

HANDBOOKS PREPARED UNDER THE DIRECTION OF THE  
HISTORICAL SECTION OF THE FOREIGN OFFICE.—No. 41

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THE KIEL CANAL  
AND  
HELIGOLAND

LONDON:

PUBLISHED BY H.M. STATIONERY OFFICE.



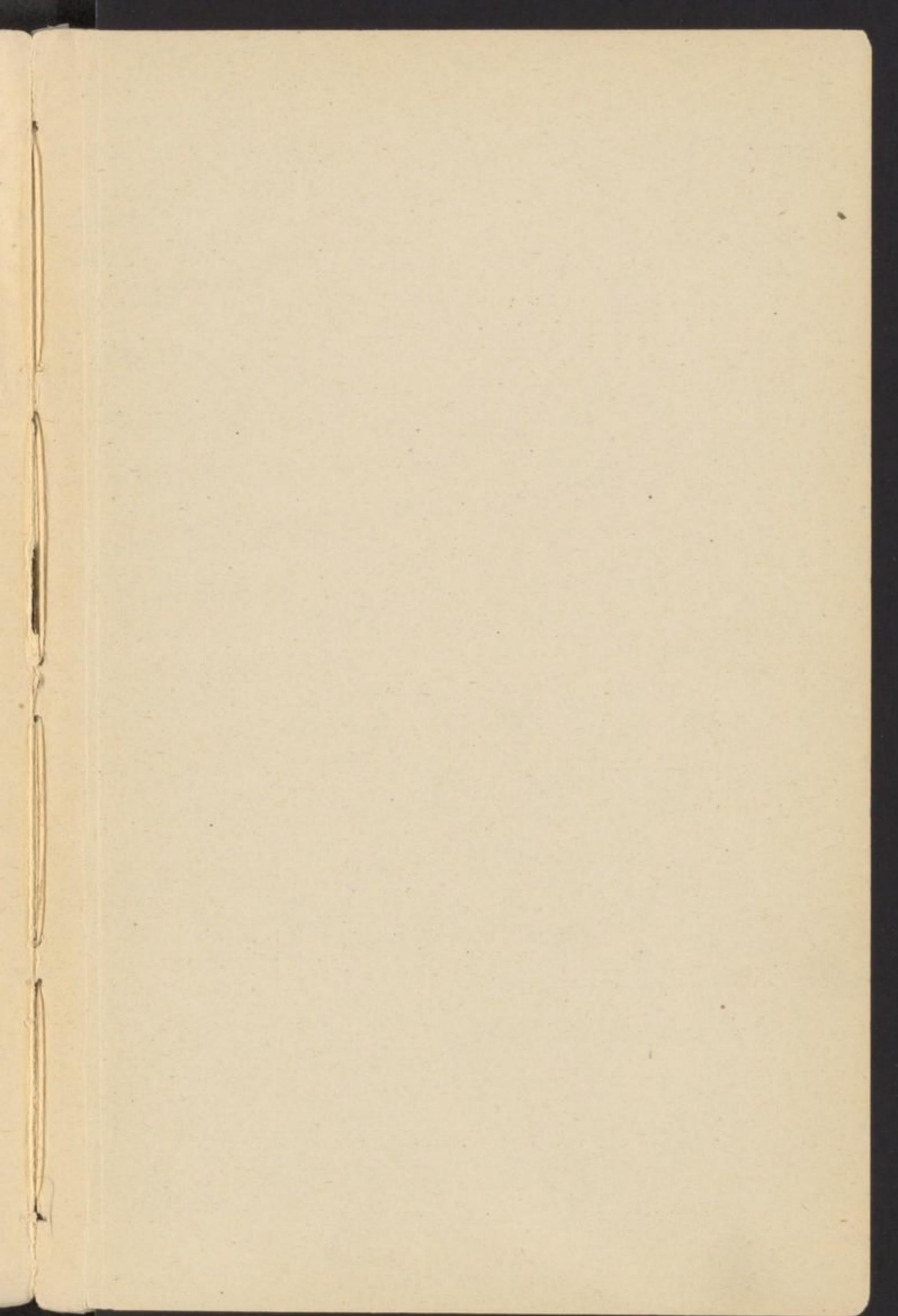
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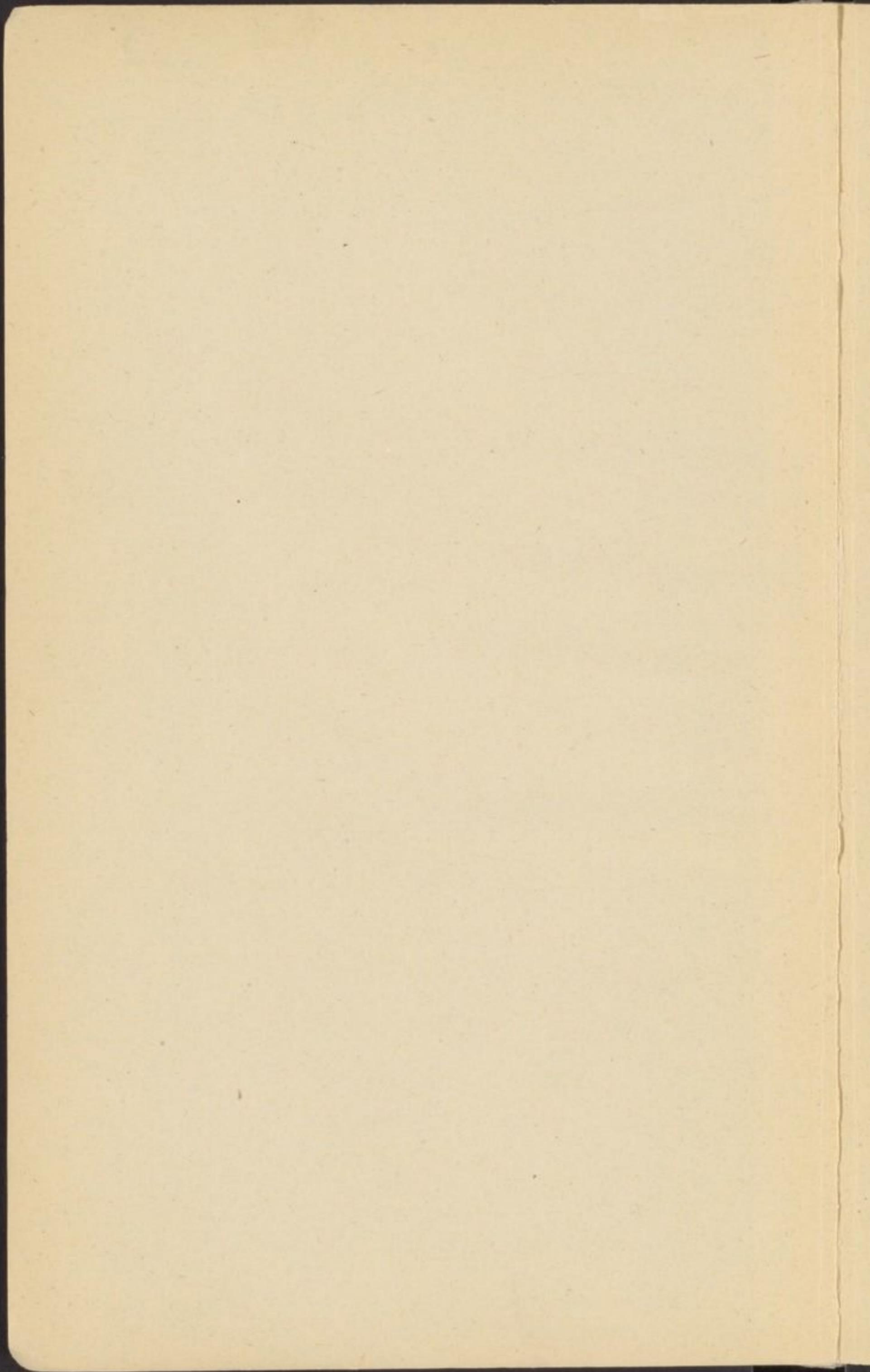
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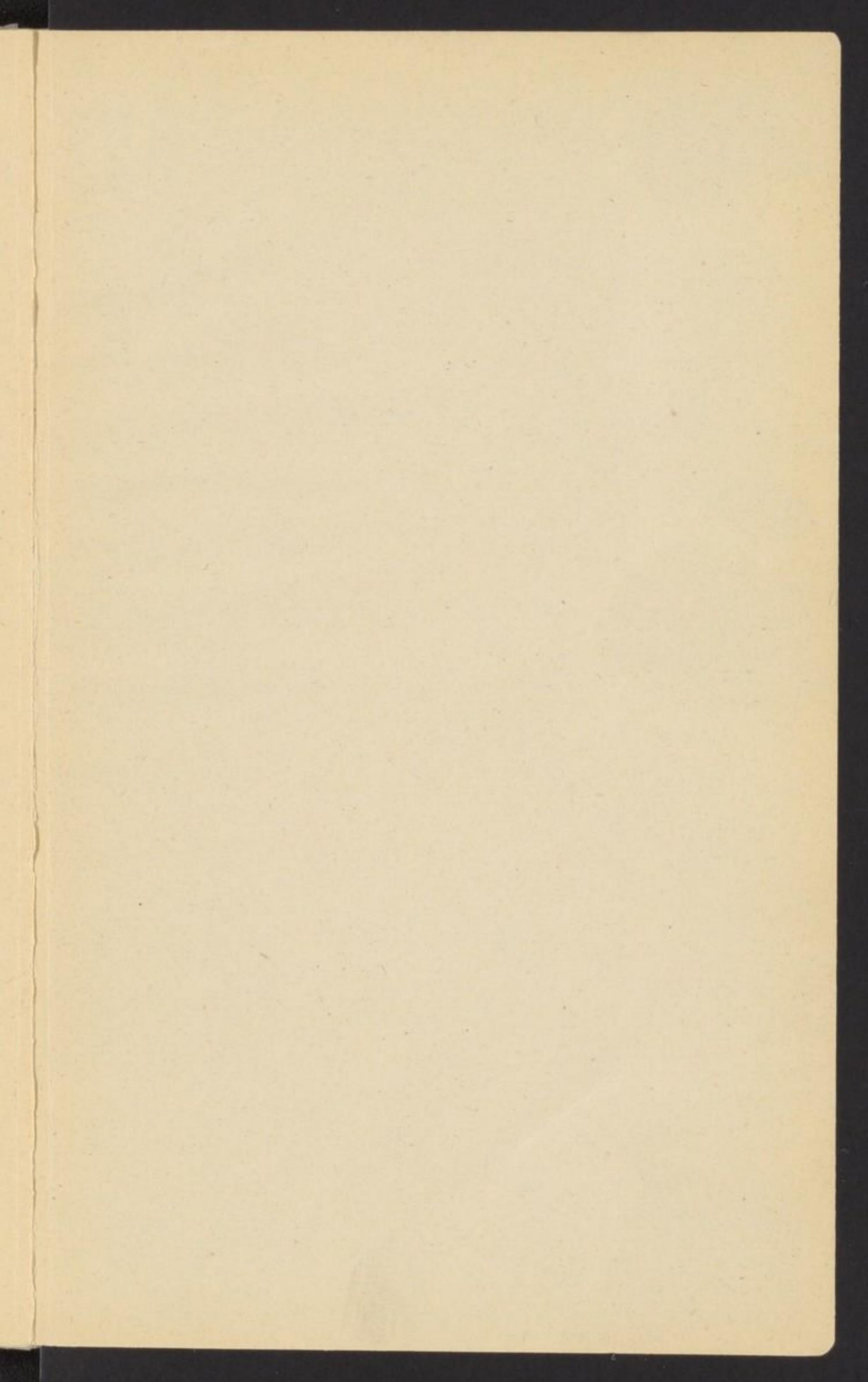


