than Rhine or Main ports either. The receipts by ports of the tributaries of the Main and Rhine and by Switzerland were comparatively insignificant. On the other hand, some adjustment ought to be made as regards bunker coal.

Similar inconsistent figures are given in *B.1913, I. a (Güterverkehr der wichtigeren Häfen)*. We obtain, however, different results from Part II (*Bezirksverkehr*), the tables of which show that the amounts despatched upstream by Districts 25a, 26b, 26c and 28 were 8,876,000 tons for coal and 662,000 tons for coke. These figures are in closer agreement with the figures of receipts by the Rhine and Main ports according to *C.C.* statistics than with those calculated from the same statistics on the quantities despatched from the Ruhr.

As the statistics of the *Bezirksverkehr* are not always complete, it may be stated that the round figure of 9,400,000 tons based on the preceding table represents certainly a *minimum* limit for the shipments of Ruhr coal and coke by water in the upstream direction in 1913, and that the actual quantities shipped were probably several hundred thousands higher.

2. *Upstream Shipments in 1925.*

The *C.C.* statistics for 1925 show the following figures for upstream shipments of coal from the Rhine-Ruhr ports :

TABLE 60. — UPSTREAM SHIPMENTS OF COAL FROM THE RHINE-RUHR PORTS.

Tons (000's omitted).

Despatched upstream from :	Coal	Briquettes	Coke	Total
Duisburg	4,941	0.2	193	5,134
Homburg	239	—	14	253
Alsum	926	—	51	977
Walsum	194	0.9	4	199
Total :	6,300	1.1	262	6,563

To these figures should be added the estimated quantities of coal emerging from the Rhine-Herne Canal and shipments of coal from less important coal ports such as Orsoy, Neuss, Reisholz, Cologne and Wesseling. The shipments from some other ports, such as Crefeld, Mannheim, Ludwigshafen, Lauterburg, Kehl and Strasburg, probably represent reconsignments and may be disregarded. (For estimates referring to the Rhine-Herne Canal, see section above dealing with the downstream traffic in 1925.)

The results are given in Table 61.

TABLE 61. — RUHR COAL, COKE AND BRIQUETTES SHIPPED UPSTREAM IN 1925.

Tons (000's omitted)

	Coal	Briquettes	Coke	Total
Ruhr ports	6,300	1	262	6,563
Rhine-Herne Canal. . .	?	?	?	2,200
Other coal ports	361	2	79	442
Total :	?	?	?	9,205

For reasons already stated, the total given above may err a few hundred thousands of tons in either direction.

Owing to the erratic character of the above figures, it is necessary to check them with the corresponding figures for coal received by upstream ports.

Table 62 shows, in addition to the quantities of coal received by the ports on the Upper and Middle Rhine, also those received by the tributaries of the Rhine (*C.C.*, page 205) :

TABLE 62. — COAL RECEIVED IN THE UPSTREAM DIRECTION BY THE RHINE PORTS AND THE TRIBUTARIES. OF THE RHINE.

Tons (000's omitted)

	Coal	Briquettes	Coke	Total
Upper Rhine	6,598	27	818	7,443
Middle Rhine	319	—	3	322
Rhine-Marne Canal	6	—	—	6
Rhine-Rhone Canal	1.4	—	0.6	2
Neckar	0.9	—	—	1
Lahn	0.7	—	—	1
Main	1,876	—	120	1,996
Total :	8,802	27	942	9,771

These amounts include, in addition to Ruhr coal, English coal received from the Netherlands. According to the Lobith records (C.C.1925) and to the Emmerich records (B.1925), the upstream shipments from the Netherlands amounted to 297,000 and 267,000 respectively. If calculated on the basis of the figures in B.1925, *Bezirksverkehr*, the same traffic may be said to have amounted to about 320,000 tons. Out of these, 310,000 or 97 per cent went to districts beyond the Ruhr. If the round figure of 300,000 tons be adopted for the total shipments from the Netherlands, and the same percentage of 97 per cent be applied, the figure for English coal received by ports beyond the Ruhr becomes 290,000 tons. This amount as well as traffic consigned twice over, which may be estimated at 250,000 tons, should be deducted from the quantities received by the various ports upstream.

Omitting the minor ports, the receipts of Ruhr coal in 1925 may be summarised as follows :

TABLE 63. — RUHR COAL RECEIVED IN THE UPSTREAM DIRECTION.

Tons (000's omitted)

Receipts by the Rhine and Main ports.	9,770
Less :	
Coal from the Netherlands	290
„ consigned twice	250
	540
Net receipts of Ruhr coal	9,230

If the minor ports were included, the figure would probably exceed 9,300,000 tons. On the whole, this calculated total figure for receipts agrees well with the figure for consignments given in Table 61 (9,205,000), but as it is impossible on account of the Rhine-Herne Canal to give separate figures for coke and coal, it cannot be ascertained whether these figures are actually correct or whether they conceal discrepancies for coal and coke in opposite directions, as it happened with the figures for 1913.

As the estimated 1913 figure was 9,400,000 tons, we have an arithmetic decrease of 100,000-200,000 tons. In view of the uncertain character of some of our estimates, we may say, however, that the consignments of Ruhr coal by water in the upstream direction were probably more or less the same as in 1913. If there was any decrease at all, it was certainly altogether insignificant.¹

¹ If the total figure for shipments of coal from the Rhine-Herne Canal is taken as being 6 millions instead of 5.5 millions, the figure for coal sent upstream in 1925 becomes 2,400,000 instead of 2,200,000. The total shipments of Ruhr coal upstream will be 9,400,000, i.e., the same as in 1913.

(b) *Rail Traffic in 1913 and 1925.*

Comparison with the Combined and Through Water Traffic.

Before studying the rail traffic in Ruhr coal by either route, we must consider the effects of the political changes since the war on traffic in coal other than Ruhr coal. Consignments of Ruhr coal may, indeed, have been seriously affected by changes in the distribution of coal traffic. Table 64, compiled from *G.*, shows the quantities of coal carried from the Saar and from Alsace-Lorraine to some German districts (chiefly South Germany).

The quantities despatched to Switzerland in 1913 are likewise given; corresponding data for 1925 and 1926 are however not available.

TABLE 64. — COAL (INCLUDING BRIQUETTES AND COKE) DESPATCHED BY RAIL FROM THE SAAR BASIN AND FROM ALSACE-LORRAINE TO SOME GERMAN DISTRICTS.

Tons (000's omitted).

Despatched to district	From the Saar			From Alsace-Lorraine			Total from both		
	1913	1925	1926	1913	1925	1926	1913	1925	1926
26 (Rhineprovince left) . . .	447.0	212.6	140.2	31.6	13.7	11.7	478.6	226.3	151.9
21 (Hesse-Nassau)	381.4	13.5	6.1	51.2	—	0.1	432.6	13.5	6.2
31 (Bavarian Palatinate) . . .	877.9	442.8	315.1	183.0	51.6	40.4	1,060.9	494.4	355.5
32 (Hesse)	305.1	57.9	26.9	44.7	0.2	—	349.8	58.1	26.9
33 (Baden)	603.9	154.7	152.8	206.1	35.5	19.6	810.0	190.2	172.4
34 (Mannheim-Ludwigsh) . . .	121.0	40.2	49.1	16.6	0.7	0.5	137.6	40.9	49.6
35 (Württemberg)	630.7	78.4	127.0	259.1	41.4	27.4	899.8	119.8	154.4
36 (South Bavaria)	228.3	5.3	4.7	73.1	1.8	2.1	301.4	7.1	6.8
37 (North Bavaria)	186.8	62.0	60.8	17.0	—	—	203.8	62.0	60.8
Total	3,782.1	1,067.4	882.7	882.4	144.9	101.8	4,664.5	1,212.3	984.5
56 (Switzerland)	694.9	.	.	596.0	.	.	1,290.9	.	.

The above table shows that there was a very heavy fall in coal traffic by rail from the Saar and the provinces of Alsace and Lorraine to some German provinces.

From Table 65, showing the coal traffic from some Rhine and Main districts to South Germany, it will be seen that with the exception of District 32 (Hesse) and to a certain extent of District 31 (Bavarian Palatinate) the transshipment traffic of Ruhr coal not only did not gain by the decrease in shipments of Saar and Lorraine coal, but was itself on the contrary in many cases considerably reduced. The table is based on the assumption that the coal sent from the districts given in the table represents chiefly Ruhr coal carried by water first and reloaded on rail. Shipments which cannot reasonably be considered as constituting a transshipment traffic in Ruhr coal have been omitted and the data replaced by an asterisk (*).¹

¹ It is obviously difficult to make a clear distinction between the ordinary consignments and those which are reconsigned *ex water*. Consignments like those from District 34 to District 32 ought possibly to have been omitted from the table.

TABLE 65. — COAL CARRIED BY RAIL IN 1913, 1925 AND 1926 FROM "UMSCHLAG" DISTRICTS TO SOME OTHER GERMAN DISTRICTS (SOUTH OF MAIN) AND TO SWITZERLAND.
Tons (000's omitted).

Despatched to districts	from 21	from 32	from 37	from 33	from 34	Total
	(H. Nassau)	(Hesse)	(N. Bav.)	(Baden)	(M. Ludw.)	
	(a)	(b)	(c)	(d)	(e)	(a-e)
31 (Bavarian Palatinate)	*	15.1	*	0.6	71.7	87.4
32 (Hesse)	39.3	207.5	*	*	51.6	298.4
33 (Baden)	*	*	*	378.6	1,008.8	1,387.4
35 (Württemberg)	3.9	2.9	—	203.3	827.3	1,037.4
36 (South Bavaria)	10.1	369.0	1.1	6.9	32.4	419.5
37 (North Bavaria)	60.7	451.9	24.1	0.3	9.7	546.7
Total	114.0	1,046.4	25.2	589.7	2,001.5	3,776.8
56 (Switzerland)	*	*	*	225.9	546.7	772.6

1925						
Despatched to districts	from 21	from 32	from 37	from 33	from 34	Total
	(H. Nassau)	(Hesse)	(N. Bav.)	(Baden)	(M. Ludw.)	(a-e)
31 (Bavarian Palatinate)	*	17.6	*	8.8	269.1	295.5
32 (Hesse)	80.0	266.8	*	*	241.1	587.9
33 (Baden)	*	*	*	606.1	763.0	1,369.1
35 (Württemberg)	2.7	1.5	0.5	235.3	824.2	1,064.2
36 (South Bavaria)	0.7	1.5	4.3	4.5	26.4	37.4
37 (North Bavaria)	25.3	23.2	102.7	1.6	6.4	159.2
Total	108.7	310.6	107.5	856.3	2,130.2	3,513.3
56 (Switzerland)	*	*	*	237.4	130.1	367.5

1926						
Despatched to districts	from 21	from 32	from 37	from 33	from 34	Total
	(H. Nassau)	(Hesse)	(N. Bav.)	(Baden)	(M. Ludw.)	(a-e)
31 (Bavarian Palatinate)	—	15.9	—	18.0	237.6	271.5
32 (Hesse)	3.9	234.7	0.1	0.4	44.8	283.9
33 (Baden)	4.0	1.3	—	547.4	826.5	1,379.2
35 (Württemberg)	3.7	0.2	—	281.6	761.7	1,047.2
36 (South Bavaria)	2.3	0.1	3.5	18.3	44.5	68.7
37 (North Bavaria)	17.7	8.2	357.9	0.7	7.9	392.4
Total	31.6	260.4	361.5	866.4	1,923.0	3,442.9
56 (Switzerland)	1.2	—	—	153.5	72.4	227.1

The distribution of the combined traffic having changed considerably, in part owing to the improved navigability of the Main, it is preferable to consider the total figures, which show, as mentioned above, that the combined traffic did not, on the whole, benefit in any marked degree by the exceptionally favourable circumstances arising from the cutting-off of traffic from the Saar and Lorraine and from the existence of the Rhine-Herne Canal, which was not open in 1913. The reduction was particularly striking in the case of North and South Bavaria, for which it reached 80 per cent. As regards District 34, reference should be made to Table 19, which showed an important decrease in the combined traffic of Mannheim, but an increase in the case of Ludwigshafen. The latter increase corresponds probably to the increased consignments to District 31 (Bavarian Palatinate). The actual situation of Mannheim was therefore less favourable than the data of Table 65 opposite would suggest.

Unlike the combined traffic, the through traffic in Ruhr coal to South Germany by rail has increased, as shown in Table 66 on the following page. In addition to actual Ruhr Districts 22, 23, and 28, Districts 24 and 26 have likewise been taken into account, the former because it is probable that coal despatched from the Ruhr districts contains some Westphalian coal, the route taken by which may have undergone some changes. The consignments from District 26 are certainly in part, though probably not altogether, made up of Ruhr coal.

The quantity of Ruhr coal sent to Switzerland by rail was smaller in 1925 and 1926 than in 1913. The same applies to a still greater extent to the combined traffic, as may be seen from Table 65. From the Swiss trade returns it will be seen, however, that there was a general reduction in imports of coal into Switzerland, from 3,387,000 in 1913 to 2,739,000 in 1925 and 2,707,000 in 1926.

We may now summarise the position of the various districts referred to and of Switzerland in Table 67 (page 119). Separate lines have been added showing Ruhr coal received according to *R.*, by water (from Districts 22*a-b*, 23*b*, 25*a-b*, 26*b-c* and 28). As the figures for the combined traffic for one district represent to a great extent quantities already counted under water traffic for another district, no total can be given for all receipts by all districts.

TABLE 66. — RUHR COAL CARRIED BY RAIL DIRECT FROM THE RUHR TO SOUTH GERMANY AND SWITZERLAND.

Tons (000's omitted).

1913

Despatches	from 22 (Ruhr W.)	from 23 (Ruhr Rh.)	from 24 (Westph.)	from 26 (Rh. pr. r.)	from 28 (Duisb. Ruhr)	Total
31 (Bavarian Palatinate)	33.7	32.6	—	8.0	—	74.3
32 (Hesse)	125.9	95.6	—	45.7	0.2	267.4
33 (Baden)	50.5	21.5	—	24.3	—	96.3
34 (Mannheim-Ludwigsh.)	17.3	1.5	—	0.6	—	19.4
35 (Württemberg)	96.1	117.5	0.1	48.6	3.3	265.6
36 (South Bavaria)	210.2	86.5	0.2	27.2	0.5	324.6
37 (North Bavaria)	508.4	95.0	—	28.3	0.6	632.3
Total	1,042.1	450.2	0.3	182.7	4.6	1,679.9
56 (Switzerland)	266.4	177.5	—	37.1	—	481.0
Grand Total	1,308.5	627.7	0.3	219.8	4.6	2,160.9

1925

31 (Bavarian Palatinate)	62.5	25.2	0.3	19.0	—	107.0
32 (Hesse)	185.1	132.3	0.4	82.0	0.4	400.2
33 (Baden)	274.1	107.6	1.6	42.5	0.5	426.3
34 (Mannheim-Ludwigsh.)	38.9	52.7	0.2	2.7	—	94.5
35 (Württemberg)	388.6	233.6	2.3	38.5	0.8	663.8
36 (South Bavaria)	318.0	134.4	22.1	16.2	0.5	491.2
37 (North Bavaria)	509.9	142.7	7.7	12.1	2.3	674.7
Total	1,777.1	828.5	34.6	213.0	4.5	2,857.7
56 (Switzerland)	229.9	116.4	48.1	39.9	2.5	436.8
Grand Total	2,007.0	944.9	82.7	252.9	7.0	3,294.5

1926

31 (Bavarian Palatinate)	73.5	38.9	—	15.2	0.1	127.7
32 (Hesse)	191.7	153.9	2.1	94.6	0.5	442.8
33 (Baden)	219.1	121.9	3.7	78.5	1.2	424.4
34 (Mannheim-Ludwigsh.)	29.1	46.1	0.1	48.9	—	124.2
35 (Württemberg)	427.1	259.8	2.8	95.9	1.0	786.6
36 (South Bavaria)	229.7	120.2	7.7	30.0	—	387.6
37 (North Bavaria)	468.6	205.9	6.8	18.6	0.1	700.0
Total	1,638.8	946.7	23.2	381.7	2.9	2,993.3
56 (Switzerland)	266.5	116.4	2.3	37.4	2.4	425.0
Grand Total	1,905.3	1,063.1	25.5	419.1	5.3	3,418.3

TABLE 67.— COAL CARRIED FROM THE SAAR, ALSACE-LORRAINE AND THE RUHR TO SOUTH GERMANY AND SWITZERLAND.

Tons (000's omitted).

1913

Despatched to districts	From Saar and Lorraine by rail	From the Ruhr		
		Direct by water	Combined traffic (water-rail)	Direct by rail
31 (Bavarian Palatinate)	1,060.9	31.1	87.4	74.3
32 (Hesse)	349.8	1,946.9	298.4	267.4
33 (Baden)	810.0	911.0	1,387.4	96.3
34 (Mannheim-Ludwigsh.)	137.6	4,094.6	—	19.4
35 (Württemberg)	889.8	35.3	1,037.4	265.6
36 (South Bavaria)	301.4	—	419.5	324.6
37 (North Bavaria)	203.8	74.3	546.7	632.3
Total	3,753.3	7,093.2	3,776.8	1,679.9
56 (Switzerland)	1,290.9	18.2	772.6	481.0
Grand Total	5,044.2	7,111.4	4,549.4	2,160.9

1925

31 (Bavarian Palatinate)	494.4	2.7	295.5	107.0
32 (Hesse)	58.1	977.9	587.9	400.2
33 (Baden)	190.2	836.5	1,369.1	426.3
34 (Mannheim-Ludwigsh.)	40.9	4,368.2	—	94.5
35 (Württemberg)	119.8	10.2	1,064.2	663.8
36 (South Bavaria)	7.1	—	37.4	491.2
37 (North Bavaria)	62.0	875.2	159.2	674.7
Total	972.5	7,070.7	3,513.3	2,857.7
56 (Switzerland)	No data available	0.5	367.5	436.8
Grand Total		7,071.2	3,880.8	3,294.5

1926

31 (Bavarian Palatinate)	355.4	10.3	271.5	127.7
32 (Hesse)	26.9	950.7	283.9	442.8
33 (Baden)	171.9	949.3	1,379.2	424.4
34 (Mannheim-Ludwigsh.)	49.7	3,199.4	—	124.2
35 (Württemberg)	154.4	20.9	1,047.2	786.6
36 (South Bavaria)	6.8	—	68.7	387.6
37 (North Bavaria)	60.8	552.3	392.4	700.0
Total	825.9	5,682.9	3,442.9	2,993.3
56 (Switzerland)	No data available	41.3	227.1	425.0
Grand Total		5,724.2	3,670.0	3,418.3

The increased receipts of Ruhr coal by rail compensated only in part for the fall in traffic from the Saar and Lorraine. This fall was also, as shown in Table 68, partly made good by Silesian coal received by rail which showed a heavy increase as compared with 1913. Coal received from Saxony shows, on the contrary, a certain decrease.

TABLE 68. — COAL CARRIED BY RAIL FROM SAXONY AND SILESIA TO SOUTH GERMANY AND SWITZERLAND.
Tons (000's omitted).

1913					
Despatched to districts	From 20 (Saxony)	From 15 (Lower Silesia)	From 13 (Upper Silesia)	Total	
31 (Bavarian Palatinate)	—	—	—	—	
32 (Hesse)	—	—	—	—	
33 (Baden)	—	—	—	—	
34 (Mannheim-Ludwigsh.)	—	—	—	—	
35 (Württemberg)	1.0	—	—	1.0	
36 (South Bavaria)	22.2	18.9	—	41.1	
37 (North Bavaria)	324.9	3.0	—	327.9	
Total	348.1	21.9	—	370.0	
56 (Switzerland)	—	—	1.7	1.7	
1925					
Despatched to districts	From 20 (Saxony)	From 15 (Lower Silesia)	From 13 (Upper Silesia)	From 47 (Polish Upper Silesia)	Total
31 (Bavarian Palatinate)	—	—	1.0	—	1.0
32 (Hesse)	—	6.7	13.2	0.3	20.2
33 (Baden)	—	25.9	62.1	17.3	105.3
34 (Mannheim-Ludwigsh.)	—	2.3	0.8	—	3.1
35 (Württemberg)	2.6	111.7	235.0	32.6	381.9
36 (South Bavaria)	11.5	246.3	437.0	157.7	852.5
37 (North Bavaria)	264.2	141.3	399.6	106.8	911.9
Total	278.3	534.2	1,148.7	314.7	2,275.9
56 (Switzerland)	—	6.4	2.9	*	.
1926					
Despatched to districts	From 20 (Saxony)	From 15 (Lower Silesia)	From 13 (Upper Silesia)	From 47 (Polish Upper Silesia)	Total
31 (Bavarian Palatinate)	—	0.3	1.8	—	2.1
32 (Hesse)	1.1	7.0	7.8	—	15.9
33 (Baden)	—	—	35.1	—	35.1
34 (Mannheim-Ludwigsh.)	—	—	0.9	—	0.9
35 (Württemberg)	1.1	54.8	193.5	—	249.4
36 (South Bavaria)	13.0	216.8	437.7	—	667.5
37 (North Bavaria)	257.4	78.5	246.1	—	582.0
Total	272.6	357.4	922.9	—	1,552.9
56 (Switzerland)	0.3	5.8	—	.	.

* According to the Swiss official trade returns, the imports of coal (special trade) from Upper Silesia to Switzerland amounted in 1925 to 33,200 tons. According to G. the coal carried from Upper Silesia to Switzerland via Germany amounted to 46,000 tons. This figure probably includes coal re-exported from Switzerland.

The coal traffic by rail from the Netherlands, though increasing, is too small to be considered.

Table 68 shows a very heavy increase of traffic by rail from Lower and Upper Silesia to South Germany and to a lesser extent to Switzerland; this traffic was practically non-existent in 1913. Owing to the tariff war between Poland and Germany since June 1925, the figures for Polish Upper Silesia represent traffic during the first half of the year, supplies of this coal having been practically stopped in the second half of the year. As at the same time a severe economic crisis occurred in Germany which lasted for about one year, the internal consumption of coal was greatly reduced. This explains why, in spite of the cutting-off of the supply from Polish Upper Silesia, the consignments from other mining centres to South Germany did not show any marked increase.

The two last statements above may likewise be illustrated in the following manner, together with the + or — differences from 1913 to 1925 and from 1913 to 1926. A column has been added showing separately the total rail traffic (total of the first three columns).

TABLE 69. — CHANGES IN QUANTITIES OF COAL RECEIVED BY SOUTH GERMANY AND BY SWITZERLAND IN 1913, 1925 AND 1926.

Tons (000's omitted).

(a) Quantities actually received.

Received from		Saar and Lorraine (rail)	Saxony and Silesia (rail)	From the Ruhr			Total rail only
				Direct by rail	Combined traffic (water-rail)	Direct by water	
Received by District :							
31 (Bavarian Palatinate) . . .	1913	1,060.9	—	74.3	87.4	31.1	1,135.2
	1925	494.4	1.0	107.0	295.5	2.7	602.4
	1926	355.4	2.1	127.7	271.5	10.3	485.2
32 (Hesse)	1913	349.8	—	267.4	298.4	1,946.9	617.2
	1925	58.1	20.2	400.2	587.9	977.9	478.5
	1926	26.9	15.9	442.8	283.9	950.7	485.6
33 (Baden)	1913	810.0	—	96.3	1,387.4	911.0	906.3
	1925	190.2	105.3	426.3	1,369.1	836.5	721.8
	1926	171.9	35.1	424.4	1,379.2	949.3	631.4
34 (Mannheim-Ludwigshafen).	1913	137.6	—	19.4	—	4,094.6	157.0
	1925	40.9	3.1	94.5	—	4,368.2	138.5
	1926	49.7	0.9	124.2	—	3,199.4	174.8
35 (Württemberg)	1913	889.8	1.0	265.6	1,037.4	35.3	1,156.4
	1925	119.8	381.9	663.8	1,064.2	10.2	1,165.5
	1926	154.4	249.4	786.6	1,047.2	20.9	1,190.4
36 (South Bavaria)	1913	301.4	41.1	324.6	419.5	—	667.1
	1925	7.1	852.5	491.2	37.4	—	1,350.8
	1926	6.8	667.5	387.6	68.7	—	1,061.9
37 (North Bavaria)	1913	203.8	327.9	632.3	546.7	74.3	1,164.0
	1925	62.0	911.9	674.7	159.2	875.2	1,648.6
	1926	60.8	582.0	700.0	392.4	552.3	1,342.8
Total	1913	3,753.3	370.0	1,679.9	3,776.8	7,093.2	5,803.2
	1925	972.5	2,275.9	2,857.7	3,513.3	7,070.7	6,106.1
	1926	825.9	1,552.9	2,993.3	3,442.9	5,682.9	5,372.1
56 (Switzerland)	1913	1,290.9	1.7	481.0	772.6	18.2	1,773.6
	1925	.	.	436.8	367.5	0.5	.
	1926	.	.	425.0	227.1	41.3	.

TABLE 69. — CHANGES IN QUANTITIES OF COAL RECEIVED BY SOUTH GERMANY AND BY SWITZERLAND IN 1913, 1925 AND 1926 (continued)

(b) Deficit (—) or Surplus (+) in 1925 and 1926 respectively, as compared with 1913.

Received from		Saar and Lorraine (rail)	Saxony and Silesia (rail)	From the Ruhr			Total rail only
				direct by rail	Combined traffic (water-rail)	direct by water	
Received by District :							
31 (Bavarian Palatinate)	1925	— 566.5	+ 1.0	+ 32.7	+ 208.1	— 28.4	— 532.8
	1926	— 705.5	+ 2.1	+ 53.4	+ 184.1	— 20.8	— 650.0
32 (Hesse)	1925	— 291.7	+ 20.2	+ 132.8	+ 289.5	— 969.0	— 138.7
	1926	— 322.9	+ 15.9	+ 175.4	— 14.5	— 996.2	— 131.6
33 (Baden)	1925	— 619.8	+ 105.3	+ 330.0	— 18.3	— 74.5	— 184.5
	1926	— 638.1	+ 35.1	+ 328.1	— 8.2	+ 38.3	— 274.9
34 (Mannheim-Ludwigshafen).	1925	— 96.7	+ 3.1	+ 75.1	—	+ 273.6	— 18.5
	1926	— 87.9	+ 0.9	+ 104.8	—	— 895.2	+ 17.8
35 (Württemberg)	1925	— 770.0	+ 380.9	+ 398.2	+ 26.8	— 25.1	+ 9.1
	1926	— 735.4	+ 248.4	+ 521.0	+ 9.8	— 14.4	+ 34.0
36 (South Bavaria)	1925	— 294.3	+ 811.4	+ 166.6	— 382.1	—	+ 683.7
	1926	— 294.6	+ 626.4	+ 63.0	— 350.8	—	+ 394.8
37 (North Bavaria)	1925	— 141.8	+ 584.0	+ 42.4	— 387.5	+ 800.9	+ 484.6
	1926	— 143.0	+ 254.1	+ 67.7	— 154.3	+ 478.0	+ 178.8
Total	1925	—2,780.8	+1,905.9	+1,177.8	— 263.5	— 225.0	+ 302.9
	1926	—2,927.4	+1,182.9	+1,313.4	— 333.9	—1,410.3	— 431.1
56 (Switzerland)	1925	—	.	— 44.2	— 405.1	— 17.7	.
	1926	—	.	— 56.0	— 545.5	+ 23.1	.

The table above, although it does not include the total shipments from all directions to the various districts and although it contains some elements of uncertainty, may be taken as fairly representative of the actual situation. It shows clearly that the common practice of considering South-German rail and water traffic of the Ruhr only is a mistaken one. Such an incomplete investigation may lead to the false conclusion that the supply of coal to South Germany by rail increased in every case, at the expense of the water traffic. On examining all the important sources of coal supply, we find that there was undoubtedly such an increase of rail traffic at the expense of water or combined traffic in the case of South and North Bavaria, but that the same can hardly be said of the other South-German districts. In several cases, however, the fall in rail traffic from comparatively near coalfields has been made good by rail traffic from the distant Silesian coalfields, rather than by water traffic in Ruhr coal.

When considering the coal traffic from the Ruhr both in the downstream and in the upstream direction and the traffic from the other mining districts to South Germany, we may observe that there appear to be serious changes in the mode of distribution of coal throughout the country as compared with 1913. These changes may or may not mean an adaptation towards new conditions created by territorial changes.

Iron Ores.

(C.C. 1913 : Articles 20, 22*e*, 22*f*. G. 1913, 1925 : 20, 22*e*. C.C. 1925 : 70*a*, 73, 98*f*.)

Traffic on the Rhine.

Whilst, according to Lobith returns, the upstream shipments — chiefly from the Netherlands — showed nearly the same figures in 1913 and in 1925 (9,033,000 and 8,966,000 tons respectively), there was a big reduction according to Emmerich records, the corresponding figures for which were 8,924,000 and 8,286,000 tons. The port statistics for arrivals upstream show likewise an important decrease. It appears, however, from Table 46 that the traffic in 1913 was very much higher than in 1912.

Rail Traffic.

The arrivals in upstream direction from abroad — practically only Belgium — in Districts 22-23, 25-26, 28, which amounted in 1913 to 271,800 tons, fell in 1925 to 21,000 tons. Quantities received from German seaports remained negligible. Owing to territorial changes, the quantities received from other countries — France and Luxemburg — showed likewise a heavy reduction which is also reflected in the reduced figures for general imports of ores by Germany (see Table 21).

The reduction of the traffic on the Lower Rhine is thus hardly due to railway competition. As between 1913 and 1925, the upstream traffic on the Ems (from Emden) increased from 1,338,000 to 1,698,000 tons, it may be stated that the reduction on the Rhine traffic was due (1) to a general reduction in imports of iron ore, (2) to increased receipts via the German seaport Emden.

As regards the Upper Rhine, Mannheim-Ludwigshafen (District 34) received in 1925 by water bigger shipments of ore than in 1913, but its direct transshipment traffic from water to rail, which amounted to 28,673 tons, disappeared altogether in 1925. The consignments from Mannheim-Ludwigshafen by rail partake, however, of the character of local traffic and it is therefore not believed that the disappearance of the transshipment traffic is due either to competition on behalf of the Main navigation or on behalf of the railways.

The same remark applies to the contrary movement — transshipment from rail to water — which has likewise disappeared. There might be some competition on behalf of the Main navigation, but not sufficient to explain the disappearance of the transshipment in downstream direction.

Ores other than Iron.

There was a heavy reduction in the upstream shipments on the Rhine from Dutch and Belgian ports, but, as the railway traffic has been insignificant, the reduction was apparently not due to railway competition.

Iron and Steel Wares.

(C.C. 1913 : Articles 12*a*, *b*, 13-15, 17-19*a*. C.C. 1925 : 148-149*i*. G. 12-15, 17-19*a*.)

Downstream Traffic.

The records for downstream shipments by water, although being very divergent, point to an important increase between 1913 and 1925 :

	Tons (000's omitted)	
	1913	1925
Lobith returns for arrivals in Rhine seaports.	1,613	2,075
Emmerich returns	1,524	2,323
Rhine-Main port statistics : consignments downstream	1,552	1,868

The corresponding consignments by rail from Districts 22, 23 and 28 were as follows :

Consignments by rail to :	Tons (000's omitted).	
	1913	1925
Elbe seaports	331	183
Weser seaports	264	228
Ems seaports	15	7
Total.	610	418
Netherlands	355	90
Belgium	409	32
Grand total.	1,374	540

It appears from the above data that the water traffic on the Lower Rhine in downstream direction has gained appreciably at the expense of rail traffic, which suffered particularly from the slump in the traffic by rail to Belgium (see Table 48). The situation might possibly have changed in 1927, the summary data for which show an important increase in the general traffic of ironware by rail, there having been no parallel increase in the water traffic (see Table 8).

The shipments from Mannheim-Ludwigshafen in downstream direction have been greatly reduced. This reduction is due chiefly to the cutting-off of iron received by rail from the Saar district and from Lorraine and not to competition by rail. As shown in Table 18, the direct transshipment traffic in downstream direction has suffered to a very great extent.

Traffic Upstream.