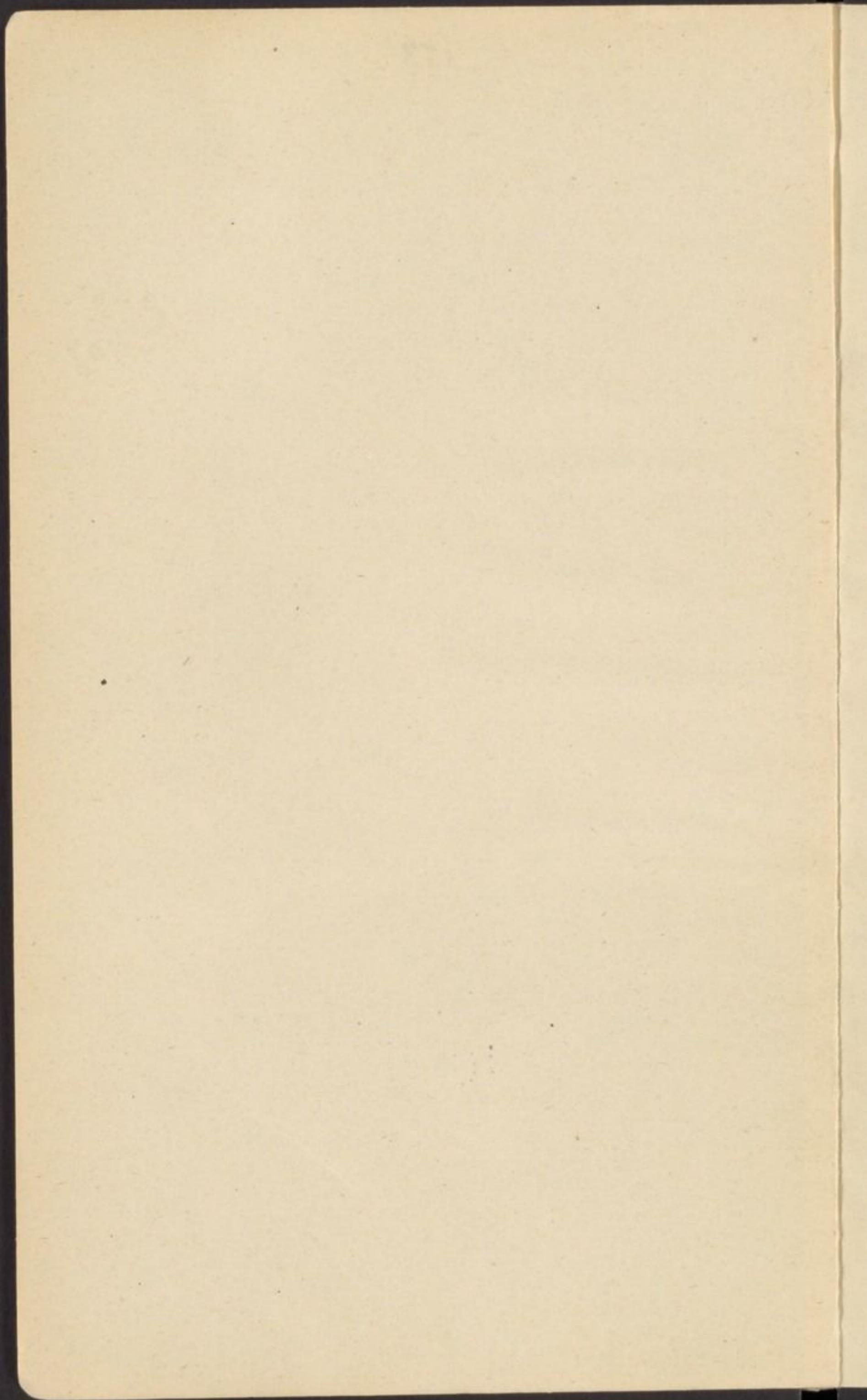
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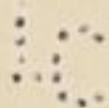
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THE KIEL CANAL  
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### Editorial Note.

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IN the spring of 1917 the Foreign Office, in connection with the preparation which they were making for the work of the Peace Conference, established a special section whose duty it should be to provide the British Delegates to the Peace Conference with information in the most convenient form—geographical, economic, historical, social, religious and political—respecting the different countries, districts, islands, &c., with which they might have to deal. In addition, volumes were prepared on certain general subjects, mostly of an historical nature, concerning which it appeared that a special study would be useful.

The historical information was compiled by trained writers on historical subjects, who (in most cases) gave their services without any remuneration. For the geographical sections valuable assistance was given by the Intelligence Division (Naval Staff) of the Admiralty; and for the economic sections, by the War Trade Intelligence Department, which had been established by the Foreign Office. Of the maps accompanying the series, some were prepared by the above-mentioned department of the Admiralty, but the bulk of them were the work of the Geographical Section of the General Staff (Military Intelligence Division) of the War Office.

Now that the Conference has nearly completed its task, the Foreign Office, in response to numerous enquiries and requests, has decided to issue the books for public use, believing that they will be useful to students of history, politics, economics and foreign affairs, to publicists generally and to business men and travellers. It is hardly necessary to say that some of the subjects dealt with in the series have not in fact come under discussion at the Peace Conference; but, as the books treating of them contain valuable information, it has been thought advisable to include them.

It must be understood that, although the series of volumes was prepared under the authority, and is now issued with the sanction, of the Foreign Office, that Office is not to be regarded as guaranteeing the accuracy of every statement which they contain or as identifying itself with all the opinions expressed in the several volumes; the books were not prepared in the Foreign Office itself, but are in the nature of information provided for the Foreign Office and the British Delegation.

The books are now published, with a few exceptions, substantially as they were issued for the use of the Delegates. No attempt has been made to bring them up to date, for, in the first place, such a process would have entailed a great loss of time and a prohibitive expense; and, in the second, the political and other conditions of a great part of Europe and of the Nearer and Middle East are still unsettled and in such a state of flux that any attempt to describe them would have been incorrect or misleading. The books are therefore to be taken as describing, in general, *ante-bellum* conditions, though in a few cases, where it seemed specially desirable, the account has been brought down to a later date.

G. W. PROTHERO,

*General Editor and formerly*

*Director of the Historical Section.*

*January 1920.*

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## THE KIEL CANAL

### I. ORIGIN AND HISTORY

#### CHRONOLOGICAL SUMMARY

- 1853 Dissolution of the German Federal Navy.  
Acquisition of Jade Bay by Prussia.
- 1864 Cession of Slesvig and Holstein to Austria and Prussia.
- 1865 Prussian Government decides to convert Kiel into a naval port.
- 1866 The construction of the canal promised.  
Battle of Königgrätz.  
Prussia acquires Slesvig and Holstein.
- 1869 Completion of Wilhelmshaven harbour.
- 1886 Bill for construction of canal accepted by Diet.
- 1887 Foundation stone laid.
- 1890 Heligoland ceded to Germany.
- 1895 Canal opened.
- 1914 Enlarged canal opened.

#### (a) NAVAL POLICY OF GERMANY

THE construction of the Kaiser Wilhelm Canal, known also as the Kiel Canal, connecting the North Sea with the Baltic Sea, was one of a chain of measures aiming at the extension of German commercial enterprise and naval power. After the dissolution of the embryonic German federal navy in 1853, it fell to Prussia for nearly a generation to keep alive the idea of a defensive fleet; yet, in adding steadily to her small navy, Prussia, as a State hampered by a vulnerable seaboard, considered primarily her own safety. In 1853 the Prussian Admiralty

took an important step in this direction, when for half a million thalers (about £75,000) it acquired from Oldenburg Jade Bay, with a strip of adjacent land, for the purpose of a naval harbour. Building works were begun two years later, but the present harbour of Wilhelmshaven was not completed till 1869.

The navy question became more prominent through the acquisition by Prussia in 1866 of the Danish Duchies of Slesvig and Holstein, including Kiel and its extensive bay, situated in the latter Duchy. From the standpoint not only of Prussia, but of Germany at large, this was the most important result of the Danish War. Prussia had occupied Kiel soon after the cession of the Duchies to her and her ally, Austria, as a result of that war; and in March 1865, while the territories were still in joint possession—Prussia administering Slesvig and Austria administering Holstein—the Prussian Government decided to convert Kiel into a naval port, and demanded from the Diet a large vote for the necessary work and for a number of small vessels of war. In a speech made on June 1, 1865, while the fate of the Duchies was still undecided, Bismarck, then Minister-President, stated that Prussia would in any event refuse to renounce her interest in them, except on the condition that Kiel Harbour remained in her sole and absolute possession. In the speech from the throne with which the Diet was opened in the following January (1866), the construction of the long-desired Kiel Canal was formally promised.

Nevertheless, in order to secure the formal and permanent possession of Kiel, the Austro-Prussian *condominium* in the annexed territories had to be terminated; and to that end another war was necessary. After Austria's defeat in 1866 Prussia annexed both the Duchies. In later years Bismarck stated that the acquisition of Kiel as a naval base and the natural starting-point of a canal connecting the North and Baltic Seas was his object in bringing about the Danish War; and, whether his claim to sagacious foresight in the matter be conceded or not, the possession of Kiel

was undoubtedly of paramount importance to Prussia. Recalling the origin of the Kiel Canal scheme, Bismarck wrote (1891-1892) :—

“ One of the enterprises, the possibility of which I had advanced, is now, after long delay, being carried into execution—the North Sea and Baltic Canal. In the interest of German sea-power, which was then capable of development only under the name of Prussia, I (and not I alone) had attached great importance to the building of the canal and the possession and fortification of both its mouths. The desire to make a concentration of our naval forces possible, by cutting through the stretch of land separating the two seas, was still very vigorous as an after-effect of the almost morbid enthusiasm for the fleet in 1848; it slumbered, however, until the time when we had the territory in question at our free disposal. In my endeavours to revive this interest I met with opposition in the Committee for National Defence, of which the Crown Prince was President, but Count Moltke the real head.

“ The latter, as a member of the Reichstag, gave it as his opinion on June 23, 1873, that the canal would only be navigable in summer, and was of doubtful military value; with the forty to fifty million thalers which it would cost it would be better to build a second fleet. The reasons advanced against me in the suit for the Royal decision weighed with the King more because of the great regard His Majesty had for the military authorities than because of their intrinsic value. They culminated in the argument that so costly a public work as the canal would require for its protection in time of war a number of troops which could not be withdrawn from the army without weakening it. . . . Owing to the excessive pressure of other business and the manifold struggles of the 'seventies, I could not apply the time and energy necessary to overcome the resistance offered to my project in the Imperial councils by these authorities; and the matter was pigeon-holed. I ascribe the resistance I experienced principally to that military jealousy with which, in 1866, 1870, and also later, I had to maintain struggles that were more painful to my feelings than most others.

“ In my endeavours to win the Emperor's consent I rather gave prominence to the military considerations likely to appeal to him than to any political advantages on commercial grounds. . . . If our united fleet can issue from the harbour of Kiel, from the mouth of the Elbe, and even, if the canal is lengthened, from the Jahde also, without a blockading foe being aware of it beforehand, the latter would be compelled to maintain a squadron equivalent to our whole fleet in each

of the seas. On this and other grounds I was of opinion that the making of the canal would be more advantageous for the defence of our coasts than if we applied the cost of it to building fortresses and enlarging our fleet, especially as we had not unlimited resources for manning our fleet. . . .