The direct transshipment traffic of Mannheim is recorded as having been greatly reduced. The following are the figures for the direct transshipment of iron and steel wares in Mannheim and Ludwigshafen from water to rail :

	Tons (000's omitted).		
	1913	1925	1926
Mannheim	13.7	9.2	0.6
Ludwigshafen	0.5	.	7.0

According to B., the quantities received in Mannheim-Ludwigshafen from the Ruhr districts by *water* (from 25a-b, 26c, 28) amounted to 72,300 tons in 1913 and to 90,600 tons in 1926. The arrivals by *rail* from the Ruhr and the Palatinate were equally important, but much inferior to those from the Saar, Alsace and Lorraine as shown below :

Arrivals by rail in Mannheim-Ludwigshafen :	Tons (000's omitted).	
	1913	1926
From Districts 22-31	85.9	72.3
From the Saar	215.0	43.4
From Alsace and Lorraine	43.7	11.8
From Luxemburg	16.2	1.9

The traffic by rail from the territories ceded has thus undergone a great reduction. The through traffic by rail from the Ruhr to South Germany has, however, increased, whereas the consignments by rail from Mannheim to South Germany have decreased as shown below :

	Tons (000's omitted).	
	1913	1926
Arrivals by rail in South Germany (districts 35-37) :		
From Mannheim-Ludwigshafen	57.7	53.9
From Ruhr districts	230.7	281.8
From Saar, Alsace and Lorraine	230.5	170.6

It may be stated that the Rhine traffic from the Ruhr proved unable to take advantage of the falling-off of the traffic with ceded territories. The increase in the through rail traffic from the Ruhr to South Germany made good the deficiency in the traffic with those territories. The transshipment traffic of Mannheim and Ludwigshafen respectively seems, moreover, to develop in an opposite direction.

Metals other than Iron.

(*C.C.* 1913 and *G.* : Articles 4, 67, 19*b.* *C.C.* 1925 : Articles 81, 82, 76, 77, 83, 152-155.)

The upstream traffic on the Rhine (*C.C.*) has increased at the expense of the rail traffic :

	Tons (000's omitted).	
	1913	1925
Rhine traffic upstream	108.4	175.3
Arrivals by rail from the Elbe and Bremen seaports in Districts 21-26, 28, 31-37	32.1	25.6

The decrease of consignments by rail is due chiefly to a decrease of shipments to the Ruhr districts, whilst the increase of consignments on the Rhine is due to a great extent to increased shipments to Cologne. The arrivals by water in Mannheim-Ludwigshafen fell, however, from 31,300 tons in 1913 to 18,000 tons in 1925.

Cereals.

(*C.C.* 1913 and *G.* : 28*a-f.* *C.C.* 1925 : 20-24.)

The upstream shipments on the Rhine from Dutch and Belgian ports are shown below (*C.C.*) :

Consignments upstream from :	Tons (000's omitted).	
	1913	1925
Dutch ports	3,205	1,146
Belgian ports	724	951
Total.	3,929	2,097

Traffic by rail from Hamburg and Bremen fell in the same period from 103,300 tons in 1913 to 75,400 in 1925 (*G.*).

It should be noted, however, that there has been a general decrease of imports of cereals by Germany (see Table 21) and, as regards particularly the total rail traffic from any origin, there was a change affecting the rail traffic adversely, imports from Russia (rail) having been replaced in part by overseas imports (foreign seaports).

As the traffic by water appears to be in a relatively better position as compared with the rail traffic than in 1913, the actual decrease in the water traffic does not appear to be due to railway competition.

Mannheim remained the main supplier of cereals to South Germany and there appears to be no important change in the receipts by rail.

Flour.

The quantities shipped on the Rhine upstream decreased from 134,000 tons in 1913 to 127,800 in 1925 (C.C.). The arrivals in Mannheim-Ludwigshafen fell from 121,000 to 69,000 tons (C.C.).

Whereas the statistics of the direct transshipment traffic show a considerable decrease (for Mannheim from 30,000 in 1913 to 4,500 in 1926), the "Bezirksverkehr" statistics of consignment from Mannheim-Ludwigshafen to South Germany by rail (Districts 35-37) show on the contrary an increase from 148,500 in 1913 to 181,400 in 1926 (G.). Consignments from the Elbe and Weser seaports to Districts 21-26, 28, 30-37 increased from 5,200 tons in 1913 to 22,100 in 1925 (G.). This increase represents, however, in part the substitution of one given traffic by rail by another. Thus the three South-German districts referred to above received by rail from District 20 (Saxony) in 1913 26,400 tons, but only 15,800 in 1926. This reduction was accompanied by rail traffic of new consignments by river from the Elbe seaports which were non-existent in 1913 and amounted to 13,100 tons in 1926.

The reduction in the arrivals in Mannheim by water was due chiefly to a decrease in the traffic coming from the Rhine Districts 25*b* and 26*b* and not to a decrease of arrivals from the Netherlands which remained more or less stationary.

In spite of an increase in the consignments from the Elbe seaports to South Germany, there appears to have been no growing competition on the part of the railways.

Rice and Rice Flour.

The upstream traffic on the Rhine (from Dutch and Belgian ports and Rhine sea traffic) decreased from 46,700 tons in 1913 to 30,400 in 1925 (C.C.). Mannheim was particularly affected by this decrease: 13,000 tons received in 1913 and only 4,400 in 1925 (C.C.). The railway traffic from the Elbe and Weser seaports to Districts 21-26, 28, 31-37 increased on the contrary from 24,200 tons in 1913 to 29,500 in 1925 (G.).

As regards more particularly some South-German districts, the statement below shows for the two years under review the receipts by rail from Hamburg and from Mannheim-Ludwigshafen (G.):

Tons (000's omitted)

Receipts by rail	From Hamburg		From Mannheim	
	1913	1925	1913	1925
Baden (District 33)	—	2.2	1.6	0.4
Württemberg (35)	0.1	0.8	1.8	1.3
South Bavaria (36)	1.5	5.9	4.2	0.2
North Bavaria (37)	0.3	1.4	0.6	0.1
	1.9	10.3	8.2	2.0

As shown in Table 19, the direct transshipment traffic from Mannheim-Ludwigshafen was considerably reduced:

Transshipment from River to Rail.

Tons (000's omitted).

	1913	1925	1926
Mannheim . . .	3.1	0.1	0.2
Ludwigshafen . .	1.1	.	0.3

The Rhine traffic appears to have suffered from an increasing railway competition.

Coffee, Tea, Cocoa.

The upstream traffic on the Rhine shows a heavy decrease accompanied by an increase in the rail traffic (*C.C.*).

Tons (000's omitted).		
<i>Rhine traffic</i>		
	1913	1925
From Dutch ports	44.3	22.5
„ Belgian „	2.5	0.7
Rhine sea traffic	4.7	2.8
	51.5	29.0
<i>Rail traffic: Consignments to Districts 21-26, 28, 51-37 (G).</i>		
From Elbe seaports	8.9	16.1
„ Weser „	2.2	3.1
	11.1	19.2

As regards more particularly the Upper Rhine, Mannheim-Ludwigshafen shows an important reduction in arrivals by water in upstream direction (Districts 26*b* and Netherlands): from 10,982 in 1913 to 8,289 tons in 1925. Its consignments by rail fell from 4,337 tons in 1913 to 2,750 tons in 1925. The figures for its direct transshipment traffic show likewise an important reduction. (See Table 19.)

On the other hand, consignments from the Elbe ports by rail to South Germany have increased considerably :

Tons (000's omitted).		
<i>Consignment by rail from the Elbe seaports to:</i>		
	1913	1925
Baden (District 33)	78	327
Mannheim-Ludw. (34)	27	498
Württemberg (35)	576	2,950
South Bavaria (36)	925	2,972
North Bavaria (37)	969	1,216
	2,575	7,963

It would appear from the above statistics that the upstream traffic on the Rhine and particularly on the Upper Rhine has suffered from an increasing competition of traffic by rail from German seaports.

Sugar.

The quantities of sugar carried on the Rhine in upstream direction showed in 1925 an increase as compared with 1913, the consignments from Dutch and Belgian seaports together with the Rhine sea traffic having increased from 176,700 tons in 1913 to 230,800 in 1925.

The quantities received by Mannheim-Ludwigshafen in upstream direction — chiefly from Belgium, Netherlands and via the Ems-Weser Canal — increased from 94,600 tons in 1913 to 98,900 in 1925. The direct transshipment traffic in Mannheim of sugar, which was practically non-existent in 1913, amounted in 1925 to over 14,000 tons and in 1926 to over 18,000, but the transshipment traffic of Ludwigshafen (consignments to District 31) fell from 57,000 to 34,000. As the traffic by rail did not undergo any important changes, it may be stated that the water traffic of sugar to the Upper Rhine does not appear to have suffered from an increasing competition on the part of the railways.

Salt.

The Rhine traffic to Dutch and Belgian ports (*C.C.*) increased from 103,400 tons in 1913 to 135,600 in 1925, the railway traffic with the German seaports being of no importance.

The direct transshipment traffic in Mannheim, which consists in re-consigning on the Rhine salt received by rail from Württemberg, has increased considerably (see Table 18).

It may be stated that the Rhine traffic of salt developed in the absence of a growing competition on the part of the railways.

Raw Tobacco.

The upstream Rhine traffic (*C.C.*) fell from 22,800 tons in 1913 to 17,200 in 1925. The consignments by rail (*G.*) to Districts 21-26, 28, 31-37 from the Elbe and Weser seaports rose, on the contrary, from 13,200 tons to 14,300.

Oil and other Seeds.

(1913 : *C.C.* and *G.* 28 *h,i.* 1925 : *C.C.* 61. *G.* 28*h.*)

The heavy reduction in the upstream traffic on the Rhine (*C.C.*) from 553,900 tons in 1913 to 186,800 in 1925 was not accompanied by an increase in the traffic by rail. It does not therefore appear to be due to railway competition.

Oils and Fats.

The Rhine traffic upstream showed a heavy decrease which affected the majority of ports (*C.C.*)

	Tons (000's omitted).	
<i>Consignments by water from :</i>	1913	1925
Dutch ports	161.1	121.5
Belgian ports	44.9	5.2
Rhine sea traffic	16.6	7.2
	222.6	133.9
Total		

The statement below shows that, whilst the consignments by rail from Mannheim-Ludwigshafen to other South-German districts decreased, the contrary obtained in the case of consignments from the German seaports.

Tons (000's omitted).
Consignments by rail from :

	Mannheim-Ludwigshafen		Hamburg and Bremen	
	1913	1925	1913	1925
To Districts :				
31-33	13.2	5.7	0.8	2.0
35-37	17.3	12.9	4.8	20.2
Total	30.5	18.6	5.6	22.2
Switzerland	2.2	0.2	0.5	1.2

Here, again, the traffic on the Rhine — and particularly on the Upper Rhine — appears to have suffered from an increasing competition the railways.

Cotton.

The consignments on the Rhine upstream showed a reduction :

	Tons (000's omitted).	
<i>Consignments by water from :</i>	1913	1925
Dutch ports	1.4	3.3
Belgian ports	13.0	1.6
	14.4	4.9
Total		

The corresponding quantities carried by rail to Districts 21-26, 28, 31-37 likewise showed a decrease :

<i>Consignments by rail from :</i>	Tons (000's omitted).	
	1913	1925
Elbe seaports	20.6	20.8
Weser seaports	241.6	192.5
Total	<u>262.2</u>	<u>213.3</u>
Netherlands	10.5	19.4
Belgium	15.0	16.2
Grand Total	<u>288.7</u>	<u>248.9</u>

As the general imports of cotton in Germany were in 1925 much lower than in 1913, it may be stated that both rail and water traffic suffered from the slump in imports.

Wool.

(C.C. and G.)

The upstream Rhine traffic shows a heavy reduction from all seaports :

<i>Consignments by water from :</i>	Tons (000's omitted).	
	1913	1925
Dutch ports	5.5	3.7
Belgian ports	8.4	0.1
Rhine seaports	3.4	0.6
Total	<u>17.3</u>	<u>4.4</u>

The arrivals of wool in Mannheim-Ludwigshafen fell consequently from 9,833 tons in 1913 to 3,637 tons in 1925 (G.).

The traffic by rail from the seaports to South Germany shows, on the contrary, an increase.

The table below gives the consignments by rail from German seaports to Districts 21-26, 28, 31-37 :

<i>Consignments by rail from :</i>	Tons (000's omitted).	
	1913	1925
Elbe seaports	4.8	5.7
Weser seaports	1.0	5.8
Total	<u>5.8</u>	<u>11.5</u>

The increase is particularly striking in the case of Bremen, its consignments of wool to South Bavaria having increased from 141 tons in 1913 to 3,366 tons in 1925. For the same years the shipments from Mannheim-Ludwigshafen to South Bavaria fell from 2,832 tons to 177 tons.

The situation did not change substantially in 1926, although it became slightly more favourable to Mannheim than in 1925. It is set out in the following statement :

Consignments by Rail to South Germany (tons).

Consigned from :	To 35 (Württemberg)		To 36 (South Bavaria)		To 37 (North Bavaria)	
	1913	1926	1913	1926	1913	1926
34 (Mannheim-Ludwigshafen)	3,845	2,586	2,832	976	54	4
8-9 (Elbe and Weser ports).	255	780	570	3,601	806	860
11 (Hanover)	563	1,090	253	229	47	122

As no wool appears to be transhipped via Aschaffenburg, it would appear that the Rhine traffic of wool upstream has suffered severely from an increasing competition by railways.

Jute, Hemp, Flax and other Textile Fibres.

(1913 : C.C. and G. 25, 34. 1925 : C.C. 95-97.)

The traffic on the Rhine in the upstream direction fell between 1913 and 1925 by nearly 50 per cent as shown in the following statement :

<i>Consignments by water from :</i>	Tons (000's omitted)	
	1913	1925
Dutch ports	13.1	11.3
Belgian ports	11.8	7.3
Rhine sea traffic	10.9	0.2
Total	35.8	18.8

At the same time, the arrivals in Mannheim-Ludwigshafen by water fell from 10,400 tons in 1913 to 7,600 in 1925. On the contrary, the traffic from German seaports to Districts 21-26, 28, 31-37, nearly quadrupled :

<i>Consignments by rail from :</i>	Tons (000's omitted).	
	1913	1925
Elbe seaports	12.4	29.7
Weser seaports	0.5	18.9
Total	12.9	48.6

The increase was particularly marked as regards the traffic between Hamburg and South Bavaria, which increased from 63 tons in 1913 to 12,114 in 1925. As the shipments from the Weser seaports went chiefly to the Ruhr districts, the growing traffic from Bremen did not affect the traffic on the Upper Rhine.

The Rhine traffic of textile fibres upstream appears to have suffered from an increasing competition of railways. This competition made itself felt on the Lower Rhine as well as on the Upper Rhine.

Porcelain, China and Other Pottery.

(C.C., G. 1913 : Article 63. C.C. 1925 : Articles 142,143.)

According to C.C. the shipments on the Rhine downstream to Dutch and Belgian ports, as well as the Rhine sea traffic decreased from 36,494 tons in 1913 to 4,152 tons in 1925.

Although the B. data of shipments to the Netherlands and Belgium show a much smaller reduction, there was still a considerable decrease also according to that source. It was particularly striking in the case of Mannheim-Ludwigshafen, the consignments by water

from which decreased from 13,583 tons in 1913 to 363 tons in 1925. At the same time, the traffic by rail from Districts 21-26, 28, 31-37 to the German seaports has increased :

	Tons (000's omitted).	
	1913	1925
<i>Consignments by rail to :</i>		
Elbe seaports	8.1	19.1
Weser seaports	2.3	8.6
Ems seaports	0.1	0.8
Total	10.5	28.5

The increase was particularly striking as regards receipts by the Elbe seaports from North Bavaria, which increased from 5,200 tons in 1913 to 14,500 in 1925. The receipts by Bremen from North Bavaria likewise increased.

At the same time, the receipts by Mannheim-Ludwigshafen from Czechoslovakia (in 1913 Bohemia), which amounted in 1913 to 4,191 tons, disappeared entirely in 1925, the receipts from Alsace and Lorraine fell from 4,577 tons in 1913 to 54 tons in 1925 and those from North Bavaria from 2,113 tons to 1,487 tons. As the rail traffic from Czechoslovakia to German seaports showed likewise a slight decrease and the transit traffic via Germany by rail only a slight increase, it may be stated that the traffic on the Upper Rhine suffered much more from territorial changes than from a competition by railways, if there was any at all. The Main-Rhine traffic appears, on the contrary, to have been directly affected by the increased consignments by rail from North Bavaria to the German seaports.

Glassware.

The downstream traffic on the Rhine to Dutch and Belgian ports and the Rhine sea traffic fell from 37,800 tons in 1913 to 12,300 in 1925 (*C.C.*). But it should be noted that : (1) the traffic of glassware by water was in 1913 much bigger than in 1912 and may consequently have been somewhat exceptional ; (2) this traffic does not originate from the Upper Rhine ; and (3) the traffic by water to the German seaports has increased. The decrease in the downstream Rhine traffic of glassware is therefore not caused by a competition by railways, in South Germany at least.

Paper and Cardboard.

There was a slight reduction in the Rhine traffic in the downstream direction to Dutch and Belgian ports and in the Rhine sea traffic from 99,900 tons in 1913 to 88,500 in 1925 (*C.C.*).

The consignments by rail from Districts 21-26, 28, 31-37 to the Elbe and Weser seaports increased in those two years from 11,200 tons to 33,500.

As regards particularly the situation of Mannheim-Ludwigshafen, its receipts by rail from Districts 33, 35-37 decreased from 38,800 tons to 30,400 and its consignments by water to Belgium and the Netherlands fell from 56,400 tons to 49,400. At the same time the consignments by rail from Districts 33-37 to Elbe seaports rose from 2,100 tons in 1913 to 13,500 in 1925. The above figures point to a decrease of the Rhine traffic in favour of railway traffic. As shown in Table 45, however, the consignments to the German ports have increased considerably both by rail and by water. It would thus appear that the reduction in the traffic of Mannheim was due, not only to a competition on behalf of the railways, but also to increased exports via German seaports instead of foreign ports.

Fertilisers.

(C.C.1913, G.1925 : 10a-f : G.1913 : 10. C.C.1925 : 53.)

Traffic upstream.

According to the Lobith records (C.C.), the Rhine traffic upstream from or via the Netherlands and Belgium decreased from 437,000 tons in 1913 to 172,400 in 1925. The consignments by rail from the Elbe and Weser seaports decreased from 30,800 tons to 12,000. But it should be noted that the general imports of fertilisers into Germany have been in later years much smaller than before the war, the use of chemical fertilisers produced within Germany being at present much more important than in 1913. For this reason, both the figures of the foreign Rhine traffic and of consignments by the various seaports are no longer representative of the traffic of fertilisers.

The direct transshipment traffic of Mannheim, Ludwigshafen and Aschaffenburg was as follows :

Direct Transshipment from river to rail (in tons) :

	Mannheim	Ludwigshafen	Aschaffenburg
1913	5,063	1,852	—
1925	2,987	.	—
1926	1,418	565	16,019

The statement below shows the quantities arrived by rail in Württemberg, South Bavaria and North Bavaria from (a) Mannheim-Ludwigshafen, (b) other origins, local traffic being excluded (G.) :

Tons (000's omitted).

Consignments by rail :	From Mannheim-Ludwigshafen		From other origin		Total	
	1913	1925	1913	1925	1913	1925
To District 35 (Württemberg)	18.6	37.5	111.4	160.4	130.0	197.9
36 (South Bavaria)	29.5	27.5	245.5	376.5	275.0	404.0
37 (North Bavaria)	15.0	34.1	200.0	230.3	215.0	264.4
Total	63.1	99.1	556.9	767.2	620.0	866.3

The increase in consignments by rail to South Bavaria from districts other than Mannheim-Ludwigshafen is particularly striking. The statement below gives the origin of the more important consignments to that province by rail :

Consignments to South Bavaria by Rail.

Tons (000's omitted).

Despatched from districts	1913	1925
19, a, b, (Merseburg, Erfurt, Thüringen)	45.9	109.6
21 (Hesse-Nassau)	38.3	56.3
26, 28 (Ruhr)	2.1	15.6
35 (Württemberg)	9.1	22.2
37 (North Bavaria)	17.6	17.2
Saar	22.4	23.1
Alsace-Lorraine, France	55.5	74.1
Luxemburg	35.8	27.1

The above statement shows that the increased supply by rail is due to changes in the nature of fertilisers used rather than to a competition on behalf of the railways.

Traffic downstream.

The water traffic of fertilisers on the Rhine downstream shows a big increase (*C.C.*), but the consignments from Mannheim-Ludwigshafen are not of great importance. Similarly, the traffic by rail to German seaports remained unimportant. Ludwigshafen had in 1913 an considerable transshipment traffic from rail to river. This traffic which originated in the Lorraine has stopped since. The suppression of this traffic is therefore due to territorial changes and not to a competition by the German railways.

Hides, Skins and Furs.

The upstream Rhine traffic (Dutch, Belgian and Rhine sea traffic) decreased from 23,900 tons in 1913 to 22,700 in 1925 (*C.C.*). The corresponding consignments by rail (to Districts 21-26, 28, 31-37) from the Elbe and Weser seaports increased from 26,300 tons to 45,300 (*G.*).

As regards more particularly Mannheim-Ludwigshafen, the arrivals by water from the Netherlands and Belgium increased from 7,100 tons in 1913 to 8,300 in 1925 (*G.*), but its consignments by rail to South Germany decreased. The corresponding through traffic by rail has greatly increased as shown in the following table :

Consignments by Rail to South Germany.

Tons (000's omitted).

Consignments by rail	From Mannheim-Ludw.		From Elbe seaports		From Alsace	
	1913	1925	1913	1925	1913	1925
To District 35 (Württemberg)	3.9	2.7	3.7	16.3	2.5	0.1
„ 36 (South Bavaria)	0.2	0.1	0.4	5.0	0.6	—
„ 37 (North Bavaria)	0.1	0.1	0.8	1.4	0.7	0.1
Total.	4.2	2.9	4.9	22.7	3.8	0.2

As a whole, the Rhine did not benefit from the increase in the traffic which was entirely taken over by the railways. As regards consignments to Württemberg, the traffic via Mannheim suffered from an increasing competition by the railways, which gained five times as much as they lost owing to territorial changes.

Mineral Oils.

The total Rhine traffic upstream increased from 420,500 tons in 1913 to 432,000 in 1925 and to 541,500 in 1926 (*C.C.*). The quantities received by District 34 (Mannheim-Ludwigshafen) and 32*b* (Rhine in Hesse) amounted to (*G.*):

Tons (000's omitted).

Received by :	1913	1925	1926
District 34 (Mannheim-Ludwigshafen)	184.1	168.7	183.8
32 <i>b</i> (Rhine, Hesse)	27.4	7.8	12.8

The consignments by rail from the Elbe seaports to the Upper Rhine (Districts 33-37) and to Switzerland were as follows :

		Tons (000's omitted).		
Despatched to :		1913	1925	1926
Districts	33-35	0.2	7.0	7.6
"	36	0.9	7.8	14.5
"	37	2.8	13.1	9.4
Total		3.9	27.9	31.5
Switzerland		—	8.5	17.7

The statistics of the direct transshipment traffic give figures which in the case of Mannheim suggest that this traffic has practically disappeared, but that it was particularly important in 1926 for Ludwigshafen :

Transshipment from River to Rail.

		Tons (000's omitted).		
		1913	1925	1926
Mannheim		2.4	0.6	0.2
Ludwigshafen		0.1	.	45.1

The traffic statistics (*G. Bezirksverkehr*) give, however, quite a different impression :

Consignments by Rail from District 34 (Mannheim-Ludwigshafen).

Tons (000's omitted).

Despatched to		1913	1925	1926
District	31 (Bavarian Palatinate) . . .	9.5	9.9	11.4
"	33 (Baden)	22.4	20.6	23.9
"	35 (Württemberg)	19.2	31.0	37.2
"	36 (South Bavaria)	25.9	14.7	14.8
"	37 (North Bavaria)	9.9	12.4	13.1
Total		86.9	88.6	100.4
Saar		3.0	1.0	1.5
Switzerland		32.8	40.2	31.8

The above analysis points towards a certain competition by the railways, particularly as regards consignments of mineral oils to Switzerland, North and South Bavaria, but not to other South German districts.

Cement.

Downstream Traffic.

The total Rhine traffic downstream fell from 329,900 tons in 1913 to 277,600 in 1925 (C.C.). The reduction was particularly striking in the case of Mannheim-Ludwigshafen, the figures of which fell from 118,800 tons in 1913 to 23,700 in 1925 (C.C.). The data calculated from *G.* give somewhat higher results (shipments to Belgium and the Netherlands : 138,200 tons in 1913 and 25,600 in 1925), but do not alter the conclusion.

The corresponding traffic by rail shows an increase :

Consignments by rail from Districts 21-26, 28, 31-37.

	Tons (000's omitted).	
	1913	1925
To Elbe seaports . . .	7.2	2.3
To Weser seaports . .	18.9	62.4

As it appears from Table 43, however, that the traffic by rail to Bremen was in 1913 much lower than in 1912, the statements above are not sufficient to judge whether the decrease in the Rhine traffic was really due to an increasing railway competition.

Upstream Traffic.

The direct transshipment traffic of Mannheim (river to rail) fell from 62,400 tons in 1913 to 12,600 in 1925 and 8,500 in 1926. Ludwigshafen likewise shows an important decrease. The chief origin of cement despatched in the upstream direction to the Upper Rhine are Districts 32*b* (Rhine in Hesse) and the Ruhr Districts 25*b* and 28. The consignments to Mannheim-Ludwigshafen from these districts fell from 125,200 tons in 1913 to 19,700 in 1925 (*G.*).

The following statement shows the consignments by rail from Mannheim-Ludwigshafen to some other South German districts :

	Tons (000's omitted).	
	1913	1925
<i>Despatched from Mannheim-Ludwigshafen by rail :</i>		
To District 31 (Bavarian Palatinate)	9.9	1.6
„ 33 (Baden)	41.1	11.5
„ 35 (Württemberg)	21.3	1.6
„ 36 (South Bavaria)	18.6	—
„ 37 (North Bavaria)	1.6	—
Total	92.5	14.7

The through consignments of cement by rail to the above provinces show, on the contrary, a big increase :

*Total consignments by Rail from Districts other than 34
(Mannheim-Ludwigshafen).*

	Tons (000's omitted).	
To District :	1913	1925
31 (Bavarian Palatinate)	44.2	60.8
33 (Baden)	137.8	201.1
35 (Württemberg)	281.0	299.6
36 (South Bavaria)	279.2	358.0
37 (North Bavaria)	183.4	191.0
Total	925.6	1,110.5

If the local traffic (*i. e.*, traffic within each of the five districts), which is very important, be excluded, the total figures are 478.1 and 539.2 respectively. Whichever figures are taken, there has been obviously an increase in the through traffic by rail, which is the more striking as this traffic originated before the war chiefly in Alsace-Lorraine, and the consignments from this origin have been greatly reduced. Through consignments by rail from District 21 (Hesse-Nassau) have on the contrary greatly increased.

*Consignments by Rail from Alsace and Lorraine
and Hesse-Nassau to South Germany.*

Tons (000's omitted).

	From Alsace and Lorraine		From Hesse- Nassau	
	1913	1925	1913	1925
To District :				
31 (Bavarian Palatinate) . .	8.2	0.3	5.4	27.3
33 (Baden)	16.4	7.6	2.4	20.6
35 (Württemberg)	20.6	2.0	1.9	13.0
36 (South Bavaria)	3.9	—	3.8	14.8
37 (North Bavaria)	0.2	—	25.7	38.8
Total	49.3	9.9	39.2	114.5

It might be concluded that the railways increased their through traffic by an amount double of what they lost owing to territorial changes after the war. This increase has, no doubt, affected the transshipment traffic via Mannheim to a considerable extent. This growing competition on behalf of the railways is the more striking as the District 21 (Hesse-Nassau) from which the through consignments of cement by rail have increased to such an extent is itself a river district.

ANNEX C 1.

SYNOPSIS OF INFORMATION COMMUNICATED TO THE COMMITTEE CONCERNING THE EFFECTS OF THE TARIFF POLICY OF THE GERMAN, BELGIAN AND FRENCH RAILWAYS ON RHINE TRAFFIC.¹

I. EFFECTS OF THE TARIFF POLICY ON TRAFFIC TO AND FROM RHINE SEAPORTS.

(a) *Falling Distance Rates and Exceptional Seaport Rates.*

In the years preceding 1914, the German railways made efforts to obtain the traffic to German seaports by means of a special tariff policy. However, as this was a disadvantage to German inland shipping, the German railways also introduced special transshipment tariffs (rail and water) for their own shipping, these being valid from the interior of Germany to German Rhine ports.

The Peace Treaty required that exceptional tariffs already granted to German seaports be also applied to the ports of the Allied Nations. Accordingly, as from September 1st, 1919, the German railways withdrew all special tariffs. However, in November 1923, they re-introduced thirty-two of these tariffs in connection with seaports, but the special transshipment tariffs mentioned in paragraph 1 above were not re-established. The special tariffs for seaports therefore detrimentally affect inland shipping at present.

The traffic to Rhine seaports is also unfavourably influenced by the fact that the German railways calculate their rates on the so-called Distance Scale (*Entfernungsstaffel*). The Falling-distance Rates (*Staffel tarife*) based thereon emanate from the principle that the freight rate per fixed length of distance called the "unit of distance" decreases in accordance with the whole length of the journey, so that for long distances very low, and for short distances very high, freight rates are charged. In this way inland shipping is doubly injured, in the first place as its importance lies in transportation over long distances, for which very low freight rates are quoted by the railways, and in the second place because, for goods choosing the water route only, there are short railway distances down to the shipping station, and for these the railway rates are high.

As mentioned in paragraph 2, on November 1st, 1923, the German railways introduced special preference tariffs for their own seaports. Therefore, in accordance with the Peace Treaty, Germany was forced to introduce a number of special tariffs on behalf of Belgian seaports. Persons interested in traffic to Dutch seaports made representations in this connection, with the result that Germany also set up certain special tariffs in favour of Dutch ports.

However, since that time, the special tariffs to German seaports have been reduced twice, whereas those to Rhine seaports have not been changed; the effect is obvious. To take one example, the freight for a five-ton truckload of toys from Stuttgart to the Dutch frontier (Venlo) is at present 71 marks dearer than to Hamburg, in spite of the distance to the Dutch frontier being 235 kilometres shorter. Similar measures cause great injury to the Rhine seaports.

The German railways have drawn a demarcation line, Rheine-Eger, for the few exceptional tariffs enjoyed by the Netherlands, these tariffs only applying in the event of goods coming from the west of this line.

During the negotiations which took place between Germany and the Netherlands prior to the Commercial Treaty of November 26th, 1925, Germany promised that the differences which existed to the disadvantage of Dutch ports as compared to ports of third States should be abolished. The German Government fulfilled its promise in this

¹ It should be noted that all information summarised in Annex C 1 was collected in 1926 and that no revision has taken place afterwards. For later developments of railway policy with reference to the Rhine, see Annex D and, especially, Section III of the Report itself.

respect by abolishing as from October 15th, 1926, the special tariffs for Belgian ports. This was no advantage to the Netherlands, as the German ports alone benefit by the measure and have become more powerful competitors.

(b) *Traffic with Austria and Czechoslovakia.*

Formerly, the same German exceptional tariffs existed both to German and Rhine seaports. However, there is no practical effect as the tariff to German seaports is no longer actually applied, but is replaced by much lower freight rates in order to defy competition with Trieste and Fiume. The German railways actually refund on goods traffic between Austria, Czechoslovakia and German stations on the one side and the German seaports, Hamburg and Bremen, on the other side the difference between the railway rates from the same places to Trieste and Fiume.

(c) *Traffic between Switzerland and the Netherlands.*

Exceptional German tariffs are in force for traffic both to the German seaports and to the Belgian and Dutch frontiers, but tariffs to the Netherlands are calculated on a less favourable basis than those to Hamburg and Belgium. This difference amounts to from 35 to 50 per cent.