"What the reasons were that relaxed the resistance of the Committee of National Defence in the year 1885 I do not know. Perhaps Count Moltke had in the meantime convinced himself that the idea of an alliance between Germany and Denmark, which he had formerly entertained, was impracticable."<sup>1</sup>

### (b) CESSION OF HELIGOLAND TO GERMANY

It was with the idea of taking in hand this great project that Bismarck, first in 1884 and again in 1885, approached the British Foreign Secretary, Lord Granville, with the suggestion that Heligoland should be ceded to Germany. In a memorandum of the first conversation on the subject with the German Ambassador, Count Münster (May 17, 1884), Lord Granville relates that the ambassador told him that the construction of the canal was then contemplated, and that

"Heligoland, which, of course, would be always open to our [British] ships, would be a necessary key to such a plan."

Count Münster added that

"it was as good as impossible that Germany and England should ever be at war, but the cession of Heligoland would strengthen the good feeling of Germany towards this country to an extraordinary degree."<sup>2</sup>

Lord Granville declined to commit himself to any expression of opinion upon a question so controversial; and it was agreed that the matter should, for the present, go no further. In the following January the subject was again opened by the German Ambassador, acting on instructions from Berlin, but with the same result. Eventually Heligoland was ceded to Germany

<sup>1</sup>Prince von Bismarck, *Gedanken und Erinnerungen*, Stuttgart, 1898, II, pp. 29-31.

<sup>2</sup>Lord Edmond Fitzmaurice, *Life of the Second Earl Granville*, London, 1905, II, p. 351.

by the Government of Lord Salisbury under the African Convention of July 1, 1890; and the Emperor took formal possession of the island on August 10 following<sup>3</sup>

(c) CONSTRUCTION OF THE CANAL

By this time the construction of the canal was well advanced. In view of the fact that it was primarily intended to serve the interests of national defence, the scheme was carried out as an Imperial enterprise. The bill on the subject was approved by the Reichstag on February 18, 1886; on June 3, 1887, the foundation stone was laid by Emperor William I, "in honour of United Germany, for its progressive welfare, and in sign of its power and might"; and the canal was opened by the Emperor William II on June 20, 1895. Eighty vessels of war, representing fourteen Powers, were present at the inaugural ceremony. From the naval standpoint the canal proved of immediate advantage in greatly reducing the length of the voyage between the naval port of Wilhelmshaven and Kiel. Extensions and improvements were authorised by the Reichstag in 1907 and the enlarged canal was formally opened on June 25, 1914.

<sup>3</sup>For further particulars see below, pp. 30, 31.

## II. GEOGRAPHICAL POSITION, DIMENSIONS, AND ITINERARY

### (a) GEOGRAPHICAL POSITION

THE Kiel Canal crosses the peninsula of Jutland at its base, uniting the Baltic at Holtenau, on Kiel Harbour, 4 miles from Kiel Town, with the lower Elbe at Brunsbüttel, 15 miles above Cuxhaven.

The country through which the canal passes rises in level steadily, but very gradually, from the west coast to a watershed about 10 miles from the east coast, and from thence descends fairly steeply to the sea on the east. Both coasts are much indented; but, whereas the western inlets have shallow channels through mud flats, those on the east are deep and form good harbours.

The soil of the district is practically all Quaternary (glacial) or alluvial. On the west coast it consists largely of alluvial marshes. The central area is mainly a poor gravelly soil known as "geest," with stretches of heath and pinewoods. The hills fringing the east coast form the most fertile district of the peninsula.

The Eider is the only considerable river in the neighbourhood. It joins the Canal at Rosenkranz and leaves it at Rendsburg, whence it flows north-west to the North Sea. Its total length is 117 miles, including the section incorporated in the Canal. Below Rendsburg it has a very slight fall, and flows for the most part through marshes.

The only town situated on the Canal is Rendsburg, which had a population of 17,314 in 1910. The

average number of inhabitants per square mile in the district traversed is about 130. The town of Kiel (including Gaarden) had 211,627 inhabitants in 1910. The population is Low German in race and language, and almost exclusively Protestant.

The eastern and western approaches to the Canal lie well inland, on estuaries whose entrances are sufficiently narrow to be virtually unapproachable in war time. Variations in water-level in the entrances have necessitated the building of locks. The variation at Brunsbüttel is about 10 ft., and is due to the tide. That at Holtenau is due solely to the action of wind, and only occurs on about 25 days in the year, the maximum variation being 1.7 ft.

The western entrance, at Brunsbüttel, lies 15 miles up the Elbe; and the deep channel in the river is at some points less than 3 cables wide. Seaward from Cuxhaven mud-flats border the channel; and there are a number of sand-banks above and below that town. Dredging on a considerable scale has been necessary to procure a sufficient depth in the channel, which even at the shallowest point below Brunsbüttel (viz., between Ostebank and Oste reef) is at least  $4\frac{1}{4}$  fathoms deep at low water, with a tidal rise of 10 ft. This minimum depth is maintained right up to Brunshausen (17 miles below Hamburg).

The eastern entrance, at Holtenau, lies between Friedrichsort and Kiel, on the western bank of the Firth of Kiel (Kieler Förde), and about 6 miles from its mouth. This firth extends inland in a south-south-westerly direction for 9 miles. It is  $1\frac{1}{2}$  miles wide at its broadest point, and at Friedrichsort narrows to 4 cables (less than 1 mile) between the 5-fathom lines. The little river Schwentine enters the firth from the south-east, a little below Kiel. The whole of the inner part of the firth, above Friedrichsort, is known as Kiel Harbour, and has a depth of 6 to 9 fathoms. It is occasionally icebound for sailing ships for a few days, but is rarely closed for steamers.

## (b) DIMENSIONS

The Canal was completed in 1895. Thirteen years later work was begun on a scheme by which the depth and width of Canal and locks have been enlarged, and the swing-bridges have been replaced by fixed high-level bridges. These improvements were practically complete in June 1914, when they were formally opened.

The following are the principal dimensions:—

	As Constructed (1895).	As Enlarged (1914).
Breadth at bottom .. ..	72 ft.	144 ft.
„ depth of 20 ft .. ..	118 ft.	
„ water-level .. ..	213 ft.	335 ft.
Depth .. ..	29 ft. 6 in.	36 ft.
Height of fixed bridges above water-level	131 ft.	131 ft.
Number of fixed high-level bridges..	2	5
„ swing bridges .. ..	2	
	(Another was constructed later at Holtenau).	
Length.. ..	61 miles.	
Locks—		
Length .. ..	492 ft.	1,082 ft.
Width .. ..	82 ft.	148 ft.
Depth .. ..	29 ft.	39 ft.
Maximum dimensions of vessels allowed—		
Length .. ..	443 ft.	} Available for vessels of any size.
Breadth .. ..	65½ ft.	
Draught .. ..	26¼ ft.	
Height of mast above water-line	131 ft.	

The new locks, which are the largest in existence, are in addition to the old, so that there are now four locks side by side at each entrance.

## (c) ITINERARY

Kilometres from Brunsbüttel.	Description.	Banks.
0	Western entrance. Brunsbüttel harbour. Four locks .. ..	Low.
1	Ferry (high-road) .. ..	Ditto.
3	Ferry .. ..	Ditto.
5½	Blangen. Two former swing-bridges carrying West Holstein railway, probably replaced in 1914 by high- level bridge a few kilometres fur- ther on	Very low.
6	Ferry .. ..	Ditto.
7	Kudensee (lake), to N.W. of Canal ..	Land often below water level of Canal, and pro- tected by dykes
12	Siding .. ..	Ditto.
14	Ferry (high-road) .. ..	Ditto.
15	Burg, a little to N. .. ..	Ditto.
16½	.. ..	Low.
18	Ferry (high-road) .. ..	Ditto.
21	.. ..	High.
22-3	Siding .. ..	Ditto.
23	Ferry .. ..	Ditto.
26	Klein Bornholt, Ferry .. ..	Ditto.
27	Gross Bornholt .. ..	Ditto.
30	Grünental. Fixed high-level bridge carrying road and single railway Neumünster - Heide). Watershed between Elbe and Eider basins	Ditto.
31	Beldorf .. ..	Ditto.
34½	Steenfeld Ferry .. ..	Low.
35	Siding .. ..	Ditto.
40	Oldenbüttel Ferry. Canal reaches Eider valley	Ditto.
45	Ferry .. ..	Ditto.
47	Siding .. ..	Land below water level.
49	Ferry .. ..	Ditto.
54	Schülp Ferry. Canal approaches Eider. High dyke protects Canal from flood water	Ditto.
59	Westerrönfeld Siding. Canal leaves Eider valley and makes detour round Rendsburg	Higher.

Kilometres from Brunsbüttel.	Description.	Banks.
60	Rendsburg. Former swing-bridge carrying high-road probably removed	Higher.
62	Two swing-bridges carrying main railway, probably replaced by fixed high-level bridge in 1914. New bridge probably also carries road	
64	Ferry .. .. .	
65-6	Audorf Lake, most westerly of chain of lakes through which course of River Eider and of old Eider Canal formerly ran. Turning place for large ships in lake	
67	Lake .. .. .	
68	Lake .. .. .	
68½-71	Schirнау Lake .. .. .	
73	Steinrade. Canal leaves old Eider Canal which turns south	High with considerable undulations
74	Ferry .. .. .	Ditto.
80	Königsförde. Canal rejoins course of old Eider Canal	Ditto.
83	Rosenkranz. Upper Eider runs in from south	Ditto.
84	Siding .. .. .	Ditto.
85½	Ferry .. .. .	Ditto.
92½	Levensau. Fixed high-level bridge carrying road and single railway (Kiel-Flensburg)	Ditto.
95	Knoop.. .. .	Ditto.
96	Former swing-bridge carrying high-road replaced by high level bridge begun in 1910	Ditto.
97	Holtenau. Eastern entrance. Four locks	Ditto.

### III. FINANCE AND ECONOMIC IMPORTANCE.

#### (a) FINANCE

*Cost.*—The original cost of constructing the Canal was £7,647,000; and, if to this be added the cost of the improvements completed in 1914, namely £11,421,000, the total cost stands at £19,068,000. The original expense of construction per mile, viz., £125,300, was less than that of any of the other great canals. The Suez Canal cost £245,785 per mile, and the Manchester Ship Canal £516,547 per mile.

*Dues.*—The tolls charged for through traffic are as follows:—

#### General Traffic—

	Marks.
On the first 400 net register tons, per ton ... ..	0·60
From 400 to 600 register tons, per ton	0·40
From 600 to 800 register tons, per ton	0·30
Above 800 register tons, per ton ...	0·20
Minimum charge ... ..	10·00

#### German coastwise traffic—

Up to 50 net register tons, per ton ...	0·40
Minimum charge ... ..	6·00

Vessels empty or in ballast pay the tolls, less 20 per cent., and incur no minimum charge.

*Financial Position.*—A capital expenditure of £19,068,800, which was the total cost of the Canal up to 1914, would need a yearly return of at least £764,000 to provide for interest and sinking fund. Profits made before 1914 should of course be compared

with the original cost only, viz., £7,647,000. Up to 1903 the canal was maintained at a loss, but from that year to 1914 the annual balance-sheet always showed a profit, though sometimes a very small one. The following figures illustrate the increase in the net receipts during this period:—

					£
1903-4 <sup>1</sup>	...	...	...	...	2,834
1906-7	...	...	...	...	12,156
1910-11	...	...	...	...	35,331
1913-14	...	...	...	...	231,440

It will be seen from these figures that in 1906-7 the interest on the original expenditure was only 0·15 per cent., and even the very considerable increase in 1914 raised it to only 3 per cent. The receipts have thus not been sufficient to pay any considerable dividend on the investment. The tolls cannot be raised so as to provide for interest charges and for the amortisation of the original cost of construction, for the Kiel Canal, unlike the Panama and Suez Canals, does not connect regions of vast traffic, nor does it greatly shorten ocean routes, and therefore the imposition of heavier dues would defeat its own objects.