(d) *Transshipment Tariffs.*

The German railways have realised what a detrimental effect their tariff policy must have on Rhine traffic. Therefore, as from June 10th, 1924, they introduced a transit transshipment tariff to the Upper Rhine ports, Mannheim, Karlsruhe and Kehl. The object was to limit the effect of the special tariffs for seaports, which were responsible for a great deal of traffic, which formerly went via the Rhine, choosing the direct railway line to German seaports.

However, the new transit transshipment tariff attained its object only to a small extent, it being of minor importance. As regards the traffic of cereals to Switzerland, for example, it has to compete with the Special Tariff S.D.2. on behalf of German seaports.

Also in regard to the transit traffic from places on the Upper Rhine to Austria and Czechoslovakia, which is equally of vital importance to the Rhine, everything is done to favour German seaports.

(e) *Measures on the Part of Belgian and French Railways.*

The Belgian and French railways adopt similar measures in order to favour their own seaports.

The Belgian railways allow a reduction of rates in respect of goods shipped via Antwerp, if being loaded into a seagoing vessel there, or discharged therefrom. This naturally induces interested parties to abstain from making their shipments to Dutch ports. The system prevents Dutch seaports deriving any profit from the cheap carriage on the French railways of goods from Switzerland, as Belgium charges high railway rates for the transit, the special tariffs only coming into operation if goods are discharged or loaded into a seagoing vessel at Antwerp.

Not only does the French commercial policy injure the Rhine traffic with Alsace-Lorraine in favour of the railway traffic from and to French and Belgian seaports, by means of special railway tariffs, but also by imposing supplementary import duties (surtaxes) on many kinds of goods which are not imported directly into France from the country of origin.

The overseas goods, arriving in Rotterdam, which could be shipped along the Rhine to Strasburg, cannot follow this route owing to the prohibitive surtaxes. However, goods shipped via Antwerp are exempted from these taxes.

(f) *Other Causes for the Decline of Trade of Rhine Seaports.*

On the other hand, the trade of Rotterdam and Antwerp has been affected by the important change in different markets since the war. Before the war Germany exported great quantities of dyes to the United States of America, etc. ; since the war these dyes are manufactured in the U. S. A. and other countries. The same remarks apply to chemicals

and explain the fall in traffic on the Rhine to Rotterdam and Antwerp of about 1,000 tons a week. Traffic to Rotterdam and Antwerp by rail appears to be only about 10 per cent of the Rhine traffic to the same ports. The railway carries principally coke in trucks.

In addition to this, the regular services from the Upper and Lower Rhine which were carried on before the war, during which time there were large quantities of the above-mentioned commodities to be transported, have ceased as the result of the aforementioned situation. The present services are only occasional, and shippers therefore have to rely on railway transport to a much larger extent than in the pre-war period. They now utilise the railways to a greater extent to Hamburg, Bremen, Rotterdam, Amsterdam and Antwerp.

(g) Conclusions and Recapitulation of the foregoing.

The whole complex of the foregoing and similar measures by the German, Belgian and French railways have greatly injured the transit traffic via the Rhine seaports, especially as far as the traffic went along the Rhine.

German, Belgian and French railways are quoting several reduced tariffs with the explicit object of securing as large a part of the traffic as possible to their own seaports. As a matter of fact, the low railway rates in this connection mean sacrifices which cannot be defended from an economic point of view, and the railways are sacrificing their own interests in order to secure traffic which would under natural circumstances reach the sea in a different way.

II. TRAFFIC TO AND FROM THE UPPER RHINE.

(a) Traffic Westphalia-Ruhr and upstream.

In consequence of the Seaports Special Tariffs, above referred to in detail, the traffic territory has changed in favour of the German seaports, and the frontier point for the transport of steel and metals is now Hagen (distance Hagen-Duisburg 63 km., Hagen-Bremen 255 km.). If the proposed reduction of the Steel Special Tariff (35 per cent) is carried through, the traffic territory for the Rhine would withdraw from Hagen to Essen: as a consequence a substantial portion of the Rhine-Westphalia industry traffic would fall to the German seaports. In spite of the Special Steel Railway Tariffs, the Rhine traffic from the above-mentioned territory still has great importance, this being due to the fact that most of the large works are on the Rhine, and the Steel Union aims at occupying works with water connection. However, as regards Westphalian general industry, this, to the detriment of the Rhine, goes more and more by rail to German seaports, on account of special railway tariffs.

(b) Traffic Mannheim-South Germany.

As far as in this territory the industry lies on the Rhine, the same remarks apply in part as those regarding the Ruhr territory. Moreover, in this territory, industry is not so closely grouped about the Rhine ports. However, Mannheim feels very strongly the influence of the German Seaports Special Tariffs. Much South German traffic, which before the introduction of these tariffs went over the Rhine, now goes by rail to German seaports.

(c) Traffic Strasburg-Switzerland.

The changes which have taken place in this territory since 1920 are due to the Belgian Seaports Special Tariffs, the German Seaports Special Tariffs, and the surtaxes, dealt with above. These factors have caused an important falling-off in the Strasburg port traffic as regards the Swiss trade. An important portion of the traffic from and to Alsace-Lorraine now goes by rail via Antwerp, or the French seaports, in order to avoid the consequences of the surtax, while from Strasburg to Antwerp over the Rhine there is no steamer service, but only barge transportation. Transport from South Germany and from East Switzerland gravitates in consequence of the Seaports Special Tariffs to Hamburg.

ANNEX C 2.

SYNOPSIS OF INFORMATION COMMUNICATED TO THE COMMITTEE
CONCERNING THE EFFECTS OF THE TARIFF POLICY OF VARIOUS
RAILWAY ADMINISTRATIONS ON DANUBE TRAFFIC.

Railway rates have in some cases been reduced and in others (in transshipment traffic) increased for the sole purpose of attacking the shipping companies.

Examples.

(a) The Austrian Federal Railways' Goods Tariff, Section II, Part A, of July 1st, 1926, restricted the equality of treatment previously applied under the special goods tariffs (Artikeltarife) to all the Vienna stations of the interconnecting metropolitan railways, by excluding from the said tariffs in the case of traffic, from Vienna, consignments transhipped from the Danube.

Similar restriction, apply in the case of the Linz transshipment station, and similar measures seem to have been introduced as well in the combined tariffs to which the Federal Railways are a party.

These measures, which result in freight rates from Danube transshipment stations being much higher than from the other stations in the same place, are intended to impede, and do very considerably impede, transshipment traffic. Consignments, of iron from Germany to inland stations of the Federal Railways, for example, have been diverted from the transshipment route via Vienna to the all-rail route.

In cases where the Federal Railways' route from point of transshipment is longer than that from the land frontier, diversion of consignments to the railway actually means a loss for the Federal Railways (soda from the Kingdom of the Serbs, Croats and Slovenes to Austrian stations on the former Southern Railway).

(b) *Traffic with Linz Transshipment Station.* — Since 1926, the distance of the railway section Linz goods station - Linz transshipment station has been taken, for freight rate calculation purposes, as 16 kilometers, although the actual distance is scarcely 6 kilometers (Cf., Goods Tariff of the Austrian Federal Railways, Section II, Part A of January 1st, 1924, Division VII, page 35 (Linz and Linz goods station), Point IV, 2).

Whereas in 1924 the total freight rate on the above section amounted, per wagon, to Kr.50,000 (Gr.500), the Federal Railways' share in the freight rate on the section Linz goods station - Linz transshipment station for all goods traffic with Ebensee via Linz transshipment station would, for example, now amount to (Gr.278-227 per 100 kilogrammes) Gr. 5,100 per 10,000 kilogrammes.

This tariff rate is prohibitive for the transshipment traffic.

(c) *Salt from Ebensee.* — In April 1926, for the express purpose of competing with the transshipment route via Linz, freight rates from Ebensee to Austrian railway stations of destination were considerably reduced (e.g., Ebensee-Vienna from Gr.470 to Gr.356¹), while the freight rate from Ebensee to Linz transshipment station (Gr.278²) and to Linz goods station (Gr.227²) remained unaltered.

After the railway rate Ebensee - Linz goods station had been reduced on May 7th, 1926, to Gr.175, with a view to a partial equalisation of rates, it was again raised, on July 1st, 1926, to Gr.200, so that the shipping companies had to reduce their Linz - Vienna freight rate from Gr.112 to Gr.56 in order to retain consignments to at least some destinations.

With the same end in view, railways thereupon again raised the Ebensee - Linz goods station rate (at present it is Gr.225), so that it would seem impossible, generally speaking,

¹ Local tariff rate, Gr. 689.

² Local tariff rates.

for traffic to use the Danube route. This particular measure would appear to be specially inexpedient since, in the unanimous opinion of the salt trade, freight rates could be considerably increased without the traffic being in any way affected. Such an increase in railway rates would, on balance, certainly be financially advantageous to the Federal Railway, even though they lost part of the traffic to the Danube route. They accordingly prefer to retain, for the sole purpose of dealing a blow at Danube navigation, a measure which was imposed with ulterior motives and which operates to their own disadvantage.

(d) *Plums from the Kingdom of the Serbs, Croats and Slovenes.* — In the case also of the traffic in plums from the Kingdom of the Serbs, Croats and Slovenes, the railways have directed special efforts against, the Danube route.

In the autumn of 1925, exceptionally reduced rates to Bavarian frontier stations were introduced. Thereupon the rates thus fixed for traffic to Hamburg were again undercut as a result of measures taken by the railway administrations interested in the route via Czechoslovakia, first on the Szob - Helemba route and then on the transshipment route via Bratislava - Laube.

The following are the reductions conceded by the railways in this connection :

Dried Plums, in 10-Ton or 15-Ton Consignments.

	Reduced railway rates.	Normal railway rates.
Rosenbach Salzburg (<i>Anzeigebblatt</i> f. V. Folge 79 ex 1926)	Gr. 220	Gr. 454
Spielfeld Strass-Passau } Annex A.	{ 220	633
" " -Salzburg } to A. f. V	{ 187	581
" " -Simbach } Folge 55 ex 1926 . .	{ 215	624
	øH	
Helemba Bohumin } (<i>Vestnik pro železnice</i> . .	{ 791	(2,026 øH)
Bohumin Hamburg } a plavbu Nr. 77 ex 1926)	{ 1,264	(518 Pfg)=ø
	<hr/> 2,055	6,355
Bratislava Pristav Loubi Transshipment (<i>Vestnik pro zl.</i> Nr. 81 ex 1926).	øH 685	øH 2,228
	Gr.	Gr.
Kelebia-Frontier-Passau (A. f. V. Folge 86 ex 1926)	405	906

(e) *Sugar from Czechoslovak stations to Switzerland.* — On September 25th, 1926, the railway interested in traffic between Switzerland and Czechoslovakia introduced a new special tariff for transport of sugar, etc.

In connection therewith, the German Special Tariff 119, which provides reduced freight rates from various German stations, including Regensburg, to German Swiss frontier stations, was restricted to consignments of German origin, and can thus no longer be applied to consignments sent to Regensburg by the Danube.

For example, Danube traffic consignments of 10,000 kilogrammes on the section Regensburg - Schaffhausen have now to pay a freight rate of Rpf.378 per 100 kilogrammes, whereas the rate hitherto amounted to Rpf.171 and for consignments from Regensburg loco still remains Rpf.171.

Where freight is paid on the basis of the loaded weight of the railway wagon used, the position as regards rates is similar.

Only by means of very considerable sacrifices on the Danube section are the shipping companies still able to direct consignments originating at certain Czechoslovak stations on to the Danube route.

ANNEX D 1.

LETTER FROM DR. W. SPIESS, DIRECTOR OF THE GERMAN RAILWAY
COMPANY.

(WITH APPENDICES).

[*Translation.*]

With reference to the consultation which took place at the session of the Sub-Committee on Competition between Railways and Waterways on September 23rd to 24th, 1927, I have the honour, as promised on that occasion, to give my opinion on Mr. Hines' report on Rhine navigation.

While confirming the explanations which I gave at the time at Geneva, I should like to point out that, on the basis of the results of the Committee's discussions, the arguments developed in respect of the special instance of the port of Mannheim, should be regarded as disposing also of the general complaints against the Reich Railways, in so far as the Rhine is concerned.

In addition to the question dealt with in Mr. Hines' report, namely that the Reich Railways appear to have adopted policies seriously detrimental to the Rhine, questions were put to me as regards the special transit tariffs D 22, 32, 52 and 58. Since I was not acquainted with the material at the Sub-Committee's disposal, and an extension of the investigation beyond Mr Hines' programme: "detriment suffered by Rhine Navigation owing to the Tariff Policy of the Reich Railways" had not been provided for, I could only give the following explanations in the matter:

1. The fact of the introduction of the special tariffs 22/32 and 52/58 proves that the establishment of competitive tariffs to benefit the longest possible stretches of the Reich Railways was part of the general policy of these railways, and was not a measure specially intended to favour the German seaports.

2. The reductions in the four special tariffs named are determined in exactly the same way as the competitive rates of the German seaport tariffs, namely, by simply adopting the foreign competitive rates. The reductions in the four special tariffs must therefore be fluctuating and discriminatory according to the requirements of the situation arising from the rates in force on the Franco-Belgian and Dutch competing or adjoining sectors.

3. The special tariffs 22/32 and 52/58 prove that in their general competitive policy the Reich Railways do not hesitate in certain circumstances to fix tariffs which will benefit the route to foreign ports, even when this may in certain circumstances be to the detriment of the German seaports. The four special tariffs are advantageous to navigation in so far as the shipper will be more willing to send his goods to Antwerp or Rotterdam if he knows that, in the event of a failure of the water route, he will also have favourable terms for the carriage of his goods to these ports by railway.

As regards our working costs, this question, together with the whole problem of inland navigation transshipment tariffs, was fully dealt with in public at the Transshipment Week arranged by the German Engineers' Union in the spring of 1925. The report printed on these discussions contains all the speeches. It should be pointed out that the particulars given on that occasion by Dr. Tecklenburg, director of the Reich Railways, as regards the working costs of the railways, and especially of the Reich railways, have been submitted to further investigations, and are therefore subject to certain alterations. The

¹ This report is printed separately.

last word on the subject of working costs is contained in the summing up of the latest changes in the graded tariffs given by M. Scholz, section manager of the Goods Tariff Department, at the meeting of the Board of the Reich Railways on July 19th, 1927. The report of this meeting is attached. I would draw attention to the passage of this report in which it is stated that the longer the distance, the more our working costs tend to decrease, and this decline almost exactly corresponds to the decline in the rates of our standard tariff. In other words, the relation between our carriage receipts and working costs, on the basis of our present tariff system, is constant for all distances. This being so, it follows that carriage over a short distance can never be more profitable for the railways than over a long distance, provided the same tariff principles are applied in both cases. An extension of the seaport tariffs (long distances) to the inland waterway transshipment port (short distances) is therefore impossible for the Reich Railways if they desire to achieve the most profitable results. This being the conclusion arrived at on the basis of the easily verifiable facts published with the authority of the competent administrative and supervisory bodies, and of those contained in the various business reports and statistical publications, etc., it will be seen that all the questions raised in the Hines report will find a solution on a commercial basis and on the lines of the policy adopted up to the present by the Reich Railways.

The assertion that the Reich Railways endeavoured before 1914 to make good the losses incurred owing to their seaport policy by means of the inland navigation transshipment tariffs, is quite incorrect, since in 1914 the Reich Railways did not exist. The various German State railways at that time had quite different policies. The inner reasons for the policy of Baden, for instance, in establishing transshipment tariffs, are given in my article in the "Zeitschrift für Binnenschifffahrt" No. 4, 33rd year, dated April 15th, 1926.¹

The statement that on September 1st, 1919, the Reich Railways cancelled all the special tariffs as a consequence of the terms of the peace treaty is also incorrect. A certain number of special tariffs remained in force after September 1st, 1919, and as regards the rest, the majority of the special tariffs on the State and private railways had already been withdrawn in 1917 for the purpose of uniformity and to obtain higher receipts.

In November 1923 took place the great collapse of the German currency. In view of the Reich Railways' heavy deficit at that time and of the fact that the Reich declared the railways to be financially independent and refused further subsidies, the Reich Railways began to take more active measures to attract traffic. Accordingly a number of seaport tariffs were set up to promote the importation of the textile raw materials (wool, cotton, jute, etc.) which, in consequence of the collapse of the currency, had almost disappeared from Germany. The tariffs were issued under Nos. 30, 31 and 32 of our Special Tariff Book. This does not mean, however, that there were thirty-two seaport tariffs at that time, and this number has not even been reached to-day, if we exclude special tariffs of a temporary nature, created to meet individual cases of competition. The assertion that the special seaport tariffs are detrimental to inland navigation must be disputed; and the statistical proof attempted in the Mannheim memorandum (see Appendix I) must be regarded as unsatisfactory, as I explained in the opinion I gave on this memorandum (see Appendix II).

It would be going outside the scope of my task and of that of the Committee to extend the enquiry to the alleged detrimental influence of the policy of the Reich Railways on the Dutch or Belgian ports. It cannot, of course, be denied that the aim of the German seaport tariff policy is to assist the German seaports against the competition of the foreign seaports, especially those of the Netherlands, but such tariff measures are adopted by all big railways in the interests of their country's trade. Here, too, I would refer to my remarks on the Mannheim memorandum.

The same applies in the question of the graduated tariff (*Staffeltarif*). This tariff was not introduced on account of inland navigation but for the same reasons as apply in the case of all the other great continental railway systems, namely, those arising out of the national economic interests and out of the position as regards working costs. The

¹ This article is printed separately.

scale is not substantially different in Germany from what it is in Italy or France, for example, being in some cases proportionately higher and in some cases lower than in these countries. According to the scale percentage rate applied to the German railways, the graduated tariff rate for 1,000 kilometers falls, in the dearest and cheapest categories A and F, from 1,000 to 550. In France the reduction in the dearest category is from 1,000 to 860, and in the cheapest standard wagon-load category from 1,000 to 490; in Italy it is from 1,000 to 665 in the highest and from 1,000 to 718 in the cheapest wagon-load category (in which connection it should be observed that in Italy, owing to the geographical configuration of the country, the maximum distances are nearly twice as great as those in Germany).

It is true that, owing to a claim put forward by Belgium under Article 325 of the Treaty of Peace, tariff reductions similar to those contained in the German seaport tariffs were also granted by the Reich Railways to Antwerp and the Belgian ports, and also later to the Netherlands ports. These reductions, however, do not form part of the German seaport tariff policy; they were only granted on the basis of legal obligations or with a view to applying equal treatment to Germany's two north-western neighbours. The further development of the tariffs was therefore exclusively influenced by the relations between German and Netherlands railways, and German and Belgian railways, and not by considerations of German seaport tariff policy. The tariffs therefore followed quite a different course from that of the seaport policy. Moreover, this question is not relevant to the problem raised by Mr. Hines, namely, whether and how far Rhine navigation is assisted or hampered by the Reich Railways. *If, to-day, the German seaport tariffs were to apply in the direction of Rotterdam and Antwerp to the same extent as to the German seaports, the alleged disadvantageous effects of these tariffs on Rhine navigation would not be less but much greater than if the tariffs were only applied as at present to the German seaports.*

Reference should be made to the remarks made above in regard to the Mannheim memorandum. It is quite possible that if they receive further requests for a reduction in special tariff 44 to Mannheim, the Reich Railways will acquiesce in such a reduction. On the other hand strong protests have been received from the Upper Rhine navigation interests (above Mannheim) against the reductions already made, *e. g.*, in regard to cereals. In particular the Basle interests regard the further extension of special tariff 44, not as a measure in favour of the port of Mannheim, but as a measure to the detriment of the port of Basle and of the Upper Rhine shipping. It will not be easy for the Reich Railways to hold the balance between the conflicting interests of the parties concerned in Rhine navigation.

The transit rates from Mannheim to Passau must be kept sufficiently high above the Danube transshipment tariff for there to be a certain inducement to adopt not only the Rhine but also the Danube as a transport route. In view of the speed of transport and other advantages of the railway route, the Danube traffic has an interest in being able to choose between both alternatives, and especially in having at its disposal a direct railway connection between the port of importation, *i. e.*, Hamburg, Bremen, etc., and Passau and Regensburg (Ratisbon). The route via Mannheim is less profitable for Danube traffic. Moreover, Mannheim is already included in most of the Danube transshipment tariffs.

It is not true that the traffic of Westphalia is going more and more by rail to the German seaports. On the contrary, this traffic, since the extension of the Rhine-Herne Canal, has been showing an increasing tendency to go to the Rhine seaports. The same applies, in a lesser degree, to the South German traffic. The figures in this connection are dealt with above in the special part referring to the Mannheim memorandum.

As regards the Danube tariff question, I may confine my statement to the fact that the Reich Railways, with the quite natural object of attracting as much as possible to its own lines the goods traffic of Central and Eastern Europe from outside the frontiers of Germany, has taken all possible steps to assist and encourage Danube shipping by means of tariff and technical measures. I have had the satisfaction of learning, that in the Committee's opinion only a very small number of minor complaints have been found worth investigation, and that, in general, no competition problem is considered to exist. The individual cases, so far as they affect Germany, have been in the meantime, I hope, dealt with to the full satisfaction (see Annex D 5).

As regards the voluminous statistical material sent to me on September 16th, 1927, I cannot deal exhaustively with the individual points without unduly extending the scope of the present memorandum. I must confine myself, therefore, to dealing with the fundamental questions which apply equally to all the statistics.

I repeat what I have already stated in my remarks upon the Mannheim memorandum to the effect that no conclusions can be based on a comparison of the years 1913 and 1925.

Praiseworthy though the statistical investigations may be, the way in which these enquiries have been circumscribed, and the selection made from the statistical material available, must be looked upon as in many cases distorting the position as regards tariff policy. Naturally that part of the Rhineland which is situated on the left bank of the Rhine is not subject to competition from the *German* seaports. The same applies also to the Palatinate and the part of Hesse situated on the left bank. Even the Mannheim memorandum does not take into account the Palatinate and Hesse. Generally speaking, from the point of view of the areas on the left bank, the Rhine route is only competitively affected by the tariff measures taken on the left-bank (foreign) sectors of the railway and perhaps by our tariffs to the Aix-la-Chapelle frontier.

That the alleged losses of the Rhine route are to be attributed more to the left-bank railways and the foreign railways than to the German seaport tariffs is proved moreover by the trade statistics of Hamburg, Rotterdam and Antwerp. The figures of incoming vessels, in net register tons, have developed as follows:

Year	Hamburg	Rotterdam	Antwerp
1885	3,704,112	2,120,347	3,393,527
1890	5,202,825	2,918,425	4,517,698
1900	8,037,514	6,326,901	6,691,791
1910	12,656,281	10,658,831	10,756,030
1913	14,185,496	12,788,342	12,024,796
1923	15,344,116	11,161,328	14,750,473
1924	15,540,497	15,089,293	16,348,770
1925	16,636,312	16,670,643	17,147,260
1926	17,423,197	21,495,835	19,374,507
	Percentage increase.		
1925-1926	5	29	13
1885-1913	280	500	250
1913-1925	17	30	43
1913-1926	23	68	61
1885-1926	370	914	471

After at first being exceeded only by Antwerp, Hamburg, which before the war had the highest traffic figures, was again surpassed in 1925 and still more in 1926 by both Antwerp and Rotterdam. The movement has been even more pronounced since 1927. The ports of Antwerp and Rotterdam have, therefore attracted traffic to an increasing extent, and this traffic came for the most part from Germany. If the Rhine believes that it has lost traffic, this is in contradiction to the figures of the Rhine seaports, and the indisputable increase shown by these figures must have been due to traffic carried by the western railways. In any case, it is an undoubted fact that the *German* seaports have shown a relative decline in traffic since the war.

German seaports tariff policy cannot therefore have had an injurious effect on Rhine traffic (indeed these injurious effects cannot be statistically proved).

German seaports — looked at from the Rhine — lie on one side in an easterly direction ; their position from a geographical point of view can be compared with that of Dunkirk which is in a similar position to the west. In any case, as regards competition between railways and the Rhine, the lines to German seaports are only of secondary importance. This is primarily a question of means of approach to the ports of the Rhine estuary itself ; we have therefore to take account of the lines, tariffs and goods traffic policy of the Dutch and Belgian railways, the German railways acting in this case only as carriers to and from the more inland districts.

As has already been mentioned in the memorandum on Mannheim, no final opinion whatever can be given with regard to tariff measures for German seaports until the measures taken in the case of Belgium, the Netherlands and France have been examined in exactly the same way as has been done for Germany. If the statistical material for French ports, so far as it concerns the French and Swiss hinterland of the Belgian ports, is entirely insufficient, and thus an analysis of facts on that side is impossible, no judgment can be formed as to conditions in Germany. The knowledge on which an objective opinion as to existing conditions alone could be based is not available. For instance, the fact that the port of Strasburg is exceedingly prosperous, while before the war it could only develop slowly, might, if no further evidence were to hand, give rise to the most various deductions. In my opinion, this affords an admirable illustration of the extent to which the power of attraction of Mannheim before the war secured goods traffic for Mannheim at a time when Alsace-Lorraine freights could be shipped both through Strasburg and through Mannheim. The opening of the canalised Main system had already led to a considerable reduction of traffic through Mannheim and Ludwigshafen. Now, however, the very much greater obstacle of the frontier between Strasburg and Mannheim must bring about an even more severe curtailment of traffic through Mannheim from the former Alsace-Lorraine hinterland.

The development of traffic on the lower Rhine, and particularly in Westphalia which is intersected by canals, shows that although the seaport tariffs apply here also, industry resorts more and more to the waterways constructed during and after the war, and an increasing volume of goods traffic is deflected from the Reich Railways. Since the Reich Railways, particularly if they are to fulfil their special obligations under the Dawes Plan, must not under any circumstances incur a loss of traffic over their entire system, the impartial observer must take account of the fact that, as regards the total traffic of Germany, the railways have not exceeded the figures for pre-war times, but, on the contrary, have lost about fifty million tons of traffic on the Rhine, and furthermore that the total traffic earnings of railways and waterways have merely changed in their relation to each other. On the whole, so far as the German traffic area is concerned, the Reich Railways would appear particularly on account of the further development of canals, to be at present more severely threatened than the waterways. I would once more call attention to the statistical figures which I have given in my observations on the Mannheim memorandum.

There are combined tariffs of transshipment on the Rhine, not only for coal but also for other goods in bulk, particularly for timber and salt. It is indeed true that there is no distribution of traffic between Rhine navigation and the railway according to the specific value of the products. I suppose, however, that it will be generally adhered to that, as a rule, only goods in bulk should be consigned by waterway and goods of higher value by rail ; on this point I may say that Mannheim in particular is making claims against the Reich Railways in respect of high value goods. I need only refer, for instance, to Swiss condensed milk, for the carriage of which Mannheim is putting in a claim, (although since the development of the port of Basle these goods are consigned straight from Basle, and therefore can never be recovered for Mannheim, even if the Reich Railways were to leave them to the shipping interests). Condensed milk is a class of goods that falls into the highest category for value, not only in the German but also in other European railway tariffs. If goods of such a nature, which moreover take very little room and are therefore specially suitable for rapid railway transport, are no longer to be carried by rail, then it is difficult to see what goods are to be left to the railways and from what receipts the Reich Railways are to meet their international obligations. I am convinced that if similar demands were made on the French, Belgian, or Dutch railway administrations, they would

meet with as definite a refusal as that given by the German Reich Railways. In practice, the whole tariff policy of the German Reich Railways in no way differs from that of all other Central European railway companies — national economic interests are and must be safeguarded, so long as there is not full freedom of traffic policy and renunciation of every protectionist commercial policy on the part of all European countries by joint agreement and on uniform principles. The Reich Railways are all the more bound to base their policy on commercial grounds since their administration is obliged to seek profits such as are not obtained even approximately to the same extent by any other railway system in Europe. In carrying on a tariff policy dictated by considerations of German national economy, the conscience of the Reich Railways is clear, the more so since their policy — unlike that of all other Central European railway systems — is really of international service, in that the profits obtained by the Reich Railways go towards the service and redemption of reparations debts and therefore benefit the greater part of the international world.

(Signed) Dr. W. SPIESS,
Director of the German Railways.

[Extract from the *Rhein*
of August 10th, 1927.]

Appendix I.

[*Translation.*]

EFFECTS OF THE RAILWAY TARIFF POLICY ON THE TRANSHIPMENT TRAFFIC OF THE PORTS
OF MANNHEIM.

Memorandum of the Chamber of Commerce for the Kreis of Mannheim, July 1927.

Note. — The following memorandum, which Dr. Linden has prepared for the Mannheim Chamber of Commerce, was handed to Dr. Dorpmüller, the Director-General of the Reich Railways, on the occasion of his visit to the Baden Government at Karlsruhe, on the fifteenth of July. On that occasion M. Lenel, President of the Mannheim Chamber of Commerce, also spoke forcibly, clearly, and convincingly on the questions discussed in the Memorandum.

* * *

The German Reich Railway Company and its legal predecessors since 1920 have repeatedly asked the parties interested in the Rhine shipping and the transshipment of goods in the Upper Rhine ports for evidence showing that the effect of the railway tariff policy is to draw goods traffic away from the waterway and transfer it to the through railway route. The Reich Railways cited the figures for the German traffic as a whole, according to which there was, for example, a drop of 21.1 per cent in the railway traffic in 1925 as compared with 1913 (new territorial frontiers), while the inland shipping traffic showed a decline of only 16.6 per cent. These figures, it is argued, justify the conclusion that there has not been a transfer of traffic from the waterway to the railway, but, on the contrary, that inland navigation has obviously been successful in its competition with the railways. This, argument, however, does not attack the problem from the right angle. Inland navigation must for these purposes be divided into waterway areas, and within these again, the position of the various districts having a uniform traffic policy must be examined in relation to the railway tariff policy. The present memorandum deals with Mannheim, the most important port on the Upper Rhine, and the hinterland for its goods transshipment traffic. As far as the available statistics allow, comparisons have been drawn with the port traffic and transshipment traffic before the war, and an attempt has been made to establish the causes of the changes that have taken place.

Decline in Total Port Traffic.

In 1913 the harbours of Mannheim had a total traffic of . . .	Tons 7,397,267
This consisted of :	
Incoming traffic	Tons 6,562,744
Outgoing traffic	834,523
In 1925 the total traffic amounted to.	5,864,054 ¹
This consisted of :	
Incoming traffic	5,222,785
Outgoing traffic	641,269
The total decrease thus amounts to.	1,533,213 = 21 %
In 1926 the total traffic was	5,360,015 ¹
This consisted of :	
Incoming traffic	4,260,892
Outgoing traffic	1,099,123

The total decrease as compared with 1913 = 2,037,252 = 27.6 %

There has also been a further decrease of 6.6 per cent as compared with 1925.

Another factor which must be borne in mind is that in 1926 the transport of coal from Mannheim downstream was 250,000 tons more than in 1913, on account of the miners' strike in Great Britain. The incoming traffic into Mannheim itself has decreased by 35.1 per cent since 1913.

In a comparison of the port traffic of Mannheim with 1913 it must be borne in mind that the total traffic would actually have decreased to a greater extent than is shown in the figures but for certain countervailing factors ; thus the Thyssen harbour was not opened until after 1913, and the new high-power works of Rheinau use large quantities of coal, which are included in the figures but do not really count as part of the transshipment traffic of the port. The great increase in building at Mannheim has led to an increase in imports of clay, dredger sand, etc., and these, though they do not concern the transshipment traffic of the port, make the drop in the figures for the port traffic as a whole appear less marked than it really is. The figures also include reparation coal, and the requirements of the works situated at the waterside are considerably greater to-day than in 1913. The most noteworthy example is the port of Ludwigshafen, the traffic of which is greater by 438,000 tons than in 1913. The erection of the new nitrogen works of Oppau, however, has in itself helped to swell the transshipment traffic for factories by more than 900,000 tons, and if more than 100,000 tons are also deducted for reparation coal, the figures for Ludwigshafen show, in comparison with 1913, not an increase but a decrease of more than 20 per cent. It might be said that all this traffic has benefited the shipping industry. That is true, of course, and the point is only mentioned in order to show how mistaken it is to draw conclusions from the total figures without a close knowledge of the facts.

Decline in Transshipment Traffic.

The figures which should be compared with those for the railway, and which the railway itself should take as a criterion to judge of the effect of its tariff policy, are not those of the total traffic, but of the *transshipment traffic* from ship to rail and vice versa. Naturally carriage

¹ The figures given for 1925 and 1926 do not agree with the official traffic figures for the port. The difference is due to the fact that the official statistics include the quantities transhipped from one transport vessel to another. As these goods neither enter nor leave the port in this process they should not be included ; moreover, they are not included in the figures for 1913.

by ship alone must always be cheaper than carriage by rail, and railway tariffs can only affect the traffic where the railway carries goods to or from the ship as part of the journey.

The figures for direct transshipment of goods from ship to rail and vice versa, *i.e.*, transshipment without previous warehousing in inland ports, can be obtained from the statistics of inland waterways, though unfortunately these are published so slowly that, even now, we can only consider those for 1925. Those who know the facts regarding the harbours of Mannheim, however, may safely assume that the alarming figures for 1925 still hold good to-day; indeed, it is unfortunately probable that the setback has become still more marked since then.

1. *From Ship to Rail.* — Generally speaking than Mannheim is a port for incoming traffic, and the transshipment traffic from ship to rail is therefore more important than that from rail to ship. In 1913 the transshipment figures from ship to rail contained 61 main items of the statistical goods nomenclature. Of these, 19 no longer appear in the transshipment figures of the port for 1925. There thus remain 42 items, of which 24 show an average decrease in traffic of 75 per cent. The remainder show a smaller drop, and the increases shown amount in all to less than 26,000 tons. *The total transshipment traffic from ship to rail in 1925 has thus fallen by 52 per cent — more than half; and in 1926, be it remembered, this fall was probably greater still.* A few figures may be given for the principal items :

The decreases in transshipment traffic amount to :	Per cent
Cement	80
Pig iron	88
Iron and steel in bars	65
Pyrites	100
Barley	64
Millet and podded fruits	94
Maize	77
Milling products	76
Stone	100
Pit coal	} 50
Pit coal Briquettes	
Coke	
Lignite briquettes	59

Coal Transshipment Tariff 6u.

The great drop in the transshipment traffic in coal at Mannheim is accompanied by a fall in the pit coal transshipment traffic of the neighbouring port of Karlsruhe, although there the fall amounts not to 50 per cent but only to 17 per cent. The reason why both ports show a decrease, despite the increased demand for pit coal and pit coal briquettes and coke in South Germany, is that more has been sent direct by rail. The much smaller decrease in the transshipment traffic of Karlsruhe, however, shows clearly the unilateral advantages which the port of Karlsruhe has derived from the Special Tariff 6 *u* which has been established. Mannheim must and can demand a fairer arrangement of tariffs. The proposal of the Reich Ministry of Traffic that the Mannheim rates should be somewhat lowered, but should still remain far above those for Karlsruhe, cannot be regarded as a fair solution.

2. *From Rail to Ship.* — Turning now to transshipment from rail to ship, we find the fact — surprising at first sight — that this traffic has increased by 113,352 tons. If the figures are examined more closely, however, it will be seen that the increase applies only to the salt traffic. The quantities of salt sent by rail to Mannheim for transshipment to ship have increased since 1913 by 167,366 tons. This means a gain not for the Rhine shipping but for the Reich Railways, and it also means a loss for the Neckar shipping. Formerly salt was largely transhipped at Mannheim from the Neckar to the Rhine vessels, but now the salt

traffic sent by the Neckar to Mannheim has fallen by 35 per cent, while consignments of salt carried by the Reich Railways from Württemberg have risen by 77 per cent. If we leave this salt traffic out of account — since it means an increase not for the port of Mannheim but only for the railways — we find that the *transshipment traffic from rail to ship has fallen by 65 per cent*. This traffic covered 53 items of the statistical goods nomenclature, but of these 32 — much more than half — have wholly disappeared from this traffic; 11 show a decrease of 75 per cent, and the total increase shown in various items only amounts to 3,250 tons. The decreases in certain individual items are as follows :

	Per cent
Cement	60
Potash salts	100
Beer	100
Pyrites	100
Glass wares	100
Timber	100
Lime	99
Stone	100
Earthenware and pottery	100

Increase in Railway Traffic.

The Reich Railways have constantly asked for evidence that the decrease in the port transshipment traffic has simultaneously brought about an increase in through rail traffic. Evidence could not be obtained in the absence of comparative figures, but the statistics for the movement of goods for 1925 enable the comparison to be made and provide the evidence required.

We may take, as the principal hinterland of Mannheim, the traffic areas of Baden, Württemberg and South and North Bavaria. If the through railway traffic has increased at the expense of the transshipment ports, this should be reflected in the purchases and sales of goods in these traffic areas; and this is in fact the case.

1. *Consignments to the Hinterland.* — The consignments received by Baden from German seaports show a total increase of 59.7 per cent as compared with 1913, whereas the consignments obtained from Traffic Area 34 (Mannheim - Ludwigshafen) show a decline of 20.6 per cent. The consignments received by South Bavaria from the seaports show an increase of 108.4 per cent, whereas consignments from Mannheim - Ludwigshafen show a drop of 28 per cent. As regards Württemberg, consignments received from the seaports show an increase of 96 per cent, and consignments from Traffic Area 34 also show an increase, amounting however to 3 per cent only. This rise in the quantities obtained from Mannheim - Ludwigshafen is due to the increased consignments from the chemical factories at Mannheim and Ludwigshafen to Württemberg. These goods thus do not form part of the transshipment traffic, and if we deduct this item from the total, we obtain, as in the case of Baden and South Bavaria, a decrease in the traffic to Württemberg. This is also the case as regards North Bavaria, whose consignments from the seaports have risen by 68.3 per cent, while the amounts received from Traffic Area 34 have risen by about 35 per cent. Here again the increase consists of chemical products, principally artificial fertilisers from the dye industry, and also increased consignments from the Mannheim - Ludwigshafen mills. If this total amount is deducted, the balance once again shows a great fall in the consignments obtained from Mannheim - Ludwigshafen.

2. *Consignments from the Hinterland.* — In the opposite direction — consignments to Traffic Area 34 and the seaports — the position is exactly the same. Consignments to the seaports from Baden have risen by 57.1 per cent, from Württemberg by 57.6 per cent, from South Bavaria by 194.7 per cent and from North Bavaria by 56.7 per cent. It is true that we find an increase in consignments to Traffic Area 34 from all these areas, but the benefit is reaped by the railway alone, and the transshipment traffic remains unaffected. Thus consignments from Baden to Mannheim - Ludwigshafen show an immense increase of

722,402 tons, or 203 per cent. Consignments of bricks and quarry stone to Mannheim, however, in themselves show an increase of over one million tons, of which, as will be seen from the figures, not a single ton was forwarded by ship. If we set off the 722,000 tons against the million tons of stone, the balance shows a large decrease of more than 36 per cent as compared with 1913. In the case of Württemberg again, the increase is accounted for by consignments of salt to Mannheim, which, as we have seen, in no way benefit the Mannheim transshipment traffic, but merely constitute a loss for the Neckar shipping. If we deduct from the consignments from South Bavaria to Mannheim the 34,500 tons of wood for the cellulose factory of Waldhof, we find once again a decrease in traffic amounting to 31 per cent. Consignments from North Bavaria also comprise 64,000 tons of wood for the cellulose factory, and if this item is omitted as not affecting the transshipment traffic, we find here, too, evidence of a decrease in the traffic to Mannheim.

Change in Traffic Movement of Individual Items.

These figures, which show that, on the average, the South German traffic with the German seaports has increased at the expense of Mannheim by roughly 90 per cent, also show which items in general are being increasingly consigned to and from the seaports rather than by the Rhine, *i.e.*, items which constantly occur in the figures for all the South German traffic areas. The statistical items in question are ; 30, hides and skins ; 31, timber ; 35, coffee, tea, etc. ; 43, oils and fats ; 44, oilcake ; 45, paper and cardboard ; 46, petroleum ; 47, rice ; 61, tobacco ; 62, tar, pitch, etc. ; 64, peat ; 66, wool ; 67, zinc, and 71, other goods. One noteworthy fact which particularly concerns transshipment firms is that the general goods traffic consignments from the seaports to South Germany (except North Bavaria) show a marked increase, whereas those from Mannheim have become negligible as compared with 1913. That was the case in 1925, and we have reason to believe that since then the general movement will be found to have gone further in the same direction, particularly as a result of the system of special rates ("Auslobungsverfahren") introduced to counteract the competition of the Adriatic ports.

Causes of the Decline in Traffic.

We must now examine more closely this decline in traffic, which, as the facts show, may without exaggeration be described as disastrous. It is of course due in part to the war, to the struggle in the Ruhr, to the competition of foreign shipping companies and to the preference given by France to Strasburg. These are factors which at present we cannot eliminate, and we, like other parts of the Reich, must make the best of them. It should be pointed out however that the western part of the Reich, the Rhine shipping and Mannheim particularly have suffered enormously through the struggle in the Ruhr, from all the consequences of which we have not yet recovered. Accordingly, the latest cause of the decline in traffic — the tariff policy of the Reich Railways — is felt the more keenly, since it is the only difficulty of those we have mentioned which could be removed or at any rate mitigated.

Tariff Policy of the Reich Railways.

1. *Effect of High Short-distance Freight Charges.* — There is, first of all, the system of the *graduated tariff*. The freight charges for short distances from and to the inland port add to the cost of mixed transport so much that between many points and over long distances it would seem cheaper to send goods direct by rail. To quote individual examples from the statistics : Mannheim used to deliver to Württemberg 38 per cent of the latter's total consignments of raw sugar, whereas now it only delivers 18 per cent, and the principal consignments are sent direct by rail from Thuringia. Mannheim used to forward 26 per cent of oils, fats and oilcake to South Bavaria, but now only carries 8.3 per cent, as these goods come by rail from the Elbe ports and from the Rhine Province on the left bank of the Rhine. Mannheim formerly sent to Baden 72 per cent of its total consignments of legumes and

millet, whereas now it only forwards 12 per cent, consignments coming direct from Königsberg, East Prussia and the frontier area. Again, Mannheim used to deliver 58 per cent of the copper ore required for South Bavaria, but now sends only 0.3 per cent, 90 per cent coming direct from Westphalia. Of the starch consignments for Württemberg, 78.3 per cent were sent from Mannheim, but to-day only 11 per cent are sent from there, the bulk now coming from Brandenburg, Magdeburg and Anhalt. These few examples are characteristic of the effect of the graduated tariff on transshipment ports.

Trade in general demands the graduated tariff, and we do not propose to criticise it here. Yet, can there be clearer evidence that a most important branch of German trade is suffering on its account? If the Reich Railways are really bound to take duly into account and to adapt themselves to Germany's economic requirements as a whole, this obligation should certainly be met here. In common with German trade as a whole, we demand the reduction of short-distance freight rates, and we demand too that due consideration should be given to inland waterway shipping by a reduction of the cost of transport to and from the waterway such as will enable the transshipment traffic to regain its place in the national economy. We are grateful to the Permanent Tariff Board of the German Railways for advocating, as it did on June 30th, the reduction of consignment charges for short distances. This, however, is certainly no more than the first step which the Reich Railways must take if — and it is in their own interest — they are to meet the urgent requirements of German trade.

2. *Unilateral Preference for Seaports.* — (a) *Statistical Evidence.* — The second cause of the decline in transshipment traffic due to the tariff policy is the *unilateral* preference given to seaports. The word *unilateral* is especially emphasised, since no one here would think of opposing the support given to seaports, provided, at the same time, the requirements of other parts of the Reich and other branches of industry are not disregarded. The measures to help German seaports must not be so framed as to transfer the traditional traffic of the Rhine shipping to the through railway route. Not only does the Rhine shipping industry justly object to such a policy, but the industry and trade of South-west Germany are also hard hit by it and will protest against unfair treatment, which, in present geographical conditions threatens their very existence. To quote a typical example: The Reich Railways are now considering a request by Bremen and the Norddeutscher Lloyd for the introduction of a special tariff ("Ausnahmetarif") for foreign timber sent from the German seaports to South Germany. This timber has always been carried by water. In 1913, the amount of foreign timber sent from Mannheim to its hinterland — Hesse-Nassau, the Saar territory, Alsace-Lorraine, the Palatinate, Hesse, Baden, Württemberg, South Bavaria, North Bavaria, Switzerland and Italy — was 42,000 tons, while only 2,436 tons were sent from Bremen. Naturally Mannheim, having become a large trading centre for foreign timber, is fully equipped as regards sawmills, the veneering industry, etc. If the Reich Railways introduce the proposed special tariff from Bremen, the whole basis of the timber supply of South Germany will be changed and the timber trade and industry will necessarily be transferred from Mannheim to Bremen.

(b) *Evidence from Freight Rates.* — We have already given official figures clearly illustrating the diversion of the South German traffic from Mannheim to the German seaports. We will now quote a few specimen freights, showing equally clearly that a further aggravation of this artificially produced shift of trade to the seaports is bound to follow. We showed that the export of paper and paper pulp from Baden *via* Mannheim has declined, whereas that *via* the seaports has increased. If we now examine Special Tariff 52, as regards seaports, we shall see that this development is inevitable, since 100 kilogrammes of Class C paper costs 2.10 RM. to convey from Albrück (Baden) for a distance of 836 kilometers to Bremen, whereas the freight rate from Albrück to Mannheim, for a distance of 305 kilometers, is 2.32 RM. If the goods were exported *via* the port of Kehl, situated nearer to Albrück, the freight charge would be somewhat lower — 1.64 RM. — but the margin of 46 pf. would not be sufficient to cover the cost of shipping from Kehl to Rotterdam, even at the lowest freight rate. Again, even if this margin were sufficient, there would be nothing left to cover the cost of transshipment and insurance or to offer any attraction to traffic,

which in view of the break of transport between rail and water is very necessary if the waterway is to compete with the through rail route. At the present freight rates it is obvious that exports will no longer be sent via the Rhine but via the seaports.

The same is true of imports of rice. Augsburg and Munich can now obtain 100 kilogrammes of rice from Bremen at the same rate—2.90 RM. The normal freights from Mannheim are 2.47 RM. and 2.81 RM. respectively. The cost of carriage by ship from Rotterdam to Mannheim would thus have to be 47 pf. and 9 pf. respectively to compete with the seaports. As this is of course wholly impossible, it is very evident why the consignments of rice from the German seaports to South Bavaria have increased by 144 per cent, while those from Mannheim have diminished by 95.3 per cent. To-day there exists besides the seaport tariff the so-called "Auslobungsverfahren" (system of special competitive rates), which has done a great deal to cripple Mannheim's position as a forwarding centre. The figures showing the effect of this measure will not be available until the Reich statistics for 1926 have appeared, as the "Auslobungsverfahren" only came into force on December 14th, 1925. Under this system the Reich Railways charge for all goods transported under certain conditions the same carriage rates as those in force from Trieste and Fiume. This measure is entirely justifiable in itself, and the Reich Railways have been compelled to resort to it by the policy of the Italian and Austrian railways, but it means that the transport route from German seaports to South Germany is competing with foreign routes which previously carried practically none of this traffic at all. The natural route in pre-war times—via the Rhine, with transshipment at Mannheim—is entirely excluded under the "Auslobungsverfahren", while there is fierce competition for the traffic between two purely artificial transport routes. It is claimed, and rightly, that the Mannheim corn trade has lost practically the whole of its market in South Bavaria through the "Auslobungsverfahren". Bavaria may affirm for reasons of competition that Mannheim never sent much corn there, but this statement is wholly refuted by the statistics for 1913. According to these, purchases of corn by South Bavaria from Mannheim amounted to 53 per cent of the South Bavarian total purchases of foreign corn (these amounted to 125,128 tons, of which Mannheim supplied 66,199 tons). Mannheim's share in the total purchases of corn by South Bavaria (229,384 tons) was 30 per cent. Her share was still greater in the case of Württemberg. Of the total purchases of foreign corn by Württemberg, Mannheim supplied 96 per cent (total foreign purchases 138,704 tons, of which 133,015 tons were supplied by Mannheim). Her share of the total consignments of corn to Württemberg was 51 per cent (133,015 tons out of 267,655 tons). What the position is to-day cannot be stated in the absence of statistics, but the competition of the Italo-Austrian route was felt even in 1925, when the consignments of corn to South Bavaria from the south increased by 115 per cent (from 15,946 tons to 34,288 tons in 1925). The sharp competition between our seaports, in conjunction with the Reich Railways, and the Southern ports introduced another change in the source of supply; but whether the shift was to north or to south, in either case it was at the expense of the former principal source—Mannheim.

The reason why consignments of corn from Mannheim have so greatly declined to-day becomes more than clear on a comparison of freight rates. Under the Austro-Adriatic Joint Tariff 100 kilogrammes of corn cost 2.30 RM. to send from Trieste to Munich. Under the "Auslobungsverfahren" the same rate applies to the carriage from the German seaports of Hamburg and Bremen. Corn transhipped at Mannheim and sent thence to Munich, on the other hand, costs 2.53 RM. per 100 kilogrammes, even by the "emergency" tariff ("Nottarif"). This rate is thus definitely higher than the rate under the "Auslobungsverfahren". If to this we add cost of conveyance by ship, the reason why Mannheim has lost the South Bavarian market for corn becomes obvious. Moreover, as the "Auslobungsverfahren" applies not merely to corn but to all goods, the fact that Mannheim has been left out of account in this tariff war means that her markets will be enormously restricted, and this will undoubtedly be shown to be the case when the statistics for 1926 are published. We repeat that we have no objection to the "Auslobungsverfahren" in itself, but we must at least ask that, in adopting it, the Reich Railways should not ignore the old customary transport route via the Rhine, but should allow it to take a real part in the competition for this traffic.

3. *Competitive Policy of the Reich Railways.* — We have already commented on the competitive policy of the Reich Railways in connection with the "Auslobungsverfahren". This constitutes a third reason for the decline in Rhine traffic. It may be said at the outset that no one disputes the right of the Reich Railways to pursue a competitive policy; indeed, they are bound to do so. But we may reasonably question whether it is economically sound, or expedient from the point of view of trade, to ignore the Rhine and its transshipment traffic so completely. This is not a question of competition between the German and French Upper Rhine ports, but of the through railway route left of the Rhine. Viewed entirely impartially, the situation is as follows: There are three routes from north to south and vice versa, namely:

- (a) French and Belgian seaports - Switzerland.
- (b) Rotterdam - Rhine - Switzerland.
- (c) German seaports - Switzerland.

In the case of goods which normally used to be despatched *via* the Rhine, the low rate of exchange in France and the high local freight rates in Germany to and from the Upper Rhine ports have undoubtedly drawn traffic from the Rhine to the French route. If the Reich Railways wished to compete they ought in fairness to have adopted our proposals and to have granted transshipment tariffs for the Upper Rhine ports, with freight rates which, combined with reduced rates for the Rhine journey also, would have enabled the mixed transport route to compete. The Reich Railways did not do so, however, but introduced for the third route (German seaports - Switzerland) transit tariffs at rates approximately equivalent to those of the route to the left of the Rhine. The Upper Rhine ports still pay the normal freights for transshipment traffic, and consequently are wholly out-done, since no sensible trader will now send such consignments by the Rhine, although it was once the natural route. The tariff in question is the Seaport Tariff S.D.2, according to which 100 kilogrammes of general goods, for example, would pay 1.62 RM. for the journey of 853 kilometers from Switzerland to Hamburg. The carriage of the goods for the journey of 257 kilometers to Mannheim is 2.61 RM., so that 100 kilometers would cost as much as 1 RM. more for rail carriage alone than for the journey — almost three times as long — from Basle to Hamburg. Even in 1925 the quantity of general goods sent from Switzerland to Hamburg had increased by 37 per cent as compared with 1913, whereas in the case of Mannheim it had fallen to 0.8 per cent. With the exception of corn, which is in a different position owing to the Special Tariff 44 directed against Strasburg, the above comparison holds good, or approximately so, for all kinds of goods under the S.D.2 Tariff. Everywhere the seaport tariff or the rail route on the left of the Rhine undercuts the Rhine route so much that goods cannot be sent in mixed transport. Whether the Reich Railways still make any profit on the traffic in view of the low seaport tariff rates, we cannot judge. Of one thing we are certain, however: if transshipment tariffs were established from the Upper Rhine ports to compete with the rail route left of the Rhine, the railway's revenue per ton-kilometer would be considerably higher than at present under Tariff S.D.2. We would repeat that the existing Special Tariff 44 for transshipment traffic is directed only against Strasburg and Lauterburg, but their rates can certainly not compete with the seaport transit tariff. We need only quote as an example, the transport of Swiss condensed milk, thousands of tons of which used to be sent to England *via* Mannheim. The rate to Mannheim under Special Tariff 44 is 2.20 RM., whereas the charge for the whole journey from Basle to Bremen is only 1.45 RM. This class of goods also will be found to have disappeared from the Rhine traffic in the next statistics.

The situation is exactly the same as regards consignments of corn for the Upper Baden mills. These always used to be sent *via* Mannheim. The low rate of exchange in France enabled it to be sent more cheaply *via* the rail route left of the Rhine, whereupon the Reich Railways introduced Special Tariff A 1 in the German-Belgian joint tariff. Under this tariff 100 kilogrammes of corn may be sent from the frontier at Aix-la-Chapelle to Fahrnaue, Baden, for 1.87 RM., whereas the cost of transport from Mannheim, exclusive of shipping freight, would be 1.93 RM. under Special Tariff 44(a) (directed against Strasburg). It is certainly right

to entice traffic away from the French route, but why could not the Reich Railways have introduced a transshipment tariff from Mannheim to Upper Baden ? The Reich Railways receive 3.18 pf. per ton-kilometer under the Belgian-German Special Tariff, whereas by introducing a transshipment tariff they could have undercut the route left of the Rhine by about 2.30 RM. — inclusive of cost of carriage on the Rhine — and would have received as much as 5.06 pf.

Conclusions and Demands.

We have only given isolated examples, but, as the Reich Railways are very well aware, the list of examples could be extended indefinitely, and to judge from what has been said by some of their responsible officials, they are fully alive to the effect of their tariff policy. It is incomprehensible and also inexcusable, however, that they should fail to see how their policy necessarily means the ruin both of an important branch of German trade and of once-flourishing commercial centres like the Upper Rhine ports. This view of the situation, which is the outcome of the strictly objective examination of the facts in the present memorandum, will not be palatable to the Reich Railways. Yet it is simply the natural consequence of the statements made by the tariff rapporteur of the Reich Railways, Dr. Spiess, in the *Zeitschrift für Binnenschifffahrt* No. 4, April 15th, 1926, who states in black and white that Hamburg is to-day the Mannheim of the Reich Railways, and that the Reich Railways have no financial interest at all in meeting the requirements of the Upper Rhine ports. If this interpretation of Dr. Spiess's words is disputed by the Reich Railways, we can show that the individual Boards of Management of the Reich Railways, whether instructed to do so or not, are constantly attempting to entice shippers away from their loyalty to the Rhine shipping concerns, their traditional carriers.

The line taken by the Reich Railways clearly conflicts with § 2 of the Reich Railways Law, which provides that :

“ The Company, in conducting its business, shall act on commercial principles, safeguarding, however, *the interests of German national economy* ” ; it also contravenes § 16 of the State Agreement, which reads (§ 2) :

“ The Reich Railways Administration shall accord *equal* treatment to the whole Reich railway system; in particular it shall give uniform consideration to the interests of the railway employees and to the *traffic and economic interests of all the States, with due reference to existing circumstances*, and in the event of a conflict of interests shall endeavour to effect an equitable settlement ”.

In view of all the above considerations, the terms we demand from the Reich Railways are as follows.

The Reich Railways shall :

1. Introduce adequate water transshipment tariffs for goods where it is found that traffic has been diverted from the Rhine route, or where there is reason to fear that it will inevitably be so diverted under the existing tariffs ;

2. Discontinue any measure calculated to divert goods transport from the Rhine route to the railway ;

3. Effectively include the Rhine route in the Reich Railways' competitive policy, particularly in connection with the “ Auslobungsverfahren ” for Hamburg - Bremen - Trieste - Fiume ;

4. Modify the Coal Transshipment Tariff 6u so as to allocate to the Rhine ports a fairer share of the transshipment traffic than hitherto.

5. Lower short-distance freights still further in accordance with the wishes of German commercial interests as a whole.

Appendix II.

OBSERVATIONS OF DR. SPIESS, DIRECTOR OF THE GERMAN RAILWAY COMPANY, ON THE MEMORANDUM OF THE MANNHEIM CHAMBER OF COMMERCE, OF JULY 1927, ON THE EFFECTS OF THE RAILWAY TARIFF POLICY ON THE TRANSHIPMENT TRAFFIC OF THE PORTS OF MANNHEIM.

[Translation]

A. General Remarks.

I. In the first place the memorandum contains the following basic errors.

The years 1913 and 1925 are not suitable for an objective comparison, since the year 1913 was a year of exceptional commercial prosperity, while 1925 was the first year after the inflation and the occupation of the Ruhr.

The annual figures for traffic since 1925 have been improving, whereas the annual figures for the years preceding 1913 are much lower than those for that year. The figures for Mannheim have exceeded the 1913 figures only once, namely in 1907, *i. e.*, at the peak of the previous period of prosperity.

II. The traffic position of Mannheim was already shaky in the year 1913, in spite of the policy of Baden, then alleged to be much more friendly to transshipment traffic than that of the present Reich Railways.

Mannheim's highest point of prosperity as a transshipment port was already reached in 1907; at that time the traffic of Mannheim amounted to 7.89 million tons as against a bare 7.4 million tons in 1913. The proportionate share of Mannheim in the total Upper Rhine traffic at that time amounted to 97 per cent, but in the years immediately following it had already sunk to 84, 54, 58 and 49 per cent of the total Upper Rhine traffic. Since 1908, in spite of a temporary increase in its actual figures, Mannheim has slowly but surely lost its traffic to the southern Upper Rhine ports of Karlsruhe, Kehl and Strasburg which have become more accessible through the regulation works on the Rhine carried out between 1907 and 1913.

This particularly applies to the Swiss trade. In the year 1927 which has just ended, Basle, which had hitherto been of little importance, also entered the lists as an important rival, mainly on account of the increased use of the Rhine-Rhone canal from Strasburg upwards, showing the extraordinary transshipment figure of 611,000 tons in nine months; so far as the Swiss trade is concerned, at any rate, Mannheim will no longer be of any account at all.

The same applies to Bavarian trade. At present Bavaria refuses every demand from Mannheim or from other Rhine ports for recognition of Bavarian territory as a hinterland of the Baden Upper Rhine ports. Bavaria has considerably extended her own port at Aschaffenburg on the Main and is not inclined to cede any business in her own sphere of influence to the Rhine ports. Mannheim's reference to a time when that port itself was the highest up river port for Rhine navigation is therefore out of date on account of the works carried out both on the Main and on the Rhine.

Mannheim, therefore, is definitely compelled to take a second place through the increased navigability of the Rhine and Main, and lately also of the Neckar (canalisation to Heidelberg). It has lost some commercial outlets towards east and south and has lost them completely in the west, for France has entirely closed the former Alsace-Lorraine hinterland so far as German ports are concerned. I need only refer to the *surtaxe d'entrepôt* which was also dealt with in the Hines' Report. On this point I would say at once that a correct estimate of the situation at Mannheim and of the policy of the Reich railways is impossible unless an exactly parallel investigation is made into the policy of the ports and railways on the left bank of the Rhine, based on the same statistical and other data. So long as the corresponding figures for left Rhine traffic, French traffic and traffic from the Swiss port of Basle, have not been collected according to the same method and have not been compared with those connected with any movement or change in the ports on the right bank of the Rhine, there is always the possibility that any movement or change noted

on the German side may not have its origin in any factor on that side but may be due to circumstances on the French or Swiss side of the river.

Mannheim built up its grain traffic to Bavaria — the falling-off of which it now frequently deplores — only in the last ten years before the war and to a great extent at the expense of other commercial relations (for instance the Balkan grain traffic via the Danube); it can, therefore, not be regarded as an old-established traffic.

III. Mannheim “corrects” the figures of 1925, *e.g.*, it reckons separately some one million tons of stone as accidental traffic, makes a distinction between *local traffic* (which remains in Mannheim or comes from Mannheim itself) and *railway transshipment traffic* (which goes into the hinterland).

Mannheim figures corrected in this manner cannot, however, be compared with uncorrected figures for 1913 or for Bremen or Hamburg (for in 1913 also there was accidental traffic, and there is accidental traffic in the seaports every year; there is also local traffic in the seaports; indeed this is proportionately larger than in Mannheim for the seaports are even more industrialised than Mannheim).

Moreover, the meaning of the term “local traffic” as applied in 1925 is no longer the same as in 1913. In 1913 local traffic only meant traffic originating in Mannheim itself; owing to recent developments, however, local traffic in 1925 includes not only local traffic in the old sense of 1913 but also traffic which *enters or leaves Mannheim by motor vehicles*. According to statistical technique, this traffic is included in local traffic since it is taken by “hand-driven vehicle”. The local traffic of 1925 is therefore, so to speak, artificially increased in the statistics as compared with that of 1913; to-day it includes the greater part of the traffic within a radius of from 30 to 50 kilometers whereas in 1913 it only covered a radius of from 3 to 5 kilometers. In so far as local traffic has increased through this change in the meaning of the term, the direct traffic losses of the railways to motor lorry transshipment traffic at Mannheim are actually included in the local traffic. For purely scientific reasons we cannot, therefore, agree with the correction of the Mannheim transshipment figures by cutting out local traffic as not of interest to the German Reich Railways. Such a practice tends to increase rather than rectify an error which is unfortunately at present inherent in the statistics.

IV. But even if all the figures in the Mannheim memorandum were correct, this alleged crisis in the port's affairs would only justify transshipment tariffs for Mannheim. Karlsruhe and Kehl have, however, already officially applied for tariffs of the kind that might be granted to Mannheim; and the Reich Railway directorates concerned have been informed that the same demand will be put forward in respect of *all other Rhine ports*. Hamburg is making the same demands on behalf of the *inland Elbe ports*, and, indeed, it would be difficult to find a reason why the Reich Railway Company should treat the Rhine ports differently from the Elbe and Oder ports, particularly since before the war Saxony, for instance, introduced almost the same tariffs for its ports — in particular Dresden and Riesa — as Baden established for Mannheim, Karlsruhe and Kehl.

This, however, invalidates the deduction on which Mannheim's request is based, for Mannheim's difficulties, the intensity of which is exceptional, cannot justify transshipment tariffs for the whole Rhine or for all the inland ports of Germany.

V. As regards the comparison often made by Mannheim between itself and the seaports, it must be pointed out that Mannheim is not in the same position as Bremen or Hamburg. Export traffic through Mannheim benefits not only Mannheim but also in the same measure Rotterdam or Antwerp, or any other non-German ports which may be concerned.

But every advantage given to Rotterdam and Antwerp involves direct injury to the German seaports, which have already suffered from the competition of the ports lying more to the west of them, and nearer the ocean.

If, therefore, anything is taken from Hamburg or Bremen and transferred to Mannheim, this does not merely imply a different allocation of traffic between the German ports of Mannheim and Hamburg (Bremen), with no economic loss or gain for Germany, but by the encouragement of Dutch or Belgian competition a direct injury is inflicted on the

German seaports. Germany cannot, however, renounce her right to support her German seaports as a part of her general German commercial and economic policy so long as other European countries do not renounce the commercial and economic policy they have established in the interests of their own country.

VI. It is true that the memorandum does not, in principle, oppose the alleged causes of the Mannheim crisis, viz :

1. The graduated tariff of the Reich Railways ;
2. The seaport tariffs of the Reich Railways ;
3. More particularly the Hamburg-Trieste tariff parity scale ;

all of which have been established in the interests of national economy and of the world importance of Germany. It does, however, demand adjustment or compensation in respect of the tariff policy of the Reich Railways.

Now the Reich Railways cannot give compensation for measures which — very often against their own interests — they have been compelled to take in the interests of German national economy, under Paragraph 2 of the Reich Railway Law of August 30th, 1924 (Dawes Plan).