It remains to be asked if the Kiel Canal, though not in itself a profitable undertaking, in the sense of earning a substantial dividend, may not have contributed to the increase of prosperity in the towns influenced by it. There have been cases of this sort. The Manchester Ship Canal, for instance, has not paid high dividends, but the city of Manchester has derived immense advantage from it; and in many cases individual investors, though getting no direct return on their investment, have recouped themselves by the increased prosperity of their businesses. It does not appear, however, that the German Baltic ports have derived much advantage from the Kiel Canal. Between 1890 and 1910 the populations of Lübeck, Danzig, and Königsberg in-

<sup>1</sup> The fiscal year of the Canal Administration begins on April 1.

creased only between 40 and 50 per cent. Stettin, it is true, showed an increase of 103 per cent. and Kiel of 205 per cent.; but these increases, though considerable, were not remarkable in comparison with those of other towns during the same period; and it is reasonable to suppose that Kiel, as headquarters of the German Navy, would have shown a great increase even without the Canal.

(b) ECONOMIC IMPORTANCE

*Tonnage passing through the Canal.*—Sartori,<sup>1</sup> after elaborate calculations, estimated the tonnage likely to pass through the Canal in 1895 as 11,700,000 registered tons. Events have proved that this estimate was much too high. In 1896, the first complete calendar year when the Canal was open, the whole of the traffic using it as a through route amounted to only 1,751,065 tons, and the steam tonnage was only 1,321,311. It is true that, except for a slight drop between 1906 and 1909, the traffic steadily increased from year to year. Nevertheless, in 1913-14, the last fiscal year before the war, the total traffic had reached only 9,077,708 tons, a figure well within Sartori's estimate for 1895. Of this total 87 per cent. (7,845,511 net register tons) was steam tonnage, while sailing ships and barges or lighters contributed respectively 5.5 per cent. and 7.5 per cent.

The types of vessel passing through the Canal in 1912-1913 and 1913-1914 were as follows:

Year.	Number.	Tonnage.	Average size, in net register tons.	
1913-1914	} Steamers .. {	16,501	7,845,511	475
1912-1913		15,557	7,161,207	460
1913-1914	} Sailing ships {	9,772	512,630	52
1912-1913		9,257	475,100	51
1913-1914	} Lighters and {	2,116	719,567	340
1912-1913		2,157	744,109	344

<sup>1</sup> A. Sartori, *Kiel und der Nord-Ostsee-Kanal*. Berlin, 1891.

The diagram (Fig. 1) shows the percentage of ships of various tonnage passing through the Canal in 1913-1914.

It will be clear from the table and the diagram that liners make very little use of the Canal, and that the traffic ordinarily consists for the most part of sailing ships or steamers of no great size. In 1913-1914 only 2.5 per cent. of the ships passing through were of over 1,500 tons, and only 6.1 per cent. of over 1,000 tons, while 67.7 per cent. were of 400 tons and under. Of the steamers only 47.2 per cent. were of more than 400 tons.<sup>1</sup>

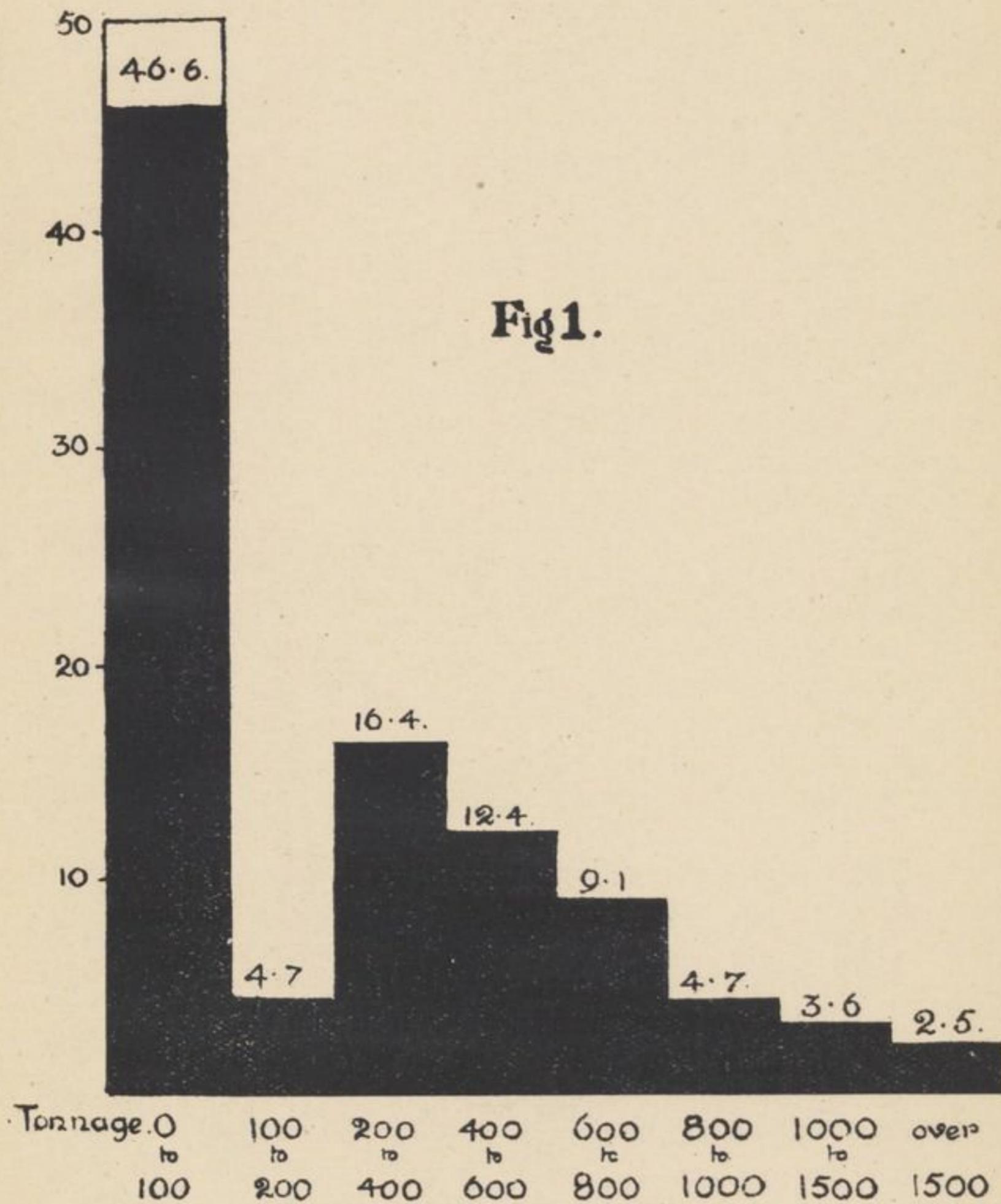
*Goods carried through the Canal.*—The trade from the Baltic to the North Sea is largely in wheat, eggs, butter, timber, and wood-pulp, while that in the reverse direction is chiefly in coal, iron, manufactured goods, and rubber. The total quantity of goods carried through the Canal in 1914 was 8,392,819 metric tons. Details, which can be given for only part of this total, are shown in Fig. 2.