B. Detailed Remarks.

Re Section 1 of the Memorandum.

The total traffic of Germany, according to the railway and inland waterway statistics for 1913 (new frontiers) and 1925 was distributed between railways and inland waterways as follows :

	1913 (New Frontiers)		1925	
	Tons	Percentage	Tons	Percentage
Railways	445,000,000	82.1	395,000,000	82.1
Inland waterways	97,000,000	17.9	86,200,000	17.9
	<u>542,000,000</u>	<u>100</u>	<u>481,200,000</u>	<u>100</u>

As against 1913, the traffic in 1925 fell :

	Percentage
On the railways to	88.9
On the waterways to	88.8

Therefore both means of transport in 1913 and in 1925 had the same proportion of the total traffic, and almost the same percentage of decrease. On the whole there is no evidence of any diversion of traffic from one means of transport to the other. Changes as a result of railway tariff measures of a general character (which by their very nature would affect economic life as a whole) are extremely improbable, if not impossible.

The memorandum considers it necessary that "inland navigation should for these purposes be divided into waterway systems and within these again the position of the various districts forming a unit for traffic policy must be examined in relation to the railway tariff policy". The memorandum only deals with Mannheim and with the hinterland for its goods transshipment traffic, the geographical extent of which is unfortunately nowhere clearly indicated. Here we might observe :

1. That, if the traffic figures of the years 1913 and 1925 are divided according to the different waterway systems, an exceedingly favourable picture of navigation on the Rhine system is obtained. In this system the traffic was :

	1913 (New Frontiers)		1925	
	Tons	Percentage	Tons	Percentage
Railways	265,500,000	81	222,000,000	77.9
Waterways	62,400,000	19	62,800,000	22.1
	<u>327,900,000</u>	<u>100</u>	<u>284,800,000</u>	<u>100</u>

While the railways in the Rhine area had lost 42.5 million tons of traffic, navigation had a traffic increase of half a million tons.

Out of the total traffic carried, navigation has gained 3.1 per cent. On the actual shipping traffic taken separately the increase is 16.1 per cent. The picture so far as the railways are concerned is correspondingly unfavourable.

2. It is not correct to regard Mannheim together with its hinterland as "a district forming a unit for traffic policy" entirely apart from its position in relation to railway traffic policy. The ports of Kehl and Karlsruhe are dependent on the same hinterland which was formerly served by Mannheim alone. In the case of tariffs for Mannheim, as for instance, special tariff 44, Kehl and Karlsruhe should be entitled to the same reductions. On this account, and in view of the fact that west of Mannheim there is Ludwigshafen and east Aschaffenburg, the hinterland of Mannheim has now become much smaller and the object of keen competition, and thus it is impossible to consider Mannheim as a separate unit and to treat it accordingly.

Re Section "Decline in Total Port Traffic".

The memorandum adduces as a proof of the decline of total traffic in Mannheim the figures of the waterway statistics for 1925 and 1926 as compared with those of 1913.

With regard to this I would point out:

1. That the comparison of the boom year 1913 with the years 1925 and 1926, in which traffic was still in process of development after the inflation, gives a misleading picture. For instance, the total traffic of Mannheim in 1912 was only 6,844,933 tons (as against 7,398,267 tons in 1913). Compared to 1912 the year 1925 would therefore only show a decline of 14 per cent (instead of 21 per cent when compared with 1913). In the first six months of 1927 Mannheim, like almost all Rhine ports, shows a most satisfactory development. With 3.43 million tons (equivalent to 6.86 million tons for a year) it exceeded its 1912 traffic and almost reached that of 1913. A reliable picture will therefore only be obtained by taking the whole rising and descending curve representing economic conditions over several years after the war and comparing it with a similar curve before the war.

2. Comparison of the traffic of Mannheim alone before and after the war proves nothing, for Mannheim is no longer the furthest point upstream for Rhine navigation, but in most cases only a port at which passing traffic touches. A comparison of the total traffic of the Upper Rhine ports (Mannheim, Karlsruhe, Kehl, Lauterburg, Strasburg, Basle) shows that already in 1926 the traffic figures of 1913 had almost been reached *i. e.*, 11,571,000 tons in 1926 as against 11,832,000 tons in 1913. In the year 1927 they will doubtless be considerably exceeded (the final figures are not yet available).

3. It is not fair to attempt, as in the Mannheim memorandum, to correct and place in an unfavourable light the figures for post-war traffic in Mannheim by eliminating from the post-war figures traffic due to special circumstances (increased building activities, reparation deliveries of coal) which have had a favourable influence on traffic, unless the pre-war figures are also corrected in the same way and on the same principles. In the year 1913 there were also considerable building activities in the Mannheim port; for instance, the memorandum itself refers to the building of the Thyssen Basin which was commenced before the war. It is only right to take conditions as they exist to-day; the transport of reparation coal, for instance, is a consequence of the war which benefits Mannheim whereas the unfavourable effects of the war are incomparably greater.

Re Section "Decline in Transshipment Traffic".

We cannot admit the view that in order to estimate the alleged harm done to the economic position of Mannheim by the tariff policy of the Reich Railways, local traffic should be eliminated from the total traffic figures and only transshipment from ship to rail and vice versa be taken into account. When dwelling upon the decline in transshipment

traffic the memorandum touches on a circumstance which also gives the Reich Railways ground for complaint. The Reich Railways themselves have recently been losing a large volume of traffic and revenue from transport rates to the waterways owing to the fact that industry is increasingly migrating from the dry hinterland to the waterways. This migration leads to a decline in transshipment traffic and an increase in local traffic. Apart from the fact that natural waterways are free from taxes, this movement has been brought about by the works carried out with a view to making the waterways increasingly navigable and connecting them with each other by canals. Inland ports which formerly were the terminus of upstream navigation or which were specially equipped for transshipment traffic, such as Mannheim, may, it is true, experience certain disadvantages from the extension of the navigable waterways. The Reich Railways, however, are the chief sufferers from this change and are therefore not in a position to give compensation to the transshipment ports concerned, which will probably be able to obtain compensation for the declining transshipment-forwarding business in the shape of dues from the new industrial concerns established and possibly also make good their losses in other ways.

The following conclusion may be drawn from the foregoing :

For the economic success of ports, all traffic, including local and transshipment traffic, is of equal importance, and ports must, according to the conditions obtaining at any time, adapt themselves to this or that branch of the traffic, as has already been done at Ludwigshafen for instance by the timely establishment of new industrial settlements.

The port of Mannheim is also beginning to adapt itself to changed conditions, inasmuch as the warehouse sheds of the large forwarding and shipping companies have recently been increasingly centralised and many of them sold. Others are about to be used for other purposes or are already being so used.

Furthermore, the statement in the memorandum that the traffic figures for Mannheim have not increased since 1925, is incorrect. Transshipment traffic has had a considerable share in the large increase of the total traffic of Mannheim shown for 1927.

1. *From Ship to Rail.* — The memorandum states that of 61 categories of goods transhipped in 1913, 19 have entirely disappeared and the others are so much reduced that the total transshipment from ship to rail has fallen by 52 per cent. However, in the statement which follows in respect of the more important categories of goods, only the percentages of the decline (50 to 100 per cent) are given, so that, failing the actual figures, the volume of the traffic in the various items cannot be estimated. It will be seen, however, from the actual figures that the nineteen categories of goods which have disappeared were of very small importance from a traffic point of view. This is shown by the following figures for the main categories of articles which have been compiled by the Reich Railway Directorate at Karlsruhe :

Transshipment at Mannheim from Ship to Rail.			
	1913	1925	1925 as against 1913
	Tons		Percentage
1. Cement	62,394	12,632	— 80
2. Pig iron	6,943	828	— 88
3. Iron and steel in bars	6,213	2,176	— 65
4. Pyrites	20,096	—	— 100
5. Barley	8,401	3,085	— 64
6. Millet and podded fruits.	3,473	222	— 94
7. Maize	41,557	9,911	— 77
8. Mill products	29,979	7,664	— 76
9. Stone	4,995	—	— 100
10. Coal, etc.	930,659	468,159	— 50
11. Lignite, briquettes	47,690	19,747	— 59
	<hr/> 1,162,400	<hr/> 524,424	<hr/> — 55

The figures for total transshipment are :

	1913	1925	1925 as against 1913
	Tons		Percentage
From ship to rail.	1,262,373	607,821	— 52
Deduct from this the weight of the main categories of goods specified above	1,162,400	524,424	— 55
Remains for other categories of goods (50 in 1913 and 31 in 1925).	99,973	83,397	— 20

Thus, in the case of *all* other categories of goods there has only been a reduction of 6,576 tons. In the case of the 19 categories of goods which have entirely disappeared the reduction must consequently have been much smaller. The actual figures, therefore, cannot have been of the smallest importance.

Taking individual items, the following comments may be made on the fall in transshipment figures for the goods mentioned above :

1. *Cement*. — The import of cement to Baden is at present in itself abnormal, since Baden has two large cement works in operation at Leimen and Kleinkems.

8. *Mill Products*. — The efforts of the Mannheim mills were always directed to milling themselves and as far as possible avoiding the importation of milled products. In respect of export traffic from Mannheim and the Upper Rhine ports to Switzerland, there is moreover already the transshipment tariff 44.

9. *Stone*. — At present the Baden stone quarries can meet the requirements of the country.

10. *Coal* (Transshipment Tariff 6u). — A further modification of the special tariff 6u in favour of Mannheim was introduced on August 1st, 1927. It remains to be seen whether this meets all the desires of Mannheim. So far as there are still complaints that Mannheim has too small a share in traffic through Karlsruhe, this is due to the freight rates by water. For the Mannheim - Karlsruhe sector, these are actually lower than before the war, whereas freight rates to Mannheim have risen by 50 per cent.

11. *Lignite Briquettes*. — The decline in transshipment traffic is largely the consequence of the establishment and extension after the war of the briquette factories at Rheinau and particularly at Kehl.

4. *Pyrites*. — This is due to accidentally large shipments in 1913.

5 to 7. *Grain and Podded Fruits*. — In the case of these goods, transshipment tariffs 44 and 44a already allow a considerable reduction for traffic to Upper Baden and to the Swiss transit stations.

The heavy fall in transshipment from ship to rail at Mannheim cannot therefore be ascribed to the tariff policy of the Reich railways. *Furthermore, no seaport import tariff exists in the case of any of the above-mentioned goods.*

The main reason for the fall in traffic is rather *the fact that goods have been diverted to other transshipment places*, as will be seen from the following table, which does not even contain the figures for Strasburg and Basle.

	Transshipment from Ship to Rail		
	1913 Tons	1925 Tons	1925 as against 1913 Percentage
Mannheim	1,262,375	607,821	— 52
Ludwigshaven	323,919	374,480	+ 16
Gustavsburg	869,657	301,719	— 65
Aschaffenburg	5,042	788,146	+ 15530
Karlsruhe	490,220	557,375	+ 13.7
Kehl	197,785	314,546	+ 59
	<hr/> 3,148,998	<hr/> 2,944,087	<hr/> — 6.5

From Rail to Ship. — The conditions are the same in the case of transshipment from rail to ship in regard to which the memorandum states that, of 53 categories of goods, 33 have disappeared. Here again only percentages and not actual figures are given.

In the case of the main categories of goods which are there shown as having fallen by 60-100 per cent, the following are the actual quantities carried :

	Transshipment at Mannheim from Rail to Ship		
	1913 Tons	1925 Tons	1925 as against 1913. Percentage
1. Cement	12,090	4,860	— 60
2. Potassium salts	431	—	— 100
3. Beer	6,225	—	— 100
4. Burnt pyrites	27,700	—	— 100
5. Glass ware	1,803	—	— 100
6. Timber	2,067	—	— 100
7. Lime	2,893	—	— 100
8. Stone	806	366	— 55
9. Pottery	1,777	2	— 100
10. Rock salt	19,465	186,431	+ 863
Total	<hr/> 75,247	<hr/> 191,659	<hr/> + 160
Deduct these figures from the total tranship- ment figures from rail to ship	82,972	196,324	+ 139
Remains for the other categories of goods (43 in 1913, 11 in 1925).	<hr/> 7,725	<hr/> 4,665	<hr/> — 40

Here again we see that the 32 categories of goods described in the memorandum as having disappeared can only have had a very small importance from the point of view of traffic. According to the actual figures shown for transshipment, even the "main categories of goods" referred to above can, for the greater part, not have had any very great importance for traffic. If, however, all 43 of the "other categories of goods" concerned only show a loss of about 3,060 tons, the 32 categories which have disappeared cannot have shown any figures worth mentioning at all.

The following detailed observations may be made as to reductions in traffic :

1. *Cement.* — The reduction in transshipment is mainly due to the loss of the overseas market and has chiefly affected the cement works at Leimen. In the meantime, however, K-tariff No. 26 for cement traffic to Mannheim as from Heidelberg and Kirchheim has been introduced. This is conditional on a yearly minimum quantity of 15,000 tons, and will contribute to raising the transshipment of cement to a higher figure than before the war.

4. *Burnt Pyrites.* — This is a case of accidentally heavy traffic, namely transport of stock left over from the year 1912.

6. *Timber.* — Timber from inland consigned down the Rhine is mainly transhipped from Karlsruhe. Moreover the inland transshipment tariff 1*u*, which was introduced in August 21st, 1927, for timber from the whole of South Germany to the Rhine and Main ports, and which grants reductions of from 20 to 30 per cent, will also bring a good deal of transshipment traffic to the port of Mannheim.

The other goods have been diverted to other transshipment ports, in so far as their export has not ceased on account of price conditions.

In any case it is certain that transshipment from rail to ship has considerably increased through the heavier salt traffic. If, as the memorandum states, this increase in traffic means no profit for Rhine shipping, as it has up to the present been transhipped on the Neckar, it nevertheless means an increase in the Mannheim transshipment traffic, the promoting of which is the main object of the memorandum. It is certain that the already existing transshipment tariffs, 40 and 40*a*, have substantially contributed to the improvement in the transshipment traffic of Mannheim. The Neckar being unreliable, the salt traffic on this river must always be primarily dependent on the state of the water.

Re Section "Increase in Railway Goods Traffic".

As regards this section, the memorandum endeavours to show, by comparing the traffic figures for the movement of goods in 1913 and 1925, that the decrease in traffic from Mannheim Ludwigshafen (Traffic district 34) with its South German hinterland has been accompanied by a simultaneous and corresponding increase of direct railway traffic between that South German hinterland and the seaports. This is intended to prove that the tariff policy of the Reich railways has injured the port of Mannheim for the benefit of the seaports.

This part of the memorandum again suffers from the fact that the figures for movement of traffic are only given in percentages and not in actual figures, which is the only way of giving an accurate idea of the volume of traffic. The actual figures for goods carried, according to the above statistics, are as follows :

	1913	1925	Increase or decrease of	
	Tons	Tons	1925 against 1913	
			Tons	%
A. Received :				
1. Baden from the seaports ¹ . . .	35,100	63,000	27,000	+ 79
From Mannheim - Ludwigshafen	1,644,298	1,305,450	— 338,848	— 20.6
2. Württemberg from the seaports ²	53,500	99,400	+ 45,900	+ 85
From Mannheim - Ludwigshafen	1,396,161	1,438,172	+ 42,011	+ 3
3. South Bavaria from the seaports ³	78,100	155,400	+ 77,300	+ 99
From Mannheim - Ludwigshafen	311,749	224,752	— 86,997	— 28
4. North Bavaria from the seaports	95,000	148,400	+ 53,400	+ 56
From Mannheim - Ludwigshafen.	113,207	152,661	+ 39,354	+ 35
Total of A :				
1-4 :				
from the seaports	261,700	466,200	+ 204,500	+ 78
From Mannheim - Ludwigshafen	3,465,415	3,121,035	— 344,380	— 10

¹ The seaport traffic is very small compared to that of Mannheim. Its increase towards Baden does not amount to one-tenth of the loss of Mannheim-Ludwigshafen. The losses refer mainly to goods carried in bulk, for instance : coal, grain, timber, petroleum and mixed consignments, for which there are no seaport tariffs.

² In this case also the seaport traffic is small compared to that of Mannheim.

³ This loss is accounted for mainly by the declining traffic in bark, lignite, briquettes, fertilizers, pig iron coal, maize, timber, petroleum, oil-cake (articles not affected by seaport tariffs).

	1913 Tons	1925 Tons	Increase or decrease of 1925 against 1913. Tons	%
B. Despatched :				
1. From Baden to the seaports	22,800	35,500	+	56
To Mannheim - Ludwigshafen	453,745	1,376,147	+	203
2. From Württemberg to the seaports	33,100	53,300	+	61
To Mannheim - Ludwigshafen	293,785	348,687	+	18,6
3. From South Bavaria to the seaports	34,000	94,400	+	178
To Mannheim - Ludwigshafen	100,500	103,610	+	3
4. From North Bavaria to the seaports	92,300	140,800	+	52
To Mannheim - Ludwigshafen	48,856	110,721	+	127
Total of B :				
1-4 :				
to seaports	182,200	324,000	+	78
To Mannheim - Ludwigshafen	896,886	1,939,165	+	116
A and B :				
1-4 :				
to and from seaports	443,900	790,200	+	78
To and from Mannheim - Ludwigshafen	4,362,301	5,060,200	+	16

These figures and the use made of them in the memorandum suggest the following observations : —

1. These figures are entirely unsuitable for use as proof that seaport traffic has increased to the detriment of transshipment traffic at Mannheim, for they include all traffic, *i.e.*, both local traffic and inland and maritime transshipment traffic. Since there are far more industrial concerns established in the seaports than at Mannheim, and since the actual traffic figures for traffic with South German districts are much lower for the seaports than for Mannheim, it can be taken as certain that in the traffic figures for seaports there will be a higher percentage of local traffic than in those for Mannheim. With every rise or fall in traffic from one of the industrial concerns in the seaports, the percentage figure for traffic to the South German districts may rise or fall by whole points. The deduction from these figures that seaport traffic has increased, particularly by reason of favourable rail tariffs, to the detriment of Mannheim, is therefore quite incorrect.

2. Apart from this, if we are to make a fair comparison, we must also take account of the traffic of the other Upper Rhine and Main ports (particularly Karlsruhe, Kehl, and Aschaffenburg) with the South German hinterland, since it is indisputable that since the war there has been a diversion of traffic from Mannheim towards these ports.

3. Here, again, the Mannheim memorandum is entirely unjustified in correcting the figures in a one-sided manner so as to make the Mannheim traffic figures appear lower, for instance, by omitting from the 1925 figures the increased shipments from the chemical factories and large mills at Mannheim - Ludwigshafen, and the additional transshipment of rock salt and of timber for the celluloid factory at Waldhof. The Mannheim transshipment traffic must necessarily have benefited by the salt imports into Mannheim; the heavy shipments from the chemical factories and large mills and to the Waldhof celluloid factory also presuppose additional imports of chemical raw materials and grain, and an additional export of celluloid products, etc., on the waterways, all to the advantage of the port. If the figures given were admitted, corrections similar to those for 1925 should also be made in the

transshipment figures for 1913, and those for seaport traffic. There can therefore be no question of the catastrophic reduction in traffic, mentioned by the memorandum in the section "Causes of the Decline in Traffic".

Re Section "Change in the Movement of Traffic with Reference to Individual Items".

The memorandum asserts, on the basis of a comparison of the traffic of the seaports and of Mannheim-Ludwigshafen ports with the South German hinterland, that as against 1913 the goods shown under certain individual statistical entries were shipped in 1925 more from the seaports than by way of the Rhine, these being: Hides and skins, timber, coffee, tea, etc., oils and fats, oil cake, paper and cardboard, petroleum, rice, tobacco, tar and pitch etc., peat, wool, zinc and other goods. Here again the absolute traffic figures are not given. Furthermore, out of all these goods, the seaport tariffs in 1925 granted favourable conditions only to hides and skins, paper and cardboard, rice and wool. In the year 1913, with which the comparison is made, hides and skins and rice were also privileged by being given proportionately larger reductions in seaport tariffs. The Hamburg-Trieste tariff parity scale had not yet been introduced in 1925. It cannot, therefore, be held generally responsible for the decrease in traffic. Thus no reproach can fairly be levelled against the tariff policy of the Reich Railways.

Re Section "Causes of Decline in Traffic: Tariff Policy of the Reich Railways".

1. *Effect of High Short-distance Freight Rates.* — The memorandum recognises the economic necessity of the graduated tariff, *i.e.*, of comparatively higher tariff rates for short distances and comparatively lower rates for long distances. For financial reasons it is impossible for the Reich Railways to lower the rates for short distances beyond the normal tariff reductions already granted on August 1st, 1927. Otherwise in order to make good the loss on the short distances, it would be necessary to make the graduation less pronounced *i.e.*, to increase rates for long distances.

The statistical examples given in the memorandum as to the alleged falling off of traffic to Mannheim in certain articles through an application of the graduated tariff system are again only percentage figures. They are completed below by the corresponding absolute traffic figures:

	1913	Tons	1925
<i>Raw Sugar</i>			
Total receipt of Württemberg	16,409		31,525
From district 34, Mannheim	6,208 = 37.8%		5,660 = 18%
<i>Oils and Fats.</i>			
Total receipt South Bavaria	45,614		38,386
From District 34, Mannheim	11,691 = 26%		3,216 = 8.33%
<i>Millet and Podded Fruits</i>			
Total Receipt of Baden	2,663		6,138
From District 34, Mannheim	1,906 = 72%		739 = 12%
<i>Copper Ore.</i>			
Total Receipt South Bavaria	6,797		5,361
From District 34, Mannheim	3,940 = 58%		16 = 0.3%
<i>Starch.</i>			
Total Receipt Württemberg	7,972		6,458
From District 34, Mannheim	6,247 = 78.3%		712 = 11%

Therefore so far as oils and fats, copper ore and starch consigned to South Bavaria are concerned not only traffic received from Mannheim but the total traffic received in South Bavaria in these goods has decreased in 1925 as against 1913. The memorandum omits to say where the goods formerly transhipped at Mannheim came from, and without knowledge of the despatching districts it is impossible to verify the justice of the complaints made by Mannheim. If for instance, Mannheim claims carriage by the coast and Rhine route to Mannheim and transhipment there, in the case of raw sugar sent from Thuringia to Württemberg, of podded fruits and millet from East Prussia and the frontier Marshes to Baden, and of starch from the Elbe district to Württemberg, it goes too far and such claims cannot even be discussed. It is contrary to every economic law to carry goods by such roundabout routes. In their relations with each other, railways regard competition by a roundabout way, which is 25 per cent longer than the usual one, as competition exceeding the admissible and customary measure. The roundabout routes which would have to be taken by the traffic claimed by Mannheim are from 200 to 300 per cent longer than the normal routes.

2. *Unilateral Preference for Sea-Ports.* — (a) *Statistical Evidence.* — In spite of its heading, this section does not give any statistical proof for its assertion that there is a unilateral preference for seaports. It confines itself to quoting as a "typical example" a case in which a German shipping company made an application in respect of seaport tariffs for a foreign commodity, namely timber. This request, however, did not get beyond the stage of a preliminary examination by the provincial authorities, since it was refused by them.

In this connection, it must be emphasised that in principle the seaport tariffs which affect the southern hinterland of Mannheim have been established solely in competition against the closed railway route through and from the foreign — French, Belgian and Dutch — seaports. That is to say, they merely apply to the route via the German seaports the tariffs offered to the consignor on the foreign route. The seaport tariffs, therefore, do not cheapen the facilities for despatch overseas available at the place of consignment; thus the assertion made in the memorandum that the Rhine loses traffic *through the seaport tariffs* is inaccurate. The Rhine would derive no advantage were the seaport tariffs abolished, since these tariffs merely imply competition with foreign railways, *i. e.*, the seaport tariffs only contain the rates which already exist by rail to non-German seaports. Therefore the only traffic affected by the seaport tariffs is that for which the closed railway route to and from foreign ports is available, and which would be likely to take that route if the seaports tariffs did not exist. If the Rhine is not in a position to compete with the foreign route by rail, then it is also not in a position to compete with the German seaport tariffs. This, however, is only a logical secondary consequence, and the primary cause, namely the cheapness of the foreign route, cannot be removed by the Reich Railways.

It has also been suggested that in addition to the seaport tariffs, competitive tariffs should be introduced for a combined route by rail and waterway along the Rhine. The Reich Railways cannot give effect to this suggestion for the following reasons.

German export goods traffic, even if sent along the Rhine, would still go to foreign seaports. There can be no doubt, however, as to the incomparable advantage for a country of possessing its own seaports. It makes the direct transport of its export goods overseas possible without the use of foreign transhipment ports and shipping lines, whereas if transhipment takes place at an inland transhipment port, there has to be a further transhipment in a foreign seaport. As is shown by history and by the present policy, of European land-locked States, every country is endeavouring to obtain seaports of its own, or to develop those it has. Germany, above all others, is obliged to follow this policy for it can only carry out the Dawes plan by increasing its receipts in foreign exchange. If the German mercantile marine, which mainly plies from German seaports, is used to capacity for overseas trade, revenue will accrue which will have a considerable effect on the German balance of payments. If German goods are sent by foreign railways and through foreign ports, the sums necessary to pay the foreign freight charges must be taken from the asset side of the German foreign trade balance.

It is therefore necessary, from the point of view of national policy, that the Reich Railways should take up the competition for goods traffic against the foreign railways route, not by favouring the Rhine transshipment ports, which pass their traffic on to the *foreign seaports* of Antwerp, Rotterdam, etc., but by favouring the route through *German seaports*. Furthermore, the latest Reich Railways investigations into self-costs have shown that it is only possible in a very few exceptional cases for the shorter haul to the inland transshipment place at the same tariff to be more profitable for the Reich Railways than transport to seaports.

Finally, competition by the Rhine route is also less profitable for the Reich Railways than that over German seaports, since to put the Rhine route in a position to compete, the equivalent of the freight charges on the closed railway route (to foreign ports) — which would have to be introduced if such competition were undertaken — would further have to be reduced by the amount of the Rhine freight charges, plus transshipment expenses, insurance, and a margin for inducement to use the combined rail-river route. The following figures may serve as an example.

(b) Evidence from Freight Rates. — The examples of rates for paper and rice given by the memorandum under (b) are not correct, and should be modified as follows :

<i>Category C. Paper.</i>	RM.	
From Albruck to Bremen (836 km.) A.T.52 . . .	2.10	
5 per cent additional charge for cover . . .	0.11	
	— 2.21	
From Albruck to Mannheim (305 km.) Category C	2.16	as against
5 per cent additional charge for cover . . .	0.11	Bremen
	— 2.27	+ 0.06
From Albruck to Kehl A.T.44c.	1.38	— 0.83

The memorandum does not state the amount of the Rhine freight charge plus transshipment expenses, insurance, and margin for inducement. In the case of Kehl the margin of RM. 0.83 would perhaps be sufficient in order to meet the above-mentioned cost of the Rhine journey Kehl - Antwerp (or Rotterdam) with transshipment expenses, insurance, and margin of inducement. In order to bring the paper by the Rhine route through Mannheim, the freight rate Albruck-Mannheim would, however, also have to be reduced at least from RM. 2.27 to RM. 1.38. If we take into account that the longer the distance the lower the self costs of the railways per ton kilometer, it is obvious that the Reich Railways make a larger profit on their transport of the goods from Albruck to Bremen for RM. 2.21 than they would have if they reduced the Albruck - Mannheim charge to RM. 1.38 (R.M. 9.06 against RM. 8.33 net profit per ton).

Rice.

	RM.	
Bremen - Augsburg (697 km.) A.T.58	2.90	
Bremen - Munich (758 km.) A.T.58	2.90	
5 per cent additional charge for cover	0.15	
	— 3.05	
	RM.	
Mannheim - Augsburg (304 kilometers) Category C.	2.15	as against
5 per cent additional charge for cover	0.11	Bremen
	— 2.26	— 0.79
Mannheim - Munich (365 kilometers) Category C.	2.46	
5 per cent additional charge for cover	0.12	
	— 2.58	— 0.47

The freight charge margin in the case of Augsburg of RM. 0.79 (instead of RM. 0.47 as stated in the memorandum) would perhaps be sufficient for Rhine shipping. The tariff charge from Mannheim to Munich would have to be reduced from RM. 2.58 at least to RM. 2.26. In this case also the net profit from the Bremen - Munich rate of RM. 3.05 is higher than that obtainable from a Mannheim - Munich rate of RM. 2.26 (RM. 18.55 as against RM. 16.24 net profit per ton).

Re Section "North Sea - Adriatic Tariff Parity Scale".

This Tariff Parity scale was introduced at the end of 1925 as a temporary competitive measure (as far as Czechoslovakia and Austria are concerned the measure, it has since been cancelled) in the interests of the German seaports as against Trieste, etc., the reason being that as a result of competition on the part of the Adriatic railways, the rates for the transport of goods between Trieste and Bavaria had become cheaper than those between Bavaria and German seaports. The traffic losses of Mannheim could not, therefore, have arisen as a result of this tariff parity, but were due to the fact that shipment by Trieste had become actually cheaper than by Mannheim. This applies in particular to the grain traffic to Bavaria referred to in the memorandum, which moreover had only been handled by Mannheim since 1905, as before that date Bavaria imported her grain from the Balkans. Since the war, Bavaria is again obtaining her grain from the Balkans, partly on account of the cheaper freight rates via Trieste, and to some extent also of the greater activity of Danube navigation. The Bavarian interests concerned have adapted themselves to this arrangement and have repeatedly stated that they attach no importance to reductions in freight rates for (American) grain from Mannheim.

The reasons of traffic policy already set forth, which militate against the application of the seaport tariffs to the Rhine ports are even stronger against allowing the Mannheim import route to participate in this tariff parity. It would be senseless to dispute traffic with Trieste only to divert it to Antwerp. Moreover, from a technical tariff point of view it would not be possible to allow the combined rail-river route, Rotterdam - Mannheim - transshipment - Bavaria, to participate in the tariff parity, for if the Trieste - Bavaria freight rates were transferred to the rail-river route, the free freight market on the Rhine would make it impossible to fix Rhine freight charges or to accept participation of Rhine shipping companies in the tariff parity scale (since they would have to be satisfied with Rhine freight rates cut down to the same extent as the Reich railways cut down their transport charges under the tariff parity scale). After deduction, however, of the existing Rhine freight rates from the Trieste transport charges there would only remain entirely inadequate sums for payment to the Reich Railways in respect of carriage over their lines from Mannheim to Bavaria. In making refunds reliance would have to be placed on statements as to the amount of Rhine freight charges paid, which it would be absolutely impossible to check.

Furthermore, were Mannheim and the other Rhine transshipment ports to participate in the tariff parity scale it would not be possible to stop there. These measures would have to be extended to traffic through the inland ports of other German river systems, particularly the Elbe (Riesa, etc.), which is much nearer the district in which competition with Trieste mainly operates, i.e. Czechoslovakia, the Czech-Adriatic tariffs, which in some cases are extremely low, being in force right up to the German frontier.

Berlin, February 29th, 1928.

ANNEX D 2.

GERMAN RAILWAYS: GOODS TRANSPORT TARIFFS.

1925 Rates compared with 1913 Rates. (1913=100.)

(Source: "Statistisches Jahrbuch für das Deutsche Reich, 1927", page 123.)

Note: The original shows more columns for distances (one for each multiple of 100 km., up to 1,000 km.) and more lines (three for each wagon-load class, viz., 5-ton, 10-ton and 15-ton lots), but the main features are reproduced below.

Tariff Classes and Special Tariffs	Distance in kilometres											Average for all distances	Proportion %, for each class, of the total goods carried
	1 to 100	101 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1,000	over 1,000		
General Express tariff, Class I	169.8	159.1	157.0	155.9	154.8	153.0	150.2	145.4	138.8	131.1	118.6	156.2	
% of quantity	43.6	21.6	11.3	7.5	6.1	4.8	2.7	1.2	0.8	0.3	0.2	100	0.37
Reduced Express tariff, Class II	162.1	151.6	150.2	147.9	146.7	146.4	144.8	141.0	136.6	129.4	115.1	151.6	
% of quantity	53.8	24.3	8.3	6.6	4.1	1.9	1.1	0.6	0.2	0.1	0.1	100	0.22
General small lots ("Stückgut") I	172.7	162.2	159.8	157.7	155.9	154.1	150.9	145.7	139.0	131.2	118.8	157.9	
% of quantity	40.9	21.3	11.9	8.1	6.9	5.1	3.0	1.4	0.8	0.3	0.3	100	2.57
Reduced small lots II	179.9	158.4	152.4	145.2	137.5	129.6	121.1	113.9	108.2	101.9	94.8	152.0	
% of quantity	57.4	20.7	8.6	5.1	3.7	2.4	1.2	0.6	0.3	0.1	0.1	100	1.23
Special tariff 25 (milk)	65.5	63.5	64.4	65.5	67.3	69.4	—	—	—	—	—	64.8	
% of quantity	82.9	13.7	3.0	0.3	0.05	0.05	—	—	—	—	—	100	0.71
Wagonloads A, total	223.4	211.8	204.8	196.0	186.0	175.9	164.2	153.5	141.8	131.2	116.6	186.7	
% of quantity	36.1	18.7	12.5	9.1	8.3	6.7	4.4	2.1	1.4	0.4	0.3	100	2.21
Wagonloads B, total	181.5	170.4	163.4	155.0	146.8	138.7	128.8	120.5	113.0	105.0	94.1	153.0	
% of quantity	39.8	23.4	12.1	8.5	6.2	4.7	2.6	1.5	0.7	0.3	0.2	100	1.69
Wagonloads C, total	209.0	174.2	168.4	160.0	154.8	146.8	137.4	127.0	116.7	105.8	91.5	167.4	
% of quantity	55.4	21.0	8.4	6.7	4.0	2.4	1.4	0.8	0.4	0.2	0.3	100	5.29
Wagonloads D, total	194.5	165.0	159.2	153.1	145.9	137.9	130.0	121.1	112.9	103.5	88.5	155.1	
% of quantity	52.7	17.9	9.1	6.5	5.9	4.3	1.6	0.8	0.5	0.3	0.4	100	3.71
Wagonloads E5	194.3	151.1	145.4	138.0	129.6	123.2	114.8	107.7	100.1	92.1	82.7	148.3	
% of quantity	56.6	20.7	8.9	5.0	3.5	2.3	1.5	0.8	0.4	0.2	0.1	100	1.32
Wagonloads E10	205.8	186.1	184.1	175.4	167.7	162.3	152.3	143.5	133.1	124.6	111.8	179.5	
% of quantity	54.8	20.9	9.1	6.6	3.8	2.2	1.6	0.9	0.6	0.3	0.3	100	1.25
Wagonloads E15	163.4	148.0	147.1	141.0	135.5	129.6	122.0	114.7	106.7	98.7	87.1	144.6	
% of quantity	59.4	19.6	8.2	4.7	3.2	2.0	1.4	0.6	0.4	0.2	0.3	100	15.36
Wagonloads E, total	169.4	151.2	149.7	143.5	137.4	131.2	123.4	116.3	108.2	100.0	89.1	147.5	
% of quantity	58.9	19.8	8.3	4.8	3.3	2.0	1.4	0.7	0.4	0.2	0.2	100	17.93
Wagonloads F, total	134.1	125.5	118.2	110.9	112.5	111.7	107.0	103.0	97.5	93.8	85.1	122.7	
% of quantity	68.0	18.3	5.0	3.0	2.0	1.2	0.8	0.7	0.5	0.3	0.2	100	7.68

GERMAN RAILWAYS: GOODS TRANSPORT TARIFFS (continued).

1925 Rates compared with 1913 Rates. (1913=100.)

(Source: "Statistisches Jahrbuch für das Deutsche Reich, 1927", page 123).

Note: The original shows more columns for distances (one for each multiple of 100 km., up to 1,000 km. and more lines (three for each wagon-load class, viz., 5-ton, 10-ton and 15-ton lots), but the main features are reproduced below.

Tariff Classes and Special Tariffs	Distance in kilometres											Average for all distances	Proportion %, for each class, of the total goods carried
	1 to 100	101 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1,000	over 1,000		
Special tariff 1-1/ (timber)	183.1	155.0	156.4	155.0	149.3	139.8	131.6	123.2	113.7	106.0	94.2	149.4	
% of quantity	49.1	25.7	9.0	4.6	3.3	2.5	1.8	1.8	0.9	0.7	0.6	100	3.25
Special tariff 5-5c (stone)	109.1	119.6	116.3	109.3	104.1	99.9	91.4	83.3	67.5	65.9	74.2	111.3	
% of quantity	65.2	21.7	7.0	3.1	1.5	0.6	0.4	0.4	0.1	—	—	100	6.82
Special tariff 6-6u (coal)	143.9	139.9	139.2	144.5	130.8	118.0	108.0	101.9	100.0	100.0	100.0	134.5	
% of quantity	60.6	18.1	6.8	5.5	3.4	2.6	1.2	0.8	0.3	0.3	0.4	100	38.89
Special tariff 7-7c (iron ore)	141.2	128.3	136.1	139.0	140.0	139.7	140.0	140.0	140.0	137.4	127.8	136.7	
% of quantity	60.0	21.9	10.3	5.2	0.6	1.0	0.5	0.1	0.3	0.05	0.05	100	1.76
Special tariff 11 (manures)	139.7	127.3	123.6	119.7	120.7	118.2	114.3	108.7	102.8	98.5	81.0	119.1	
% of quantity	31.5	24.8	14.2	10.8	7.3	3.8	2.3	1.5	1.4	1.0	1.4	100	2.76
Small lots ("Stückgut") and Special tariff 25 (milk)	146.3	150.0	153.1	154.3	152.5	150.3	146.9	141.7	135.5	127.3	115.9	149.3	
% of quantity	51.5	20.2	9.6	6.2	5.0	3.6	2.0	0.9	0.6	0.2	0.2	100	5.10
Wagonload Classes A-F	176.4	161.7	161.7	156.0	151.6	145.8	136.9	127.3	118.5	106.6	93.4	156.0	
% of quantity	57.5	19.6	8.1	5.1	3.8	2.5	1.5	0.8	0.5	0.3	0.3	100	38.51
Special tariffs : 1, 5, 6, 7, 11	141.5	138.7	137.9	139.9	130.5	120.0	112.0	106.1	104.0	101.1	95.3	133.2	
% of quantity	53.9	19.5	7.5	5.4	3.3	2.4	1.1	0.8	0.4	0.3	0.4	100	53.48
Other special tariffs . . . . .	...	...	...	...	...	...	...	...	...	...	...	135.0	2.91
Total of all tariff classes	156.0	150.6	151.6	149.8	145.3	138.6	132.3	122.1	117.3	106.8	96.6	145.6	
% of quantity	57.9	19.6	7.9	5.3	3.6	2.5	1.4	0.8	0.4	0.3	0.3	100	100
Ditto, excluding transport tax	149.1	143.3	144.0	142.6	137.9	131.6	125.1	115.8	110.8	101.8	92.3	138.4	

ANNEX D 3.

FRENCH RAILWAYS :

TABLE I. — SUCCESSIVE INCREASES IN TARIFFS.

	April 15th, 1918	February 23rd, 1920	March 10th, 1924	January 1st, 1925	March 16th, 1925	January 1st, 1926	May 1st, 1926	August 1st, 1926	March 14th, 1928
	%	%	%	%	%	%	%	%	%
Ordinary passengers . . . 1st class		80	170	170	170	190	210	240	240
2nd „	25	75	160	160					
3rd „		70	150	150					
Soldiers and sailors travelling at their own expense 1st class		55	145	145	145	190	210	240	240
2nd „	—	50	135	135					
3rd „		45	100	100					
Ordinary season ticket- holders 1st class		80	80	80	80	190	210	240	240
2nd „	25	75	75	75					
3rd „		70	70	70					
Season tickets for school-children and apprentices 1st class		25	25	25	25	190	210	240	240
2nd „	25	25	25	25					
3rd „									
Workmen's season tickets, 3rd class	25	25	25	25	25	190	210	240	240
Baggage, dogs, money, securities .	25	140	170	190(*)	200	230	250	320	370
Produce at G.V. ¹ rates 3/103 . .				170	170	200	220	290	340
Newspapers at G.V. rates 18/118 .	25	140	170	170	170	200	220	290	340
Other G.V. traffic				190(*)	200	230	250	320	370
Merchandise at P.V. ² rates 22/122 }	25	140	170	170	170	200	220	290	340
Other P.V. traffic }				190(*)	200	230	250	320	370

(*) Rates raised by 190 per cent not to exceed legal rates plus 180 per cent.

¹ G.V. = "Grande vitesse".

² P.V. = "Petite vitesse".

TABLE II. — SUMMARISING THE MEASURES TAKEN BY THE FRENCH RAILWAY SYSTEMS IN RESPECT OF GOODS EXPORTED OR IMPORTED THROUGH THE CHANNEL AND NORTH SEA PORTS.

A. HOME TARIFFS.

No. of tariff	Summary of clauses	Approximate percentage reduction on rates applicable to home traffic	Date of entry into force
P.V. No. 303, Chapter II, All systems.	Reduced scale for the carriage in 8-ton wagons of new potatoes coming from Spain and Algeria and exported through Boulogne, Dunkirk, Le Tréport, Dieppe, Honfleur and St. Malo-St. Servan.	20 to 30 %	20/III/29
P.V. No. 5/105, Etat - Nord and Paris Ceintures.	Special rates applicable to molasses consigned from Le Havre and Rouen to La Plaine-St. Denis in strings of wagons carrying 180 tons or in complete trains.	45 to 50 %	8/IX/28
P.V. No. 7/107, Chapter I.	Reduction of 20 per cent on the carriage rates paid when mineral fuel consigned from any station on the Nord system to Boulogne, Dieppe or Fécamp for export or for consumption by steamers at sea amounts to a certain tonnage.	20 %	20/VI/27
P.V. No. 9/109, Chapter VIII, Est - Etat - Nord - P.-O. Paris Ceintures.	Special rates for the carriage of balks of rough timber, tropical woods, unbarked, in logs, billets, beams, planks or joists, and unspecified woods, unbarked, in 8-ton wagons from Le Havre and Rouen to the Paris district.	35 to 60 %	1/III/28
P.V. No. 9/109, Chapter XII, Est - Etat - Nord - Paris Ceintures.	Special rates for the carriage of rough rattan wood in 5-ton wagons from Le Havre to Paris-Batignolles, Paris-La Chapelle, le Plant-Champigny and Vincennes-Fontenay.	40 %	5/IV/28
P.V. No. 10/110, Chapter III, §1, Nord.	Reduced scale for the carriage of cement consigned in 10-ton or 20-ton wagons from any station on the Nord system serving a cement-works to any seaport station on the same system for export to America.	40 to 45 %	11/IV/27

No. of tariff	Summary of clauses	Approximate percentage reduction on rates applicable to home traffic	Date of entry into force
P.V. No. 10/110, Chapter III, §2.	Special rates per 10-ton or 20-ton wagon for cement consigned from specified stations and exported through Boulogne, Calais or Dunkirk.	30 to 35 %	1/III/28
P.V. No. 10/110, Chapter XII, Etat - Nord.	Special rates for cement consigned in 20-ton wagons from Biache-St. Waast and Nointel to Dieppe for export to the Canary Islands.	40 %	1/XI/28 for Biache St. W. 10/I/29 for Nointel.
P.V. No. 11/111, Chapter III, §1, Nord.	Reduction of 20 per cent on the gross weight of unglazed baked-clay bricks, slabs of stoneware or baked clay, and tiles of baked clay, consigned in lift-vans from any station on the Nord system for export through a seaport station on the same system.	20 %	20/V/26 for bricks and tiles. 1/III/28 for slabs.
P.V. No. 11/111, Chapter III, §3, Nord.	Special rates per string of wagons carrying 180 tons for unglazed baked-clay bricks consigned from Marquise-Rinxent and La Folie siding to America via Dunkirk.	45 %	15/X/28 for Marquise-R. 4/IV/29 for La Folie siding.
P.V. No. 11/111, Chapter IX, Nord-P.-L.-M. Paris Ceintures.	Special rates for the carriage of 20-ton wagons of baked-clay slabs consigned from Decize to Dunkirk.	30 %	16/I/28
P.V. No. 12/112, Chapter III.	Reduced scale for the carriage of fluor-spar in 10-ton and 20-ton wagons from any station on the Midi, Orléans or P.-L.-M. system to any seaport station on the Etat, Midi, Nord, Orleans or P.-L.-M. system.	50 %	5/IV/28
P.V. No. 314, Chapter IX, Etat - Nord.	Special rates for heating apparatus, household utensils and vessels of cast-iron consigned in 5-ton wagons from specified stations to Dunkirk and Le Havre.	25 to 30 %	25/I/29
P.V. No. 19/119, Chapter IV, Etat-P.-O.	Special rates for paper pulp consigned in 10-ton wagons from Rouen to La Haye-Descartes, Durtal and Bazouges.	15 to 25 %	26/X/28

No. of tariff	Summary of clauses	Approximate percentage reduction on rates applicable to home traffic	Date of entry into force
P.V. No. 20/120, Chapter III, Nord.	Special rates for raw cotton and raw wool imported through Boulogne, Calais or Dunkirk and consigned in 5-ton wagons to specified stations.	10 %	1/III/28 for wool 20/IX/28 for cotton
P.V. No. 20/120, Chapter II, Etat-P.O.	Special rates for raw cotton imported through Le Havre and consigned in 5-ton wagons to specified stations.	10 %	20/IX/28
P.V. No. 21/121, Chapter II, Etat-P.O.	Special rates for porcelain consigned in 5-ton wagons from Limoges to Le Havre.	25 %	2/II/23
P.V. No. 29/129, Chapter XVI, G.V. No. 29/129, Chapter IV, Est, Nord, Paris Ceintures.	Special arrangements for carriage of goods consigned in lift-vans from any station on the Est or Nord system to any seaport station on the Nord system or vice versa.	*	6/XI/28
P.V. No. 100, Chapter VIII, Nord.	Special rate applicable from Croix-Wasquehal to Dunkirk for the carriage of agricultural implements and machinery, parts of agricultural implements, and iron bands, consigned in 5-ton wagons.	45 to 55 %	1/I/29

* Under G.V. tariff No. 29/129, Chapter IV, and P.V. tariff No. 29/129, Chapter XVI, the charges are calculated on the rates prescribed for the goods and on the weight of the goods contained in the lift-van.

B. INTERNATIONAL TARIFFS.

No. of tariff	Summary of clauses	Date of entry into force
Through G.V. tariffs, Paris-London via Boulogne and Calais.	These tariffs provide special rates for the carriage of articles consigned by parcel post, provisions, specie and securities (rates arrived at by consolidation of the normal French rates with the English rates).	1/V/13.
Through G.V. tariffs, Paris-London and beyond via Dunkirk.	These tariffs provide special rates for the carriage of articles consigned by parcel post and provisions (rates arrived at by consolidation of the normal French rates with the English rates).	1/X/28.
Through G.V. tariffs, Paris-London via Dieppe.	Special rates for articles consigned by parcel post, provisions, specie, vehicles and animals (rates arrived at by consolidation of the normal French rates with the English rates).	1/X/28.
G. V. tariff, No. 400.	Special rates for the carriage of goods from Grenoble, Lyons, St. Chamond, St. Etienne-Châteaucreux and Tarare to London via Boulogne, Calais, Dieppe and Dunkirk (reductions of about 25 per cent on the normal French rates).	1/X/28.
G. V. tariff, No. 403 (via Boulogne).	Special rates for the carriage of fruit and vegetables from French stations to Great Britain (normal French rates consolidated with English rates).	1/IV/28.
G. V. tariff, No. 403 (via Dunkirk).	Do.	Do.
G. V. tariff, No. 403 (via Dieppe).	Do.	Do.
G.V. and P.V. tariffs, No. 300 (transit).	<p>(a) Special rates for goods of all kinds, applicable as between, on the one hand, points on the Franco-Swiss frontier to the south of Delle, together with Modane, and, on the other hand, seaports from Dunkirk to Bordeaux, both inclusive. (Rates equalised with those from Switzerland and Italy to Belgian and German ports.)</p> <p>(b) Special rates for corks consigned from Cerbère, Port-Vendres, Sète and Marseille-Joliette to the French Channel and North Sea ports (rates to compete with the sea-route).</p>	1/X/24.

No. of tariff	Summary of clauses	Date of entry into force
G.V. and P.V. tariffs, No. 400 (transit).	Special rates for goods of all kinds applicable between Basle and the French North Sea and Channel ports from Dunkirk to Caen, both inclusive (rates equalised with those from Basle to Belgian and German ports).	4/VII/24.
Through P.V. tariff, Paris-London (via Boulogne).	This tariff provides special rates for the carriage of goods of all kinds (rates arrived at by consolidation of the normal French rates with the English rates).	1/V/22.
Through P.V. tariff, London (via Dieppe).	Special rates for the carriage of goods of all kinds (rates arrived at by consolidation of the normal French rates with the English rates).	1/X/28.
P.V. tariff, No. 301 (transit).	Special rates from Dunkirk to Basle and Delle frontier station for live animals arriving direct from abroad by sea (reduction of 10 per cent on the normal French rates).	10/V/28.
P.V. tariff, No. 303, transit Chapter I.	Reduced scales for the carriage of citrons, lemons, tangerines and oranges from Modane frontier station, Ventimiglia frontier station, Marseilles, Port-de-Bouc, Port-St-Louis-du-Rhône, Sète and Port-Vendres to seaport stations between St. Malo and Dunkirk (reduction of 15 and 18 per cent respectively on the normal rates for 10-ton and 15-ton wagons).	22/XI/28.
P.V. Transit tariff, No. 403, Chapter I.	Reduced rates for the carriage of eggs and dead poultry from Buchs (St. Gall) to Dunkirk, Calais, Boulogne and Dieppe (rates equalised with those of foreign routes).	21/XII/27.
P.V. tariff, No. 403, Chapter IV (transit).	Reduced rates for citrons, lemons, tangerines and oranges from Spain to seaport stations between St. Malo and Dunkirk (reduction of 15 and 18 per cent respectively on the normal rates for 10-ton and 15-ton wagons).	22/XI/28.
P.V. tariff, No. 407 (transit).	Special rates for English coal consigned from Rouen, Dunkirk and Honfleur to Basle in strings of wagons carrying 180 tons or in complete trains (rates competing with those on the Rotterdam route).	10/VIII/25.

ANNEX D 4.

RAILWAY TRANSPORT RATES PER 10 TONS, IN REICHSMARKS, OF VARIOUS COUNTRIES INTERESTED IN RHINE NAVIGATION.

(Source: Reports of the Commissioner for the German Railways to the Reparation Commission.)

Note.— The pre-war figures and the figures for distances other than 100 km. are approximate, having been read from the original graphs.

Goods and Date	Germany					France					Switzerland			Netherlands	
	Kilometres					Kilometres					Kilometres			Kilometres	
	100	400	500	700	1,000	100	400	500	700	1,000	100	400	500	100	400
Coal 1913.	30	91	105	133	175	...	...	...	...	...	...	...	...	...	...
I.V.25.	41	122	128	138	175	40	90	103	126	156	107	196	211	57	85
I.I.27.	41	122	128	138	175	48	100	112	139	175	107	196	211	...	...
Cement 1913.	34	100	122	167	232	...	...	...	...	...	...	...	...	...	...
I.V.25.	49	139	160	191	216	50	115	130	150	182	107	208	225	54	135
I.I.27.	49	139	160	191	216	60	130	145	168	200	107	208	225	...	...
Grain 1913.	58	193	238	328	463	...	...	...	...	...	...	...	...	...	...
I.V.25.	86	255	295	360	400	70	130	140	160	175	197	320	335	59	145
I.I.27.	86	255	295	360	400	75	141	148	177	190	197	320	335	...	...
Machine 1913.	55	192	238	330	468	...	...	...	...	...	...	...	...	...	...
Tools I.V.25.	135	420	480	578	653	100	320	385	495	620	197	400	435	102	235
I.I.27.	116	345	402	480	550	114	355	435	555	708	197	400	435	...	...
Iron Ore 1913.	27	60	70	90	120	...	...	...	...	...	...	...	...	...	...
I.V.25.	35	83	97	127	160	35	75	88	112	144	130	260	...	73	185
I.I.27.	35	83	97	127	160	41	86	97	125	158	130	260	...	...	...
Pine logs 1913.	40	135	165	225	315	...	...	...	...	...	...	...	...	...	...
I.V.25.	62	180	215	260	290	65	138	155	180	225	65	130	145	59	...
I.I.27.	62	180	215	260	290	73	152	174	210	220	79	153	177	...	...
Paving stones															
I.V.25.	24	...	...	...	...	...	...	...	...	...	67	...	...	54	...
I.I.27.	29	...	...	...	...	...	...	...	...	...	67	...	...	...	...
42 % Potash I.V.25.	26	...	...	...	...	...	...	...	...	...	96	...	...	46	...
I.I.27.	26	...	...	...	...	44	...	...	...	...	96	...	...	...	...
Rails I.V.25.	76	...	...	...	...	...	...	...	...	...	174	...	...	102	...
I.I.27.	76	...	...	...	...	69	...	...	...	...	174	...	...	...	...
Cotton I.V.25.	135	...	...	...	...	...	...	...	...	...	197	...	...	119	...

ANNEX D 5.

OBSERVATIONS SUBMITTED BY CERTAIN RAILWAY ADMINISTRATIONS OF DANUBE RIPARIAN STATES.

1. CZECHOSLOVAKIA.

The Czecho-slovak competent authorities are glad to be able to confirm that the Czechoslovak tariff provisions which might be mentioned in connection with this question were not directed against the shipping companies, but were framed with wholly different objects. The tariff policy of the Czechoslovak State Railways has never been one of competition with inland waterways; on the contrary its attitude towards them has been rather that of friendly co-operation, both in the interests of Czechoslovak shipping companies on the Elbe, Danube and Oder, and in the interests of the economic life of the country generally.

In pursuance of this policy, reductions have been granted annually for the transit of *plums from the Kingdom of the Serbs, Croats and Slovenes and other dried fruit* arriving at Bratislava Port by the Danube for further transport on the Elbe to Hamburg with transshipment at Loubi, to Stettin via Bohumin or transshipment on the Oder, and to Poland via Petrovice and Bohumin frontier station. Reference to the places indicated above clearly shows that the Czechoslovak transit route is the shortest and therefore the natural one for such traffic, so that this country cannot be accused of favouring this route by means of tariffs which operate against longer foreign routes.

A further proof that no measures which could be described as unfair competition have been taken against steam navigation in this case is supplied by the fact that combined transport is always allowed an adequate tariff margin as compared with rail rates, this being necessary owing to the double transshipment, the longer time of transport and the other disadvantages peculiar to combined water and rail transport.

Finally, the complaint made in this paragraph with regard to tariffs applied to the consignment of *sugar from stations in Czechoslovakia to Switzerland* can only refer to the German railways. The Czecho-slovak authorities are not aware of any tariff policy measure which discriminates against Danube navigation via Regensburg.

2. AUSTRIA.

The Central Administration of the Austrian Federal Railways has furnished the following information:

As regards the *Exclusion of Consignments shipped by the Danube from the Application of the Special Tariffs* (Artikeltarife), the special tariffs in force from certain railway stations were introduced for the protection and promotion of home manufacture and are therefore in principle applicable only from the forwarding railway stations which serve Austrian manufacturing centres. Vienna being a producing centre, the above tariffs applied to all city stations accepting goods traffic, this being intended to enable business houses to deliver goods at the stations most convenient to them and also to simplify the tariff. Consignments transhipped from the Danube, however, had to be excluded from the benefits of the special tariffs, as the application of the latter to transshipment consignments would obviously have been contrary to the above-mentioned principles. The case of the steel consignments from Germany shows that our action in refusing to apply the production tariffs to transshipment consignments was fully justified. We cannot depart from the basic principles of the production tariffs even when, as in the "*Serbian soda*" example, the effect is to divert traffic from our system, on which the journey is longer. The complaint

is quite unjustified, as the production tariffs are extended to goods despatched to Danube transshipment stations provided, of course, that the goods are despatched from stations where these special rates are also granted to goods despatched to other destinations.

As regards *Linz Transshipment Traffic*, the following should be noted :

In connection with the incorporation of federally-owned local railways and private railways worked by the Federation for its own account in the through rates system of the Federal Railways (January 1st, 1925), a distance supplement of 10 kilometres was introduced in the case of traffic between main-line stations and the local railways so incorporated. Naturally no exception could be made in respect of traffic between main-line stations and the Linz transshipment station on the local railway Linz-Urfahr.

According to the Austrian Federal Railways distance table, valid from January 1st, 1925, the distance between Linz goods station and Linz transshipment station is 6 kilometres : no alteration was made in 1927.

The remarks above regarding Vienna stations apply also to Linz transshipment station.

Another complaint relates to the consignment of *Salt from Ebensee* :

Before the war, salt from Ebensee was transported to Vienna almost exclusively by rail. The freight according to Station Tariff 26a then in force amounted to 173 heller (250 groschen) per 100 kilos. River freight rates were at that time 10 heller less, viz., 163 heller. At present the combined rail-river freight from Ebensee to Vienna (Prater quay), including discharge and transfer expenses in Linz (motor haulage from Urfahr to Linz transshipment station) and transshipment expenses, costs 300 groschen per 100 kilos, whereas the through railway freight rate Ebensee-Vienna, conditional on minimum total consignments of 1,000 tons per quarter, amounts to 356 groschen per 100 kilos. Should the quarterly total of consignments not reach the above minimum, the rate is raised to 505 groschen per 100 kilos. It is clear from the above comparison that Danube shipping companies have still a very considerable advantage over the railway, taking into consideration the pre-war difference between river and rail freight rates. It should also be pointed out that the rebate introduced by the railway last spring (356 groschen) was a consequence of a previous reduction of river freight rates, effected in two stages by the shipping companies, viz., from 112 to 97 groschen, and later, from 97 to 56 groschen per 100 kilos. As a result of these very extensive rebates, the Austrian Federal Railways lost practically all the salt traffic from Ebensee. Only through the above-mentioned railway rebate, which still left railway rates much higher than the river rates, was it possible to secure some of the lost salt traffic for the Federal Railways through route.

As regards the *Transport of Dried Plums from the Kingdom of the Serbs, Croats and Slovenes*, specially reduced freight rates were in force before the war for traffic between Germany and Serbia, as a result of the so-called Four-Party Convention between the railways interested. Dried plums were one of the articles to benefit by this reduction. In the years immediately after the war, numerous consignments of dried plums were forwarded by rail at normal freight rates from Serbia to Germany. The reduced freight rates from Kelebia, Spielfeld and Rosenbach frontier were only introduced when it was seen that the Danube shipping companies, by conceding specially reduced freight rates, were succeeding in diverting the traffic in question from the rail route.

As regards consignments of *sugar from Czechoslovakia to Switzerland*, it should be noted that the Danube route was never used formerly for transporting sugar from Czechoslovakia to Switzerland. A glance at the map is sufficient to show that, on purely geographical grounds, Danube shipping companies could not claim any share in this traffic.

The through rates at present in force for sugar between Czechoslovakia and Switzerland were only introduced after a long and bitter rates-war between the German Railways Company and the other railways interested in this traffic. During this struggle the German Railways Company endeavoured to divert sugar transports from the Arlberg route to the German railways in various ways, among others by instituting specially low rates from Bavarian Danube transshipment points to German-Swiss frontier stations, and this was the sole reason for the temporary participation of Danube shipping companies for a time in this traffic.

An agreement arrived at between the railway administrations interested in Czechoslovak-Swiss traffic put an end to the competitive rate-cutting measures resorted to during the traffic war, including the above-mentioned low through rates from Danube transshipment points.

As the German Railways Company refused to utilise, for the combined tariff, the freight rates of Export Tariff 119 for sugar, it had to restrict these latter rates to sugar of German origin, and naturally could not employ them for sugar of Czechoslovak origin transhipped at Bavarian Danube ports for Switzerland.

3. GERMANY.

Amongst the complaints formulated by Danube shipping companies, the only complaints which affect the German Railways Company are those relating to the transport of *plums from the Kingdom of the Serbs, Croats and Slovenes* via Oderberg (Bohumin)-Hamburg and to the transport of *sugar from Czechoslovakia to Switzerland*.

As regards the transport of *plums from the Kingdom of the Serbs, Croats and Slovenes*, it should be noted that the German Railways Company participates in the freight rates for dried plums only in respect of the Oderberg (Bohumin)-Hamburg section. The freight rate indicated for this section of 1,264 hč per 100 kilos, corresponding to the Section Table A rate of Special Tariff 12 of the German-Czechoslovak Seaport Tariff in force up to January 1st, 1927, was cancelled by Supplement IV of the above Seaport Tariff, and since that date the Oderberg-Hamburg-German section rate of 3,217 hč. per 100 kilos applies, this constituting only a slight reduction on the normal tariff.

The German Railways Company, however, in Special Tariff 31 of the German Danube transshipments Tariff (Tfv. 30) announced considerably reduced freight rates, valid as from September 8th, 1927, from the Danube transshipment stations at Passau, Deggendorf Port and Regensburg to the German maritime ports of Bremen, Hamburg, Königsberg (East Prussia), Lübeck and Stettin — cf., Berliner Tarif- und Verkehrsanzeiger, Blatt 87, of 8/IX/27, No. 1453a. These rates were specially favourable for the Danube shipping companies. It might also be mentioned that, even apart from the above instance, the German Railways Company has made a special point of promoting as far as possible general traffic interests in Central and South-East Europe, *particularly in co-operation with the Danube shipping companies*.

As regards transport of *sugar from Czechoslovakia to Switzerland*, as a result of agreement between the Czechoslovak, Austrian, and Swiss railways and the German Railways Company, a special tariff (Section III, Part 1) was introduced for sugar transported from Czechoslovakia to Switzerland. This tariff was valid as from September 25th, 1926. The tariff was based on the normal freight rates of the relevant inland goods tariffs in the case of the Austrian, German, and Swiss sections, and the Class B freight rates of the Czechoslovak goods tariff in the case of the Czechoslovak section. The various railway administrations agreed as to the traffic routes to be followed. After the tariff was issued, various attempts were made to secure cheaper transport rates and to circumvent the special combined tariff by transporting Czechoslovak sugar on the Danube to Regensburg quay and then carrying it by motor-lorry to Regensburg Central Station, whence it was forwarded to Switzerland at the freight rates of the German inland Special Tariff 119, which however was intended for sugar of German origin only. Such methods can no longer be resorted to; for reasons that are not material here, Special Tariff 119 for German-Swiss and other frontier stations was cancelled on September 1st, 1927. Accordingly, there is now no difference between the freight for German sugar manufactured in Regensburg and sugar of foreign origin which is to be transhipped on the Danube at that town.

ANNEX E 1 (a).

RHINE FREIGHTS.

It is difficult to make a comparison of scientific value as between railway tariffs and Rhine freight charges. The information as to Rhine freight charges given in the returns reproduced in the reports of the Central Commission for Rhine Navigation are unfortunately very incomplete, at least as regards the two years 1913 and 1925, which were used throughout in our study of the subject; even the returns which appear in the 1927 report are still far from complete.

Furthermore, this information only concerns freight charges quoted on the exchange. Now the freight charges fixed by private agreement in respect of traffic spread over a long period are sometimes very different from those quoted on the exchange. It is impossible to say what percentage of traffic is carried under such private agreements; we are, however, in a position to state that it is a considerable one. Of course freight charges fixed by special agreements usually remain unknown.

Another similar point arises as a result of the fact that a good deal of traffic is carried in hired craft. In such cases, obviously, no freight charge, as such, is made. The daily charge for hire of craft does not enable us to make any comparison with freight charges, for such a comparison would only be possible if we knew the length of the voyage, the number of tons carried, and the nature of the goods.

Another cause of uncertainty resides in the considerable difference which we find on comparing the figures for traffic by cargo steamers and by tows. Statistics do not make it possible to estimate what quantities of any given class of goods have been carried by each of these means of transport.

The tables supplied by the Central Commission have been compiled from information given by each of the riparian States. The same traffic has therefore been shown twice. In the case of Amsterdam-Mannheim traffic, for instance, information is supplied both by the Dutch and by the German authorities. These two sets of information are far from tallying. As regards the above-mentioned traffic, the difference is sometimes as high as fifty per cent.

The figures published by the Central Commission are monthly averages. The yearly averages, which are prepared by taking the arithmetic mean of the monthly figures, contain a considerable factor of uncertainty, because no account has been taken of the quantities and categories of goods transported in each month. Now the seasonal fluctuations in the quantities are often considerable. On the other hand, changes in the water level exercise great influence, because, when the level of the Rhine is low, freight charges per ton increase, while the quantities actually carried are naturally reduced. We therefore find that the highest monthly average and the lowest monthly average very often vary to a considerable extent, and that the mean of those two figures does not correspond at all with the arithmetic mean of the average monthly figures. But even if we knew the quantities of the various categories of goods actually carried in each month — in point of fact the statistics for quantities carried are yearly returns — we should still not have an exact picture of the real facts, because the monthly averages in their turn constitute the arithmetic mean of the daily figures, irrespective of the quantities to which each of those daily figures corresponds. Variations in the water level and in the relation between the tonnage available and the quantities of goods offered for transport cause the freights to vary from day to day, as they vary from month to month.

For all the reasons set forth, it is not possible to make any general comparison between railway rates and Rhine freights, nor can any general relation be established between freights and self-cost. There seems reason to believe, however, that, speaking generally, before the war Rhine freights showed a certain profit margin above the self-cost, and that after the war, with the exception of the year 1926, Rhine navigation companies have worked at a loss.

It results from a study of those figures that the increase in the freights when compared with the pre-war period is not very great. The index figure for Rhine freights for 1925 is 119 (1913=100). This index figure constitutes, of course, an average. It is to be noted that the index figure for wholesale commerce for the same year is 141.8.

FREIGHTS.

Yearly averages per ton of 1,000 kilos separately for :

- A. Goods in parcels (Stückgüter).
- B. Goods in bulk.
- C. Certain special goods in bulk — *e.g.*, coal, ore, cereals, timber, potash and soda.

Explanation :

- a.* indicates the yearly average of monthly minima ;
- b.* indicates the yearly average of monthly averages ;
- c.* indicates the yearly average of monthly maxima ;
- d.* indicates the lowest monthly minimum :
- e.* indicates the highest monthly maximum.

Freights for Antwerp.

A. Goods in Parcels (Stückgüter).

		1913		1925		1927	
		Barge with tug	Cargo steamer	Barge with tug	Cargo steamer	Cargo steamer	
		German figures		French figures	Belgian figures	Belgian figures	German figures
1. Antwerp - Strasburg 811 km.	a	Rm. 5.92		—	—	fl. 4.79	
	b	„ 6.83		Fr. f. 40.08 *	B. fr. 47.50	„ 5.29	
	c	„ 7.96		—	—	„ 5.79	
	d	„ 5.50		Fr. f. 20.00 †	—	„ 4.00	
	e	„ 9.00		Fr. f. 65.00 †	—	„ 6.50	
		No figures		No figures		No figures	
2. Antwerp - Mannheim 679 km.	a	—				fl. 4.19	fl. 4.25
	b	Rm. 3.33			B. fr. 42.50	„ 4.69	„ 4.50
	c	—			—	„ 5.19	„ 4.75
	d	—			—	„ 4.00	„ 4.00
	e	—			—	„ 6.00	„ 5.00
Mannheim - Antwerp.	a	—		No figures			fl. 3.75
	b	Rm. 2.75					„ 4.00
	c	—					„ 4.25
	d	—					„ 3.50
	e	—					„ 4.50
3. Antwerp - Ludwigs- hafen, 686 km. .	a	—	Rm. 5.25			No figures	
	b	Rm. 3.31	„ 5.75	—	B. fr. 42.50		
	c	—	„ 7.25				
	d	—	„ 5.00				
	e	—	„ 7.50				
Ludwigshafen - Ant- werp.	a	—	Rm. 3.50	No figures		No figures	
	b	Rm. 2.75	„ 5.00				
	c	—	„ 7.00				
	d	—	„ 3.50				
	e	—	„ 7.00				
4. Antwerp - Duisburg- Ruhrort, 317 km.	a	No figures				fl. 2.90	
	b				B. fr. 32.50	„ 3.40	
	c					„ 3.90	
	d					„ 2.75	
	e					„ 4.50	
Duisburg - Ruhrort- Antwerp.		No figures		No figures		No figures	

* Indications only for six months.

† „ „ „ five months.

B. Goods in Bulk.

		1913	1925		1927
		Barge with tug	Barge with tug	Cargo steamer	Barge with tug
Antwerp-Strasburg	a	Rm. 4.64	—		No figures
	b	» 4.98		B. fr. 42.50	
	c	» 5.46	—		
	d	» 4.30	—		
	e	» 6.00	—		
Strasburg-Antwerp		No figures	No figures		No figures
Antwerp-Mannheim . . .	b	Rm. 3.08	fl. 2.13	B. fr. 37.50	fl. 2.65
Mannheim-Antwerp . . .	b	Rm. 2.38	fl. 1.76		fl. 1.80
Antwerp - Ludwigs- hafen	b	Rm. 3.06		B. fr. 37.50	fl. 2.46
Ludwigshafen - Ant- werp	b	Rm. 2.38	No figures		fl. 2.97
Antwerp-Rhine-Ruhr ports	b	No figures		B. fr. 27.50	No figures
Rhine-Ruhr ports- Antwerp		No figures	No figures		No figures

C. *Special Goods in Bulk — Coal, Ore, Cereals, etc.*

		1913	1925		Cargo steamer	1927	
		Barge with tug	Barge with tug			Total freight	
						Cereals	Belgian figures
Antwerp-Strasburg	a	Rm. 3.06	fl. 3.07	Fr. f. 19.90 *	—	fl. 4.02	Fr. f. 24.—
	b	" 4.50	" 3.18	" 25.70 †	B. fr. 37.50	" 4.06	" 26.50
	c	" 4.92	" 3.30	" 22.— *	—	" 4.10	" 29.—
	d	" 3.25	" 2.00	" 15.50 *	—	" 3.70	" 24.—
	e	" 5.75	" 4.25	" 40.— †	—	" 4.50	" 29.—
			Potash	Soda			
Strasburg-Antwerp	a	No figures	Fr. f. 12.20	Fr. f. 14.87		No figures	
	b		" 13.83	" 23.80 §			
	c		" 15.40	" 27.12			
			" 10.50	" 11.50			
			" 15.50	" 35.00			
			Belgian figures	German figures		Belgian figures	German figures
Antwerp-Mannheim	a	—	fl. 2.04	—		fl. 2.96	—
	b	Rm. 2.83	" 2.22	fl. 2.13		" 3.—	fl. 2.25
	c	—	" 2.40	—		" 3.04	—
	d	—	" 1.50	" 1.42		" 2.70	—
	e	—	" 3.70	" 3.45		" 3.50	—
Mannheim-Antwerp	a						
	b	Rm. 2.13		fl. 1.76			fl. 1.55
	c	—		—			—
	d	—		" 1.50			—
	e	—		" 2.42			—
Antwerp-Ludwigshafen	a	—	fl. 2.04			No figures	
	b	Rm. 2.81	" 2.22		B. fr. 32.50		
	c	—	" 2.40				
	d	—	" 1.50				
	e	—	" 3.70				
Ludwigshafen-Antwerp	b	Rm. 2.13	No figures			No figures	
Antwerp-Duisburg-Ruhrort	a	No figures	fl. 0.69			fl. 0.72	
	b		" 0.83		B. fr. 22.50	" 0.76	
	c		" 0.97			" 0.80	Barge freight
	d		" 0.45			" 0.50	Coal
	e		" 1.40			" 1.20	
Duisburg-Ruhrort-Antwerp	a	Rm. 1.31					Rm. 1.58
	b	" 1.43					" 1.67
	c	" 1.54	No figures				" 1.76
	d	" 1.15					" 1.20
	e	" 2.00					" 2.40

* Indications for 4 months only.

† Indications for 5-6 months only.

† " " 10 " "

§ " " 4-5 " "

Freights for Rotterdam.

A. Goods in Parcels (Stückgüter).

		1913		1925		1927	
		Barge with tug	Cargo steamer	Barge with tug	Cargo steamer	Barge with tug	Cargo steamer
Rotterdam - Strasburg 700 km.	a	Rm. 5.47		No figures		No figures	
	b	„ 6.32					
	c	„ 7.38					
	d	„ 5.00					
	e	„ 8.00					
Strasburg-Rotterdam ..		No figures		No figures		No figures	
				German figures	Dutch figures	Dutch figures	German figures
Rotterdam - Mannheim 570 km.	a	—		—	—	—	fl. 3.75
	b	Rm. 3.08		fl. 3.00	fl. 4.54	fl. 4.00	„ 4.00
	c	—		—	—	—	„ 4.25
	d	—		—	—	—	„ 3.50
	e	—		—	—	—	„ 4.50
Mannheim-Rotterdam .	a	—		—	—	—	fl. 3.25
	b	Rm. 2.25		fl. 2.35	fl. 3.35	—	„ 3.50
	c	—		—	—	—	„ 3.75
	d	—		—	—	—	„ 3.00
	e	—		—	—	—	„ 4.00
Rotterdam - Ludwigs- hafen, 570 km.	a	—	Rm. 4.25	No figures		—	—
	b	Rm. 3.06*	„ 5.25			—	fl. 4.25
	c	—	„ 6.75			—	—
	d	—	„ 4.00			—	—
	e	—	„ 7.00			—	—
Ludwigshafen - Rotter- dam	a	—	Rm. 2.50	No figures		—	—
	b	Rm. 2.25	„ 4.00			—	fl. 3.50
	c	—	„ 6.00			—	—
	d	—	„ 2.50			—	—
	e	—	„ 6.00			—	—
Rotterdam-Rhine- Ruhr ports, 215 km.		No figures		No figures		No figures	
Rhine-Ruhr ports - Rot- terdam		No figures		No figures		No figures	

* Barge freight only : 1.26 Rm.

B. Goods in Bulk.

		1913	1925		1927	
		Barge with tug	Barge with tug		Cargo steamer	Barge with tug
			Flour			
Rotterdam-Strasburg ..	a	Rm. 4.34	—			No figures
	b	„ 4.68	fl. 3.50			
	c	„ 5.18	—			
	d	„ 4.00	—			
	e	„ 5.80	—			
Strasburg-Rotterdam ..		No figures	No figures			No figures
			Dutch figures	German figures		
Rotterdam-Mannheim .	b	Rm. 2.83	fl. 2.23	fl. 2.25	fl. 3.25	fl. 2.45
Mannheim-Rotterdam .	b	Rm. 1.88		fl. 1.85	fl. 2.85	fl. 1.55
Rotterdam - Ludwigs - hafen	b	Rm. 2.81	No figures			fl. 2.25
Ludwigshafen - Rotter- dam	b	Rm. 1.88	No figures			fl. 2.75
Rotterdam-Rhine-Ruhr ports		No figures	No figures			No figures
Rhine - Ruhr ports - Rotterdam.....		No figures	No figures			No figures

C. Special Goods in Bulk — Coal, Ore, Cereals, etc.

		1913	1925						1927		
		Barge with tug	Barge with tug						Barge with tug		
		Cereals	Light cereals	Heavy cereals	Timber						
Rotterdam- Strasburg	a	Rm. 3.81	—	—	—					No figures	
	b	„ 4.25	fl. 2.52	fl. 2.79-3.00	fl. 5.25						
	c	„ 4.67	—	—	—						
	d	„ 3.25	—	—	—						
	e	„ 5.50	—	—	—						
Strasburg- Rotterdam		No figures	No figures						No figures		
			German figures		Dutch figures						
					Copra	Timber	Light cereals	Heavy cereals	Dutch figures	German figures	
Rotterdam- Mannheim	b	Rm. 2.58	fl. 2.00	fl. 3.00*	fl. 2.41	fl. 3.00	fl. 2.10	fl. 1.99	fl. 1.88	fl. 2.00	
Mannheim- Rotterdam	b	Rm. 1.63	fl. 1.60	fl. 2.60*					fl. 1.30		
Rotterdam- Ludwigshafen	b	Rm. 2.56†	No figures				No figures				
Ludwigshafen- Rotterdam	b	Rm. 1.63	No figures				No figures				
Rotterdam- Rhine-Ruhr ports	a				Ore		Light cereals	Heavy cereals	Ore		
Middle-size barges	b	fl. 1.18‡	fl. 1.49‡	fl. 1.57‡	fl. 0.20 ⁵				fl. 1.10		
Large barges....	b	fl. 1.09§	fl. 1.29§	fl. 1.39§			fl. 1.23	fl. 0.99			
	c				fl. 0.29						
Rhine-Ruhr- ports - Rotter- dam	a		Coal						Dutch figures	German figures	
	b	Rm. 1.25				No figures			Coal	Coal	
									fl. 0.94"	Rm. 1.17"	

* Cargo steamer.

† Barge freight only: Rm. 1.26.

‡ Tug „ „ fl. 0.37.

§ „ „ „ fl. 0.27.

" Barge freight only.

Freights for Amsterdam.

A. Goods in Parcels (Stückgüter).

		1913		1925		1927	
		Barge with tug	Cargo steamer	Cargo steamer		Cargo steamer	
		Dutch figures	Dutch figures	Dutch figures	German figures	Dutch figures	German figures
Amsterdam-Mannheim	a	fl. 1.50	fl. 2.20 ⁵	fl. 4.96	—	fl. 4.71	fl. 5.25
	b	„ 2.00	„ 2.70 ⁵	„ 7.19	fl. 4.15	„ 6.94	„ 5.75
	c	„ 2.50	„ 3.20 ⁵	„ 9.92	—	„ 9.25	„ 6.25
	d	„ 0.87 ⁵	„ 1.87 ⁵	„ 4.00	—	„ 4.00	„ 5.00
	e	„ 3.00	„ 3.50	„ 12.00	—	„ 12.00	„ 6.50
Mannheim-Amsterdam	a	fl. 0.87 ⁵	fl. 0.99	fl. 3.06	—		.
	b	„ 1.02 ⁵	„ 1.23 ⁵	„ 5.73	fl. 3.00	fl. 4.00	fl. 4.25
	c	„ 1.46	„ 1.42 ⁵	„ 7.58	—	„ 5.06	„ 4.75
	d	„ 0.72 ⁵	„ 0.70	„ 2.50	—	„ 7.54	„ 5.25
	e	„ 1.75	„ 1.62 ⁵	„ 8.50	—	„ 3.50	„ 4.00
						„ 9.00	„ 5.50
Amsterdam-Duisburg	a	fl. 0.75	fl. 1.29	fl. 2.54		fl. 2.94	
	b	„ 0.96	„ 1.50	„ 4.03		„ 3.94	
	c	„ 1.20 ⁵	„ 1.75	„ 6.13		„ 5.50	
	d	„ 0.62 ⁵	„ 1.00	„ 2.25		„ 2.50	
	e	„ 1.37 ⁵	„ 2.00	„ 7.00		„ 7.00	
Duisburg-Amsterdam	a	fl. 0.57	fl. 0.71	fl. 2.10		fl. 2.06	
	b	„ 0.67 ⁵	„ 0.78 ⁵	„ 2.79		„ 3.08	
	c	„ 0.84 ⁵	„ 0.82 ⁵	„ 4.27		„ 4.42	
	d	„ 0.50	„ 0.62 ⁵	„ 1.75		„ 1.75	
	e	„ 0.92 ⁵	„ 0.97 ⁵	„ 6.00		„ 5.50	

⁵ = 1/2

B. Goods in Bulk.

		Barge with tug				
		1913	1925		1927	
		Dutch figures	Dutch figures	German figures	Dutch figures	German figures
Amsterdam-Mannheim	a	fl. 1.16 ⁵		—		—
	b	„ 1.33 ⁵		fl. 2.75		fl. 2.65
	c	„ 1.50		—		—
	d	„ 0.87 ⁵		—		—
	e	„ 1.75		—		—
Mannheim-Amsterdam	a	fl. 0.90	fl. 1.04	—	fl. 1.71	—
	b	„ 0.96	„ 1.52	fl. 2.10	„ 2.02	fl. 1.80
	c	„ 1.13 ⁵	„ 2.07	—	„ 2.52	—
	d	„ 0.57 ⁵	„ 0.80	—	„ 1.35	—
	e	„ 1.30	„ 2.50	—	„ 3.00	—
Amsterdam-Duisburg	a	fl. 0.30	fl. 1.10			
	b	„ 0.39	„ 1.31			
	c	„ 0.52 ⁵	„ 1.53			
	d	„ 0.22 ⁵	„ 1.00			
	e	„ 0.62 ⁵	„ 1.75		No figures	
Duisburg-Amsterdam	a	fl. 0.49	fl. 0.67		fl. 0.80	
	b	„ 0.55	„ 1.40		„ 1.31	
	c	„ 0.63 ⁵	„ 1.86		„ 1.83	
	d	„ 0.42 ⁵	„ 0.50		„ 0.65	
	e	„ 0.72 ⁵	„ 2.50		„ 2.30	

C. *Special Goods in Bulk.*

		Barge with tug				
		1913	1925		1927	
		Dutch figures	Dutch figures	German figures	Dutch figures	German figures
Amsterdam-Mannheim	a	fl. 1.04	fl. 1.70	—	fl. 1.76	—
	b	„ 1.21	„ 1.98	fl. 2.50	„ 1.98	fl. 2.25
	c	„ 1.33 ⁵	„ 2.67	—	„ 2.30	—
	d	„ 0.87 ⁵	„ 1.45	—	„ 1.50	—
	e	„ 1.50	„ 3.20	—	„ 2.80	—
Mannheim-Amsterdam	a	fl. 0.84		—		—
	b	„ 0.89		fl. 1.85		fl. 1.55
	c	„ 0.94		—		—
	d	„ 0.50		—		—
	e	„ 1.17 ⁵		—		—
Amsterdam-Duisburg	a	fl. 0.30	fl. 0.59 ⁵		fl. 0.86	
	b	„ 0.39	„ 0.79		„ 1.01	
	c	„ 0.52 ⁵	„ 1.07		„ 1.22	
	d	„ 0.22 ⁵	„ 0.50		„ 0.75	
	e	„ 0.62 ⁵	„ 1.75		„ 1.75	
Duisburg-Amsterdam	a	fl. 0.36				
	b	„ 0.43 ⁵		No figures		No figures
	c	„ 0.57 ⁵				
	d	„ 0.30				
	e	„ 0.67 ⁵				

Freights for Rhine-Ruhr Ports.

A. Goods in Parcels (Stückgüter).

		1913	1925		1927
		Barge with tug	Barge with tug	Cargo steamer	Cargo steamer
Rhine - Ruhr ports - Mannheim 352 km.	a				Rm. 4.75
	b	Rm. 2.83	Rm. 5.00	Rm. 6.50	„ 5.25
	c				„ 5.75
	d				„ 4.50
	e				„ 6.00
Mannheim-Rhine-Ruhr ports ...	a				Rm. 4.25
	b	Rm. 2.65	Rm. 4.25	Rm. 5.75	„ 4.50
	c				„ 4.75
	d				„ 4.00
	e				„ 5.00
Strasburg - Rhine - Ruhr ports 486 km.	a	Rm. 4.50			
	b	„ 6.00	No figures		No figures
	c	„ 6.50			

B. Goods in Bulk.

		1913	1925	1927
		Barge with tug	Barge with tug	Barge with tug
Rhine-Ruhr ports-Mannheim	b	Rm. 2.28	Rm. 3.00	Rm. 2.95
Mannheim - Rhine-Ruhr ports ...	b	Rm. 1.43	Rm. 2.25	Rm. 2.00
Strasburg - Rhine-Ruhr ports ...	a	Rm. 2.00		
	b	„ 3.00		
	c	„ 4.00	No figures	No figures

C. Special Goods in Bulk — Coal, Ore, Cereals, etc.

		1913	1925	1927
		Barge with tug	Barge with tug	Barge with tug
Rhine-Ruhr ports-Mannheim	b	Rm. 2.03*	Rm. 2.50†	Rm. 2.30‡
Mannheim-Rhine-Ruhr ports	b	Rm. 1.20	Rm. 1.75	Rm. 1.60
Rhine-Ruhr ports-Strasburg	b	Rm. 3.15 §	Rm. 5.26||	Rm. 4.65
Strasburg-Rhine-Ruhr ports	a	Rm. 2.30		
	b	„ 3.00		Fr. francs 13.75
	c	„ 3.80	No figures	

* Barge freight only : 0.99

† „ „ „ 1.02

„ „ „ 0.94

§ Barge freight only: 1.60

|| „ „ „ 1.90

Freights for Mannheim-Ludwigshafen.

A. Goods in Parcels (Stückgüter).

		1913	1925	1927
		Barge with tug	Barge with tug	Cargo steamer
Strasburg - Mannheim - Ludwigshafen, 134 km.....	a	Rm. 2.00	No figures	Rm. 4.65
	b	„ 3.00		„ 4.90
	c	„ 3.50		„ 5.15
Mannheim - Ludwigshafen - Strasburg.....	a		No figures	Rm. 4.75
	b	Rm. 2.13		„ 5.00
	c			„ 5.25

B. Goods in Bulk.

		1913	1925	1927
		Barge with tug		
Strasburg - Mannheim - Ludwigshafen.....	a	Rm. 1.80	No figures	Rm. 1.90
	b	„ 2.00		
	c	„ 2.30		
Mannheim - Ludwigshafen - Strasburg.....	b	Rm. 1.88	No figures	Rm. 2.65

C. Special Goods in Bulk.

		Barge with tug		
Strasburg - Mannheim - Ludwigshafen.....	a	Rm. 1.50	No figures	Rm. 1.90
	b	„ 1.80		
	c	„ 1.80		
Mannheim - Ludwigshafen - Strasburg.....	b	Rm. 1.63	No figures	Rm. 2.65*

This figure applies only to Ludwigshafen-Strasburg, the corresponding figures for Mannheim-Strasburg being : 1.78.

ANNEX E 1 (b).

TRANSHIPMENT COSTS ON THE RHINE.

With regard to transshipment costs, it results from the figures given below that, for various categories of goods, in particular for goods in parcels, the transshipment costs are at present no higher in absolute figures than in 1913. For other categories of goods, the transshipment costs show an increase up to 100 per cent in a few instances, but taking into account that in those very few cases the transshipment cost itself is extremely small (*e.g.*, 4 to 5 pfennige per ton), the influence of those variations on the total cost of transport is negligible.

1. RHINE AND RUHR PORTS.

Unloading Costs from Ship to Truck and vice versa.

(Reichsmarks for 1,000 kilogrammes.)

Article	1913	1925	1926	1927
Piece goods				
Sacks . . .	1.20/1.50	2.40	2.40	2.40
Cases . . .	1.20/1.50	3.50	3.50	3.50
Casks . . .	1.20/1.50	2.70	2.70	2.70
Ore		0.45	0.45	0.45
Iron		0.85/1.20	0.85/1.20	0.85/1.20
Wood		1.90/2.60	1.90/2.60	1.90/2.60
Grain		0.20	0.20	0.20
Potash, ammonia		1.20/1.30	1.20/1.30	1.20/1.30
Baryta		0.50	0.50	0.50

2. UPPER RHINE PORTS.

(a) Unloading Costs from Ship to Truck (Mannheim-Ludwigshafen, Karlsruhe, Kehl-Strasburg).

(German Pfennige for 1,000 kilogrammes).

Article	1913	1925/1927
Piece goods	40	70
Packed goods (10 tons and more)	12	18
Grain	10	22
Coal	5	5
Coke	6½	6½
Raw sugar	8	12
White sugar	10	18
Raw iron	6	8
Bar iron, etc.	12	15
Wood in trunks	12	15
Boards	12	25

(b) *Loading Costs from Truck to Ship.*

Article	1913	1925/1927
Cement in sacks and casks	6	10
Clay (loose)	4	8
Stones (loose)	5	8
Salt (loose)	4	6
Piece goods (cargo boat)	40	40
Ditto in part loads (barge)	20	30
Wood (boards)	12	25
Wood in trunks	12	15
Waste (loose)	4	6
Flour in sacks	8	15

ANNEX E 2.

SELF-COSTS IN DANUBE NAVIGATION.

The question of self-costs is extremely difficult and disputable, since, for example, there is a great difference between costs when a steamer is fully loaded or only partly loaded; whether there be low water or normal water; whether the steamer travels on a stretch of the river for which it is specially suitable or not.

In particular, however, the self-costs fluctuate according to whether the fleet is being fully employed, that is, according to whether the general costs are being spread over a smaller or larger volume of transported goods.

Moreover, the self-costs vary according to whether one takes average self-costs or *additional ones*; for example, a steamer travels on a certain stretch of the river with three barges, but it could take a fourth barge with little difficulty. How self-costs for this fourth barge are to be reckoned is hard to say.

However, the following are certain *average figures*, but, in considering these, it is necessary to keep in mind the aforementioned points, and the following figures may not be considered as being absolute and everywhere applicable, but only in a general way.

Table 1 below gives the average towing costs for a barge (loaded with 400 tons) on the so-called normal stretch of the river upstream journey (*i.e.*, the stretch Moldova-Gönyü). Now, in order to calculate the costs on other stretches of the river, then both for upstream and downstream journeys, there are certain conversion keys (called coefficients), and these are shown in Table 2.

TABLE 1.

TOWING COSTS OF A BARGE WITH 400 TONS LOAD FROM MOLDOVA TO GÖNYÜ (7421).

	Austrian schillings.
1. Wages of crew	527.66
2. Allowances to crew when afloat.	175.60
3. Depreciation when vessel is moving and depreciation when vessel is standing (<i>i.e.</i> , when fired, but standing)	42.59
4. Movement costs (includes variable depreciation, coal, wood, oil)	963.81
5. Repairs	191.93
6. General management and costs	551.11
7. Other costs	146.88
	<u>2,599.58</u>

No. 3 is the fixed depreciation, while No. 4 is variable according to whether vessel is travelling on this or that stretch, etc.

TABLE 2.

COEFFICIENTS.

for calculating the Self-Costs upstream or downstream on Other Stretches of the Danube by converting the Figures given for the Normal Stretch in Table 1.

Stretch.	Upstream.	Downstream.
Regensburg-Passau	1.9	0.68
Passau-Gönyü	3.5	1.16
Gönyü-Moldova	1.0	0.43
Moldova-Vodita	4.0	0.88
Vodita-Guravaii Canal	12.0	1.08
Vodita-Guravaii old line	6.0	0.84
Guravaii-Turnseverin	1.6	0.69
Turnseverin-Galatz	1.2	0.52
Galatz-Sulina	2.5	0.08
Györ-Arm	3.0	1.29
Drave	3.0	0.78
Tisza below Szeged	1.3	0.56
Tisza above Szeged	2.6	0.78

TABLE 3.

COSTS OF A NORMAL 670-TON BARGE PER DAY.

	Austrian schillings.
1. Wages of crew	20.36
2. Repair	4.66
3. Other expenses	12.27
4. General management and costs	46.11
5. Depreciation	9.60
	93.00

Addendum to C. 127. M. 43. 1929. VIII.
[B. R. C. T. 1.]

Geneva, October 1929.

LEAGUE OF NATIONS

ADDENDUM

TO THE

**REPORT OF THE SPECIAL COMMITTEE ON
COMPETITION BETWEEN RAILWAYS AND WATERWAYS**

-
- I. Extract from the Records of the Meeting of the Reich Railways Council in Berlin, July 19th, 1927.
- II. "How to arrive at Co-operation between Railways and Waterways which shall be satisfactory from the National Economic Point of View." — By Dr. W. SPIESS, Director of the German Reich Railways. (Extract from the *Zeitschrift für Binnenschiffahrt* of April 15th, 1926.)
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Series of League of Nations Publications

VIII. TRANSIT
1929. VIII. 3. Addendum

**EXTRACT FROM THE RECORDS
OF THE MEETING OF THE REICH RAILWAYS COUNCIL
IN BERLIN. JULY 19TH, 1927.**

On an average the standard-tariff introduced in the year 1920 on the basis of the graduated tariff system was equivalent to the normal pre-war tariff. At this level the scale for the lower categories made the higher rates of the upper categories bearable and the high rates for short distances were set off by the lower long-distance rates. The position was thus tolerable, both from a financial point of view and from that of competition. These conditions had changed when the German currency collapsed, and the normal tariff of 1920 had been increased by 100 per cent. The Reich Railways Board consequently demanded that the situation should be modified as soon as possible. Since then the normal tariff had been reduced three times, but on an average it was still from 45 to 50 per cent higher than before the war. Immediately after the resumption of traffic on the Rhine and Ruhr railways, the Permanent Tariff Commission had been instructed to endeavour to remove the hardships in question. In view of the uncertain financial position at that time the instructions could only stipulate that there should be no financial deficits. The so-called administrative proposals had been submitted to the Permanent Tariff Commission with the same idea. The opposition of commercial circles had been thoroughly aroused; they maintained that to set off reductions in one place by increases in another could not be considered a tariff reform. This view was not correct, however. In the case of the normal tariff the first object aimed at was to estimate correctly the marginal proportion between individual classes of wagons — *i.e.*, the differences in goods traffic rates for raw materials, partly manufactured articles and manufactured articles, placed in the various wagon-load categories — and also the proportional margin of goods traffic rates for the individual distances and thereby to determine the rates for the individual distances. The criterion was the tariff rate necessary to obtain the revenue required, which showed whether the margin was correct or whether it should be amended. In the first place, however, the correct proportional margin had to be found.

When the financial position of the Reich Railways improved at the beginning of 1927, the Central Administration had no longer insisted on the condition that there should be no financial deficit; they had based their action on an estimate that the expenditure involved by removing existing hardships would amount to about seventy million Reichsmarks. From that time onwards every branch of industry or commerce had made increasing efforts to obtain advantages under the new regulation of tariffs. The idea of removing hardships had fallen more and more into the background. If the wishes of economic circles had been complied with, the main hardship in the tariff, that is to say, the unfair margin between individual categories, would still have remained and the clamour for the removal of this disability would have arisen afresh, exactly as had been the case when three successive general reductions had been made after the introduction of the normal tariff. In its work the Permanent Tariff Commission had aimed, in accordance with the wishes of the Reich Railways Board, not at a general reduction of tariffs but at the removal of the anomalies which had crept into the system through the considerable increase in tariffs.

The Commission had endeavoured to carry out this task so far as financial considerations and the maintenance of the system allowed. The graph showing the increase and reduction in the present normal tariff as against that of pre-war times, demonstrated the heavy burden imposed upon the higher categories of goods as compared with the lower. The highest increase on Category A at 104.7 per cent might be compared with the highest increase on Category F at 36.3 per cent. In all attacks against the Reich Railways on the ground of their high tariffs, particular stress had been laid on the material

increases in the higher categories. It was contended, moreover, that the statement and graphs were open to criticism in that, unlike lower category goods, higher category goods were mainly charged according to the rates for the subsidiary category of ten-ton loads, for which there was an additional charge which had not been levied before the war, since the main wagon-load categories generally only took account of consignments of at least ten tons. The Permanent Tariff Commission therefore very properly had reduced the tariff rate for the upper categories. It must not be forgotten that goods of importance for the food supply of the population were carried at the higher category rates, *e. g.*, grain, mill products (flour, etc.), fruit, sugar, cattle, meat, fish and fat. The same applied to certain raw materials, such as copper and lead. The higher categories also included goods mainly intended for export. Urgent demands that facilities be given for export were, however, constantly being made by commercial and industrial circles. The goods in the higher categories had thus primarily to compete with motor transport. Obviously this was rather a question of transport than of tariffs. On the other hand, it was not possible that the very goods in respect of which there was motor-transport competition should be carried at a specially high rate and therefore encouragement be given to the tendency to carry them by motor vehicles. In view of the motor-transport competition the Reich Railways Board had continually demanded that the goods rates for the higher categories be reduced.

The heavy charges on the higher categories led to continual demands that goods be put in a lower category. If these demands were granted to any great extent, the ultimate result would be a general reduction in respect of the higher categories — and in the long run this would be impossible to avoid — subsequently there would be another reduction in respect of the goods thus placed in a lower category. This would mean a change in the operation of competition, since the goods transport rates for manufactured articles would come too near those for semi-manufactured articles and raw materials. In the case of a graduated tariff, particular caution should be exercised when contemplating any considerable reduction in goods transport rates which, in its effect, would be equivalent to reducing distances and thus bring about undue changes in the operation of competition. These considerations alone were enough to prove the necessity of reducing the goods transport rates of the higher categories in order to prevent improper transfers of goods from higher to lower categories. Logically this would also lead to the introduction of a new category between D and E, since the proportional margin between categories D and E amounted to 36 per cent and therefore a transfer of goods from Category D to Category E would be open to objections on financial grounds and on account of the shifting of the basis of competition.

The condition that the main categories of wagon-loads must be based on a minimum of fifteen tons led to hardships in a period of economic depression, particularly in the case of goods which could only be delivered in smaller quantities by reason of reduced demand or of export prohibitions. The Permanent Commission therefore had very rightly recommended a reduction to ten tons in the case of all subsidiary categories.

One of the most disputed questions was that of the reduction of station handling-charges for short distances. Station handling-charges, unlike mileage rates, admittedly represented payment for services rendered by the railway before and after transport. The cost of these services was therefore independent of the length of the journey. The reference to the fact that station handling of shipments of coal costs less than handling of other goods could only serve as an argument for the reduction of station handling-charges on coal; it could never provide an argument for calculating station handling-charges according to the length of the journey. The outlay of the railways when goods were carried over short distances was considerably greater than in the case of long hauls, and this was a further argument against reduction of station handling-charges for short distance traffic. If, in spite of this, the Permanent Traffic Commission had decided on a reduction of station handling-charges in the case of short-distance traffic, it had done so only to meet the requirements of economic interests; it had fully realised that this measure was not logical, since it was in contradiction not only with the very principle of station handling-charges but also with the

actual cost of the railways of short and long hauls. However, the Permanent Commission in this case had not lost sight of the following two points :

1. In spite of the value that must be attached to a consistent tariff system, still, in the interests of the national economy, it was to a certain extent possible to depart from the logical course so long as the exceptions made did not go so far as to undermine the basis of the tariff system.

2. The lowering of transport charges by departures from the tariff system must not be so considerable as to reduce transport rates in respect of a substantial proportion of the traffic to below the pre-war rates, plus allowance for increase in prices, plus traffic tax.

The Permanent Commission had borne these two points in mind when reducing the station handling-charges for short distances in Categories A to E. If, in this case, they had graded their station handling-charges by distances of 10 kilometers, this was nothing new. Such a scale for station handling-charges was also provided for in the normal pre-war tariff for parcels traffic and wagon-load Categories B and A 1. In the case of Category F, the station handling-charges for short distances had not been reduced, since absolute transport charges for all distances were less than the pre-war rate, plus allowance for increase in prices, plus traffic tax, and industry was only concerned with the actual figure of transport charges and not with the tariff system. Furthermore, even before the war, there had been no graded station handling-charges for Category F. As regards Category E, in the future only the transport charges up to 50 kilometers would exceed the pre-war rates by 53 to 55 per cent (55 per cent in the case of the short distance of 10 kilometers) instead of by 45 per cent. In view of the small absolute transport charges this increase only amounted to one mark per 10 tons (with the exception of the 40 kilometers distance, where it worked out at two marks, taking a round figure). If the fundamental idea of the graded tariff were adhered to — lowering of transport charges for long distances — nothing could be said against this minimum addition of one mark. Already on a distance of 60 kilometers the increase only amounted to 28 per cent as against pre-war times. The decisions of the Permanent Traffic Commission had been described in commercial circles as inadequate. These demanded the pre-war scale of station handling-charges in special tariffs I to III; *i.e.*, a 50 per cent reduction up to 50 kilometers and a 25 per cent reduction from 51 to 100 kilometers. In the first place, however, it must be pointed out that before the war there had been a kilometer tariff system, whereas now the graded tariff system was in force. It was a mistake to apply a tariff principle of an altogether different system to the graded tariff system, the purpose of which was to make short hauls proportionately dearer than long ones. This resulted in an impossible situation, as was clearly shown by statistics of the percentage increases and reductions, as against the pre-war tariff, which would come into effect should the proposals of industry as regards Categories E and F or the special coal tariff be carried through. If the demands of economic circles were granted, all three tariffs would show an enormous reduction in transport charges for short distances, which in no case would continue to reach pre-war rates, plus allowance for increase in prices, plus traffic tax. There would further be a relatively large increase in transport charges for medium distances which, however, would only slightly exceed the pre-war rates, plus allowance for increase in prices, plus traffic tax, and then again an exceedingly large reduction in transport charges for long distances.

In Category F, for short distances, the freight rates were even lower than the pre-war ones, for medium distances they rose to the quite inadequate height of 21.6 per cent over pre-war rates, and for long distances they fell again to the level of the pre-war rates. The special coal tariff, too, began at the pre-war rate, rose for medium distances to 37.2 per cent above the pre-war level, and, for long distances, again sank to the pre-war tariff. Owing to the fact that very large quantities of goods were carried under these tariffs and the special coal tariff, especially over short distances, it could not be seriously doubted that these rates would financially be quite insufficient. The well-known industrialist, Hugo Stinnes, who could certainly not be suspected of any partiality for the State Railways, had said, just before his death, that even for such a huge business as the Railways, the principles of

management must be the same as for a private business. Just as these, in fixing their prices, must take into account the rise in general values, the Reich railways must do the same. Apart altogether from the financial impossibility of giving effect to the demands of the economic interests, the suggestions laid the axe at the very root of the graded tariff system. It was impossible to keep short and long distances low and the medium ones high. The memorandum positively clamoured for a reduction on the medium distances. The industries which were dependent on medium distance traffic for obtaining raw materials and for selling their products would be severely handicapped in comparison with industries which were situated in the neighbourhood of their supplies of raw material or their markets. If the proposals of commerce were carried through, the Reich Railways would in a very short time be faced with the necessity of either increasing transport rates for short distances, or of also making a reduction in the rates for middle distances. If the latter alternative were adopted, then the introduction of the graded tariff system would have proved only a roundabout way of making a general reduction in the kilometer tariff. No proof was needed that the Reich Railways were financially unable to grant such a general reduction. They would very soon be obliged to raise the standard tariff afresh and would then again be faced with the question whether this increase should be carried through by means of a graduated tariff or a kilometer tariff. The railway company was convinced of the necessity of having a graduated tariff as a standard tariff. There could be no dispute on this principle, the only point open to discussion being the grading of the tariff. The graded tariff was necessary, not only on account of the splitting-up of the German economic territory by the Treaty of Peace, but also in consequence of the general rise in prices, which made a continuance of the kilometer tariff impossible.

A standard tariff could never satisfy the particular wishes of individual districts or individual groups of interests. To reduce handling charges up to 110 kilometers instead of up to 100 kilometers because a transshipment port was situated at this distance from an industrial district, or to make a special reduction in the rate up to a particular distance, because an important industrial district lay at this distance from its source of raw materials, was impossible. A standard tariff must be the best possible harmonising of the various interests involved. No claims for compensation because the standard tariff did not meet the wishes of all the individual districts or groups of interests could be entertained. In particular, a stand must be made against such compensation claims based on the ground that the standard tariff had not been properly constructed from the point of view of working costs. This assertion was unjustified. A detailed investigation of the question of working costs had shown that the reduction in the rates between 100 kilometers and 1,000 kilometers approximately corresponded to the fall in the average working costs on these distances. Likewise, the decline in the average working costs on carriage from 10 to 100 kilometers corresponded to the decline in the kilometrical transport rates for these distances.

In criticising the work of the Permanent Tariff Commission, economic circles had pronounced against even the smallest increase in rates. This standpoint was not sound, in view of the obscurity of the economic situation, which might also lead to mistakes being made in elaborating the tariff. This attitude was also not without danger for the economic circles themselves, since it would justify the Reich Railways in the conclusion that they must be very chary in reducing transport rates.

A few remarks were added on the subject of the special coal tariff. This was not within the province of the Permanent Tariff Commission, and the latter had therefore not decided upon any changes in it. Any change in this coal tariff would be extremely costly, especially as the question of transport rates for short distances could hardly be separated from the question of transport rates for medium and long distances. He could not sufficiently emphasise the enormous difficulties involved in the question of a change in the special coal tariff for consignments to South Germany, where all the coal districts were in severe competition with one another. The position would be further complicated by the fact that the Saar Basin now once more sought to dispose of its products in its former chief market of South Germany, *i.e.*, at a medium distance; and in this connection it should further be remembered that the distance from the Saar to South Germany over German lines had partly become greater owing to the loss of Alsace-Lorraine. In this connection it must be

emphasised that the special tariff 6u could not be considered from the point of view of the interests of shipping alone. The interests of all the coal areas in connection with tariff 6u were to some extent conflicting:

In his defence of the present argument he could not go into the details of all the various wishes expressed. But the complaint regarding the disabilities placed upon Bavarian lignite could not be left uncontradicted. In so far as in addition to the special coal tariff other special tariffs existed or were under consideration, the conditions specified facilitated the introduction of these tariffs in spite of the known difficulties. This applied to the transshipment tariff 6u, to the bulk tariffs to the coast, and to special tariff 6z for closed trains with heavy goods trucks. For the rest, it was questionable — he could not for the moment say for certain — whether a special tariff granted to Bavarian lignite would not also have to be extended to the much better quality Bohemian lignite, and would perhaps therefore injure the interests of Bavarian and other German lignites more than it would assist them.

II

[Extract from the *Zeitschrift für Binnenschifffahrt*, of April 15th, 1926.]

HOW TO ARRIVE AT CO-OPERATION BETWEEN RAILWAYS AND WATERWAYS WHICH SHALL BE SATISFACTORY FROM THE NATIONAL ECONOMIC POINT OF VIEW.

By Dr. W. SPIESS,
Director of the German Reich Railways, Berlin.

After the broad-minded manner in which Dr. Albert Arnecke of Cologne has written on this question in No. 3 of the *Zeitschrift für Binnenschifffahrt*, it would not be right for those who have professionally worked at this problem for a long time to withdraw themselves from the discussion. All who study this subject, whatever side they are on, have the same purpose, namely, to clear up the whole problem once and for all, and thus stop the stream of ink which flows daily on the subject of inland transshipment tariffs.

Arnecke compares the principle that railways and waterways should work together and not against each other to the elementary truth that children should behave themselves. He regards the problem of railway tariffs for goods in bulk with transshipment on inland waterways as being in practice unsolved.

If the purpose of all economic activity, and in particular of national economic activity, is to achieve the greatest possible results with the smallest expenditure of energy, it is obvious that all the forces in the economic life of the nation should work not against each other but together, and should run not in opposite directions but, so far as possible, parallel to each other. The only question is how far such a parallel movement is possible. If they are to run on parallel lines, it must be on the same plane and in the same dimensions. From the point of view of technical operation, mixed transport by rail and water presupposes that railways and waterways must be adapted to each other's working capacity if full economic success is to be achieved. It should, however, be pointed out that the reliability and working capacity of railways and waterways are very different, and that not only on the Oder but elsewhere also absolutely regular co-operation in the icy cold of January or the drought of July presents a problem which cannot as yet be solved from a technical point of view.

Waterways depend on so many chance circumstances (high-water, low-water, ice, fog, fluctuations in freight charges, differences in wages) that their working capacity is subject to much greater fluctuations than is that of the railways. At the very time when there is the greatest demand for transport, in autumn and at the beginning of winter, waterways often fail. The autumn low-water, even on the most reliable of German waterways, the Rhine, is almost invariably followed by the so-called "advent" high-water, at a time when the demand for transport is at its height in the western districts of the country. It is therefore not possible for the railways to rely on the assistance of the waterways in dealing with exceptionally heavy traffic. The much-talked-of relief to congested sections of the railway system is in such times hardly more than nominal. Even in the case of the most perfect, systematic co-operation between railways and waterways, the railways are compelled to make their arrangements in such a way as to enable them at all times to deal with the total traffic should the waterways fail. In other words, the railway lines must be so equipped as to be able to cope with a traffic far heavier than the average traffic during the period

when the waterways are working satisfactorily. During the time when navigation is open, therefore, the operation of the railways is bound to some extent to be uneconomical. This applies to rolling-stock and staff as well as to railway lines and buildings. The increased traffic which is suddenly thrown upon the Reich Railways at times when the waterways fail is all the more acutely felt by them in proportion as their operation has been reduced during the period when the waterways were working at their full capacity.

Therefore, a state of things under which it would be possible to use railway rolling-stock and plant equally and uniformly at all times — which from a business and economic point of view must necessarily be our aim — will be hindered rather than promoted by the operation of the waterways so long as these remain unreliable. During the seasons when traffic is less heavy, transport of goods by water instead of by rail prevents the satisfactory development of railway traffic in yet another manner. The greater the amount of goods accumulated at railway junctions, the easier and quicker it is to make up complete trains for great distances. A large amount of goods ready for despatch naturally leads to a more rapid circulation of wagons and more economical operation of traffic. Waterways, however, mainly handle goods in bulk in one direction; as a general rule they do not carry much traffic in the opposite direction. This means, indeed, that traffic leaving the railway for the waterway involves a large reduction in the empty wagon kilometers in railway traffic. The saving on this point, however, should not be overestimated, since it represents a saving on empty wagons running regularly in whole trains over long distances, and therefore involving small expenditure per kilometer on each unit. On the other hand, the transport of goods to the places at which they are transhipped to waterways and their removal from these places generally involves comparatively short hauls. Therefore, in comparison to the direct route, shunting work in the case of combined transport by rail and water is very considerable. We need only refer to the complicated shunting arrangements in the Ruhrort-Duisburg ports.

We may add that, according to present traffic conditions on those railway lines which compete with waterways, it would seem quite possible to transfer to the railways the greater part of the traffic at present carried by water.

From the point of view of operation, the German railways also suffer considerably from the decentralisation necessitated by the use of a series of water transshipment places geographically distant from each other; under this system it is not possible to arrange for the uniform distribution of wagons, as can be done under a centralised system such, for instance, as the direct railway coal traffic in the Ruhr district. The same considerations and experiences have led private industry more and more to standardise and to construct only a few larger types. It has been found that if there is a considerable increase in the demand for O-wagons in the Upper Rhine and Main districts, not only is the southern movement of empty wagons to the Ruhr decreased, but it may even be necessary in certain circumstances to bring empty O-wagons from the Ruhr for the heavy stone traffic from the Westerwald. This puts a further strain upon a line which the inland navigation transshipment tariff was primarily intended to relieve. Similar anomalies in wagon traffic would arise on the middle and lower Oder if coal shipped from Upper Silesia were in future carried solely by the waterway. Nothing definite could be substituted for the present system, for here also the distribution of wagons would present serious difficulties on account of the uncertainties caused by changes in the water-level, etc.

Therefore, from the point of view of the operation of traffic, the idea of co-operation between rail and water, which at first sight appears to be in accordance with the most elementary principles of national economy, has considerable disadvantages owing to the fact that the working capacity of rail and water at the present time cannot be measured by the same standard. In view of the present traffic-carrying capacity of waterways, the railway is inclined to see in the proposed partnership merely a technically undesirable dependence on the moods of the waterways. Our reply to the question, how to arrive at a co-operation between railways and waterways which shall be satisfactory from the point of view of national economy, must therefore be: "By making the waterways technically more reliable, so that they should become the faithful and reliable companions and partners of the railways throughout the year and in all weathers".

From the point of view of law and tariff policy, Dr. Arnecke's question concerning a partnership between railways and waterways which would be satisfactory from a national economic point of view must necessarily be answered by the further problem of waterway transshipment tariffs which he describes as unsolved. Indeed, everything which can be done for co-operation apart from the question of tariffs, for instance, in the spheres of wagon supply and operation, sinks into the background as compared with the tariff question itself, particularly as these matters of wagon distribution and operation cannot be described as specifically and exclusively transshipment questions. They can only be regarded as general technical railway problems and perhaps technical transshipment problems.

However, Dr. Arnecke has made very valuable observations in regard to railways and navigation and the relations of one with the other, but certain reservations must be made. Of course, we are moved by Dr. Arnecke's appeal: "Of what use to us is a perfect traffic system if we have to pay for it with the strength of our people? If you do not feel this, you will never reach achievement. Inland navigation transshipment tariff policy as a cultural policy? The inland navigation skipper with his recognised dependence on the elements should be valued and praised in the same way as the cultivator for his vigour and strength". May we not reply, however, that these arguments do not apply in this case? To pursue cultural advancement by means of inland transshipment entails great effort to get a little nearer a possible end. There must surely be less drastic and compulsory methods than the railway traffic policy by which to inculcate in the human race devotion to the soil, loyalty and strength of character. This is particularly true if we consider that, from the point of view of national education, the natural interests of the railway personnel, down to the last shunter, are greatly affected when traffic belonging to "his" railway is given away to competing transport undertakings — which the railway official in question naturally mistrusts — before the last possibilities of earning profit on that traffic have been exhausted. If, as is nowadays absolutely necessary, the Reich Railways staff is to be induced to work with zeal and devotion and with soul and body in order to obtain the maximum output, it seems impossible, from the point of view of cultural policy, to go in the opposite direction and thereby bring about improvements which affect only an infinitesimal proportion of their German countrymen as compared to those who are in the railway service.

Dr. Arnecke's statements that railway traffic carries out the functions of a monopoly whereas navigation may be regarded as a free business undertaking and that this difference has its effect on the economic management of the two means of transport are most interesting. The fact that the railway monopoly has been considerably reduced by technical progress and new inventions in recent years (and in any case even formerly the monopoly was not territorial and only covered certain lines) need hardly be enlarged upon if we think of aviation, motor transport and the enormous extension of the waterway system since 1914. In practice, the railway has now no monopoly over any given line or in respect of any goods. This applies universally from copper to stone, from Stettin and Emmerich to Cosel and Basle, but apart from these more obvious replies to Dr. Arnecke's arguments there is still another point which can be raised against him. Inland navigation is naturally designed for the transport of the more important categories of goods carried in bulk, and of those heavy goods the production of which is organised on a monopoly basis. Can we therefore claim that the carriage of such goods by water depends on individual initiative and often on undertakings acting as intermediaries? The most important goods traffic on the Rhine is that in coal, and the "Kohlenkontor" is the one important coal shipper on the Rhine. This fact, which is contrary to Dr. Arnecke's statements, in the writer's view disproves Dr. Arnecke's dictum as to an "automatic and self-adapting regulation" of the shipping freight market at Duisburg. If, as Dr. Arnecke says, the railway is a technical giant, then the large coal-shipper on the Rhine is a capitalistic giant, and as the quotations, even in the most important securities, are regulated on the Stock Exchange according to the attitude and policy of a few powerful magnates, so also the Duisburg freight quotations, according to repeated statements from competent persons (who in principle are unfavourably disposed to the railways) are not exactly "automatically" fixed and certainly cannot be regarded as decisive. The shipping business, particularly on the

Rhine, and especially in coal, is a freight business of such large dimensions and regulated so strictly that its form of yearly contract is really not very different from the railway tariff, which Dr. Arnecke regards as being fixed by a procedure the very antithesis of that adopted by the shipping trade in fixing its freights.

Dr. Arnecke attaches particular importance to his assertion that German public opinion instinctively sets special value on inland navigation, and he says that such an instinct cannot be at fault. But however attractive such a theory may be, it must be accepted with scepticism. This instinctive feeling, especially on the Rhine, can very well arise from false historical analogies. For example, Mannheim, which was in its time the greatest transshipment and transit traffic port in Baden, is to-day, owing to the transshipment trade having become less, undoubtedly in a situation of great distress. This appears to be a very good illustration and one showing how much better things were in the past; but the instinctive judgment of the public fails to take into account the fact that Karlsruhe, Kehl and especially Strasburg have to-day a much greater importance in relation to Mannheim than before the war, that the Rhine navigation to Basle is constantly growing, and that the future outlook for Mannheim can hardly be described as cheerful, especially if the Neckar Canal to Heilbronn is built, in pursuance of a report based on the trade figures of the inflation year 1922, on the general tariffs of 1917 (before the introduction of the graded system) and on the Rhine coal transshipment tariff 6u of 1923 (which does not apply to Heilbronn at all). As a matter of fact, up to 1914, Mannheim was less a Rhine port than, as it were, the Hamburg of Baden, the northern concentration point of the Baden system of communications, which ensured the Baden State Railways the longest transport distances and the best utilisation of their own wagons. It was not in its capacity as a Rhine port but in its capacity as the ideal point of the Baden railway traffic that the State of Baden granted to Mannheim the same privileges as the Reich Railways now grant to the corresponding ideal points of their railways, namely, the seaports of the north and the inland transshipment ports on the Danube in the south. For the same reasons the Saxon Railways granted these privileges to Riesa, and the Württemberg State Railways would have given the same to Heilbronn if, before 1914, the Neckar canal system, the construction of which was urged by these railways, had been completed up to Heilbronn. The reductions granted by Baden to the port of Mannheim in the exchange traffic with Württemberg, Bavaria and beyond find their exact counterpart to-day in the German-Czechoslovak seaport traffic and in the many other transit tariff measures which the Reich Railways now apply in favour of the seaports, but which are to-day protested against as a startling novelty. Conditions have changed and in the sphere of railways things are now on a larger scale. The Reich Railways have taken the place of the State Railways, and no longer attract traffic to their lines over a distance of 200 kilometers but over distances of 600 and 800 kilometers, but in substance the procedure is exactly the same as that employed by the State Railways in their smaller areas.

The question of railway tariffs for goods in bulk with transshipment on inland waterways, which Dr. Arnecke describes as unsolved, therefore stands to-day, after the transfer to the Reich of the State Railways, which favoured water traffic, at exactly the same point as before the war, and this should particularly not be forgotten in the Prussian markets. For them, compared with the pre-war period, there is to-day neither *damnum emergens* nor *lucrum cessans* in the question of inland navigation. For the Prussian railways the transfer to the Reich Railway system has not brought anything like the same change from the point of view of tariff policy as it has for Baden, Saxony, etc. The only railway system of the past which was anything like as big as the present Reich Railways was the Prussian State Railway and this had no inland navigation transshipment tariffs (apart from the tariff measures passed to enable Frankfort-on-Main, Mainz, Worms, etc., to compete with Mannheim, which were of comparatively small importance, particularly from the point of view of the quantities of goods handled). Moreover, in the question of the local treatment of inland navigation ports, Prussia did not show anything like the same readiness to make concessions as the Reich Railways have since displayed (in consideration of the South German navigation conditions) in their relations with the Prussian inland navigation transshipment ports. The wealthy Prussian State Railway, with a surplus of over 600 millions, always refused on principle the granting of transshipment tariffs. Tariffs like the present coal tariff 6u could

never have been obtained from men like Breitenbach and Stieger, who, after all, had more than a superficial knowledge of the Rhine. In Prussia's palmy days people would hardly have dared even to make such a suggestion. The position as regards "co-operation between railways and waterways" is therefore, especially in the case of goods in bulk, nothing like so unfavourable from the point of view of inland navigation on the most efficient German waterways as it was formerly. To demand more from the Reich Railways, burdened as they are with reparations, would at the least mean that more weight was given to all the other economic factors than to the interests of the Reich Railways, which are not only of great importance from the economic point of view, but also from that of foreign policy.

For, in spite of constant endeavours, no one has ever succeeded in convincing the Reich Railways that they would do better by shortening their transport distances and by sending their goods at the lowest possible transshipment rates to the nearest ports, than by keeping their traffic as long as possible on their own lines, as has always hitherto been done by railways in every country of the world. The working costs problem is, of course, an extremely difficult one, and, in the opinion of many — including the classical writers on tariff questions, *e.g.*, Ulrich, whose opinion is shared by the present writer — it is insoluble as far as railway traffic is concerned. Apart, however, from all statistical considerations, there is one principle according to economic doctrine which continues to hold good, and that is the principle of the optimum, *i.e.*, lowest working costs and highest traffic. At the present time, however, the Reich Railways are still from 20 to 30 per cent below the optimum (which may be taken to be the traffic of 1914, since the high flow of traffic in 1912 certainly exceeded the optimum, although meanwhile the building and carriage capacity has greatly increased). In times such as the present, it is an accepted principle of economic theory that the taking on of extra traffic costs little, and in some cases nothing. On the other hand, if we send our traffic to adjacent navigation transshipment ports, this would mean getting farther away from the optimum, and a further reduction in the traffic. If, owing to the difficulties of arriving at the working costs, we make no attempt to calculate the net deficit and only consider the gross amount which the railways would lose by adopting a general large transshipment tariff, we will find that this amount would run into hundreds of millions. Every German inland port counts on a radius of action or sphere of interest of 250 to 300 kilometers, which gives its area a diameter of 500 to 600 kilometers. The greatest distances in Germany are 1,000 to 1,200 kilometers. The most outlying transshipment points are probably Kehl, Regensburg, Duisburg, Dresden, Cosel, Stettin (we leave East Prussia out of account) and Hamburg, and the chief central ones are Hanover, Magdeburg, Berlin, Mannheim, Cologne, Frankfurt and Aschaffenburg. What would be left of Germany after deducting not one but all these areas? The general granting of inland transshipment tariffs would involve doing away with all railway traffic for distances over at most 200 kilometers. Since to-day the average distance over which the Reich Railways carry their goods is 150 kilometers, it is easy to imagine to what level the total receipts from the 56 milliards of t/km. of traffic, which at present amount to 2,867 millions, at an average rate of 4.7 pf. per t/km., would sink if the maximum distance were reduced to 200 kilometers, as mentioned above. This is how the matter actually stands. But Dr. Arnecke, in that desire to show a spirit of conciliation which fortunately characterises all his utterances, suggests the creation of a sort of mixed organisation, a sort of tariff parliament, for both rail and water. This is therefore a suggestion as regards procedure by means of which Dr. Arnecke hopes to remove the existing difficulties. From the point of view of the railways, however, there are no technical difficulties in the way of co-operation between inland navigation and railways. This is shown by the 195-page Danube transshipment tariff of the Reich Railways and the former Baden, etc., inland navigation transshipment tariffs. If co-operation appears to the Reich Railways to be to the purpose, and if they can only reckon on getting a due return, they are only too glad to work for the benefit of the other member in the partnership — the waterways. The Board of Directors of the Reich Railways adopted a decision almost in these words last July, and on this basis not only were seven existing transshipment tariffs reduced but a further eight were created. Apart from the coal tariff 6*u* which alone costs the Reich Railways 4¾ millions annually, freight reductions have been made in the other transshipment tariffs which involve a loss of four millions, and since then these steps have not

all been justified by the reduction in tariffs having led to an increase of traffic. The existing No. 44 tariff in favour of Mannheim figures in the list at just one million, *i.e.*, at the same figure as that calculated for the whole Danube transshipment tariff. Of the five products specially suitable for transshipment by water — coal, iron ore, stone, potash and salt — the two last are at present on an absolutely paritative footing, *i.e.*, in effect they are better treated than the German seaports. The two tariffs in question, A T 40 and 41 again represent in their freight reductions over one million, and the special tariff 44a for the transport of Swabian salt to the Rhine accounts for over 10 per cent of this freight reduction. Owing to the generous extensions made in the West German waterways system since 1914, all the consumers of iron ore are on, or in the immediate neighbourhood of, the waterways, and there is practically nothing left for the railways to do as regards this product, especially as they now hardly carry any more iron in the west. As regards coal, no further privileges can be granted in addition to special tariff 6u. We need not here go into the interminable debates which have already taken place on this question. There remains stone, and the railways would gladly renounce the traffic in this product at the present highly unremunerative rates, but it is doubtful whether the waterways would be prepared to take over this traffic from the railways. In other words the railways would hardly ever have anything to offer in the proposed new tariff council. In the opinion of many railway people the Reich Railways could just as well put forward claims on their own account. They are continually being reproached with the graded tariffs by the shipping interests. It is constantly pointed out that goods traffic on the railways is favoured over long distances by the graded tariffs. But the effect of the so-called vertical scale can only be admitted with the greatest caution, and only in comparatively few instances. Quite recently a conference of thoroughly qualified experts came to the conclusion that, up to about 70 kilometers from the inland transshipment port, transshipment offers more inducement than the direct rail route, even in the present tariff situation as regards medium transport distances in Germany (about 300 to 350 kilometers). On the other hand, the railwaymen most strongly emphasise the fact that the horizontal scale is extremely favourable to navigation and has brought it very high value and remunerative traffic. Compared to the pre-war standard, Class A has been increased for the distance of 200 kilometers, which is the decisive distance in the tariff system, by 82 per cent, Class B by 53 per cent, Class C by 63 per cent, Class D by 60 per cent and Classes E and F by only 48 and 21 per cent. The comparatively large increase in the upper categories has greatly encouraged the transfer of copper, for example, and many other goods to the water route. Like the whole graded tariff system the horizontal scale has been dictated less by considerations of railway revenue than by the requirements of the national economy (in order to bring nearer to the centre the outlying portions of the country, to spare cheap goods and to lay the burden of the unavoidable increases of rates preferably on the more expensive goods). As a matter of fact, this form of scale has proved to be not only of advantage to the general economic situation but also the basis on which quite new and more up-to-date methods of water transport have been evolved. It is therefore quite possible that in a mixed tariff council of rail and shipping interests the Reich Railways might ask for compensation for the losses they have suffered through no fault of their own, especially if similar claims were put forward by the other side. This would hardly be satisfactory, and might perhaps be the shortest way of bringing the Reich Railways to the point, where Dr. Arnecke would certainly not like to see them, of indulging in “lawyers’ tricks” and “diplomatic hair-splitting”, and of being in a frame of mind when they would always refuse concessions and become past-masters in the art of refusing. To this must be added the fact that, although the Reich Railways are lacking in many things at the present moment, they are not lacking in advisers. In the supervisory departments on both the German and the international side there are extremely experienced experts. In addition, the various industrial bodies and commercial circles very kindly put their advice at the disposal of the Reich Railways. It may be said that scarcely any tariff measures are taken by the railways without sooner or later qualified outside experts or organisations being consulted. In particular, the officials of the Reich Ministry of Communications are nowadays called in on all tariff questions which affect water traffic to any extent, *i.e.*, new measures are only introduced in agreement with them. The Railway Council for the Reich, the Railway

Councils for the States, the Reich Waterways Advisory Council and the District Waterways Advisory Councils are the proper authorities through which the representatives of inland navigation can put forward their views. To hear the latter alone in the tariff council suggested by Dr. Arnecke, without also bringing in the representatives of trade in general (whose interests may not in each individual case be identical with those of navigation), would undoubtedly mean a certain one-sidedness and lack of balance in the tariff council which it would be essential to avoid. The Committee would therefore have to be increased by the addition of several members so that in numbers it would differ very little from the Committee of the Railway Council for the State, etc. If this is so, however, it would be better to be satisfied with the Railway Councils for the States, if only for the reason that the very comprehensive investigations into the inland navigation tariffs which have been carried on in the last year and a-half have at least led to one absolutely definite and unanimously accepted conclusion, namely, that it is no good treating the waterways as a whole and that each river must be judged according to its peculiarities, its capacities and its traffic importance. The co-operation which has existed, during the eighteen months of the Reich Railway Company's existence, between this Company and the supporters of an extended waterways policy, has never in a single case led to personal differences which would justify the assumption that there was anything wrong with the procedure employed. The difficulties are in the technical sphere; they would not be removed by the creation of new organs; and in the last analysis they are also due to the existing circumstances. In the first place there is too little traffic in Germany for all the transport undertakings which are continually expanding, and, secondly, there are considerable technical differences between the shipping and railways (which have been dealt with above). Accordingly, the only means of getting over all these difficulties is the sovereign remedy which Germany requires to set her on her feet once more, the remedy of work — work to improve the technique of the plant on both sides, as this, when highly developed, must lead to a certain technical harmony, since both partners have the same end in view, namely, uniform, rapid and safe transport, and work all over the country in the service of the nation, since only hard work can produce the great quantities of goods and wealth required to fill the veins of the transport system which have, to a large extent, become empty.