Only a small part of the timber exported from the Baltic goes *via* the Canal. In 1913 Finland exported 10,000,000 metric tons of timber, and of the Russian ports Riga and Libau alone exported 1,468,000 metric tons, whereas the amount of timber which passed through the Canal in 1913-14 was only 1,669,084 tons in all.

*Nationality of Vessels using the Canal.*—About half the steam tonnage passing through the Canal is under the German flag. The diagram (Fig. 3) shows the shares of various nations in both the total traffic and the steam traffic of the Canal in 1913-14.

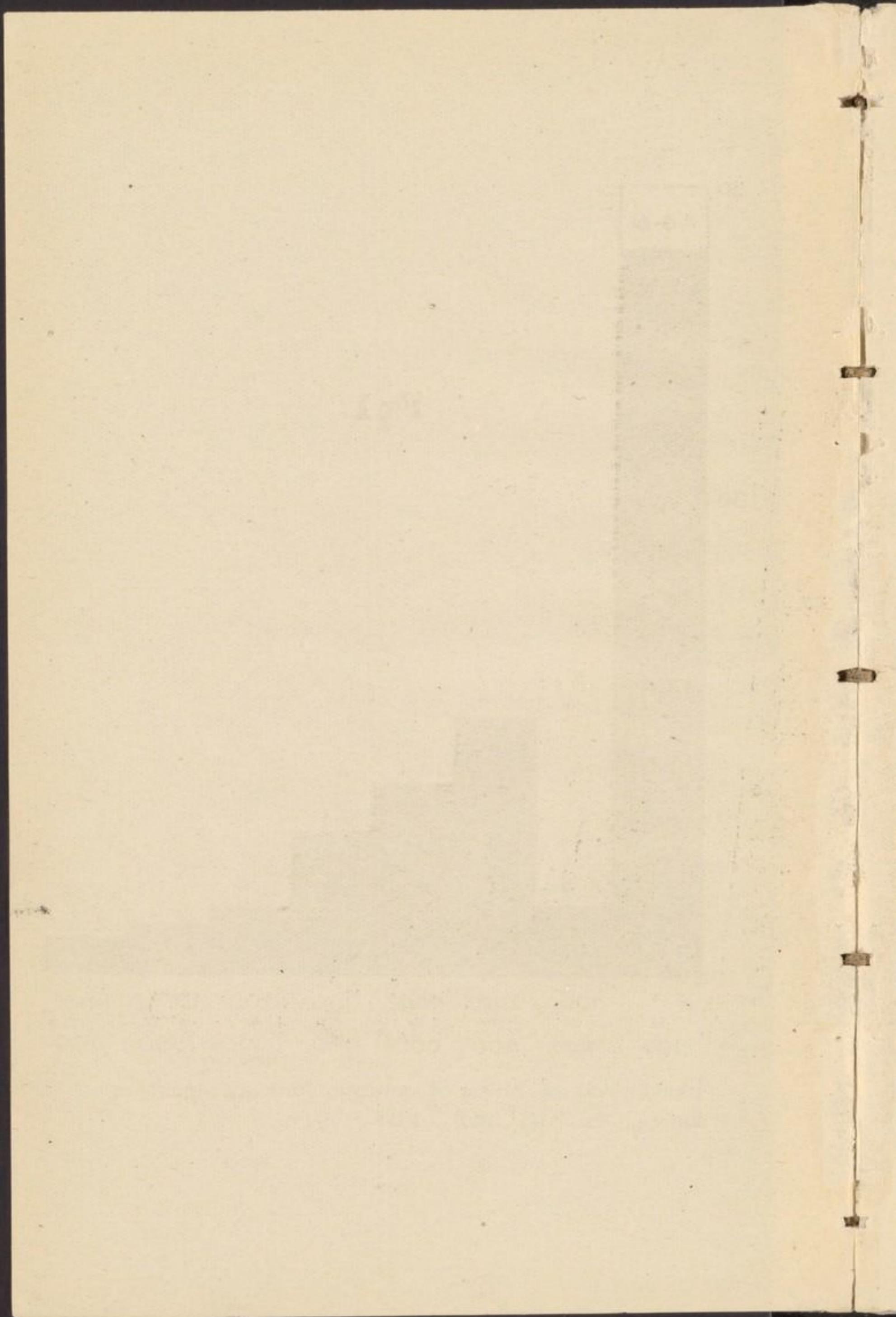
*Share of ports in the Canal Traffic.*—The following tables (p. 15) show the shares of various groups of ports in the Canal traffic.

<sup>1</sup> It should be noted that local traffic on the Canal and the movements of warships are ignored throughout.



**Fig 1.**

Percentage of ships of various tonnages passing through the Kiel Canal 1913 ~ 1914.



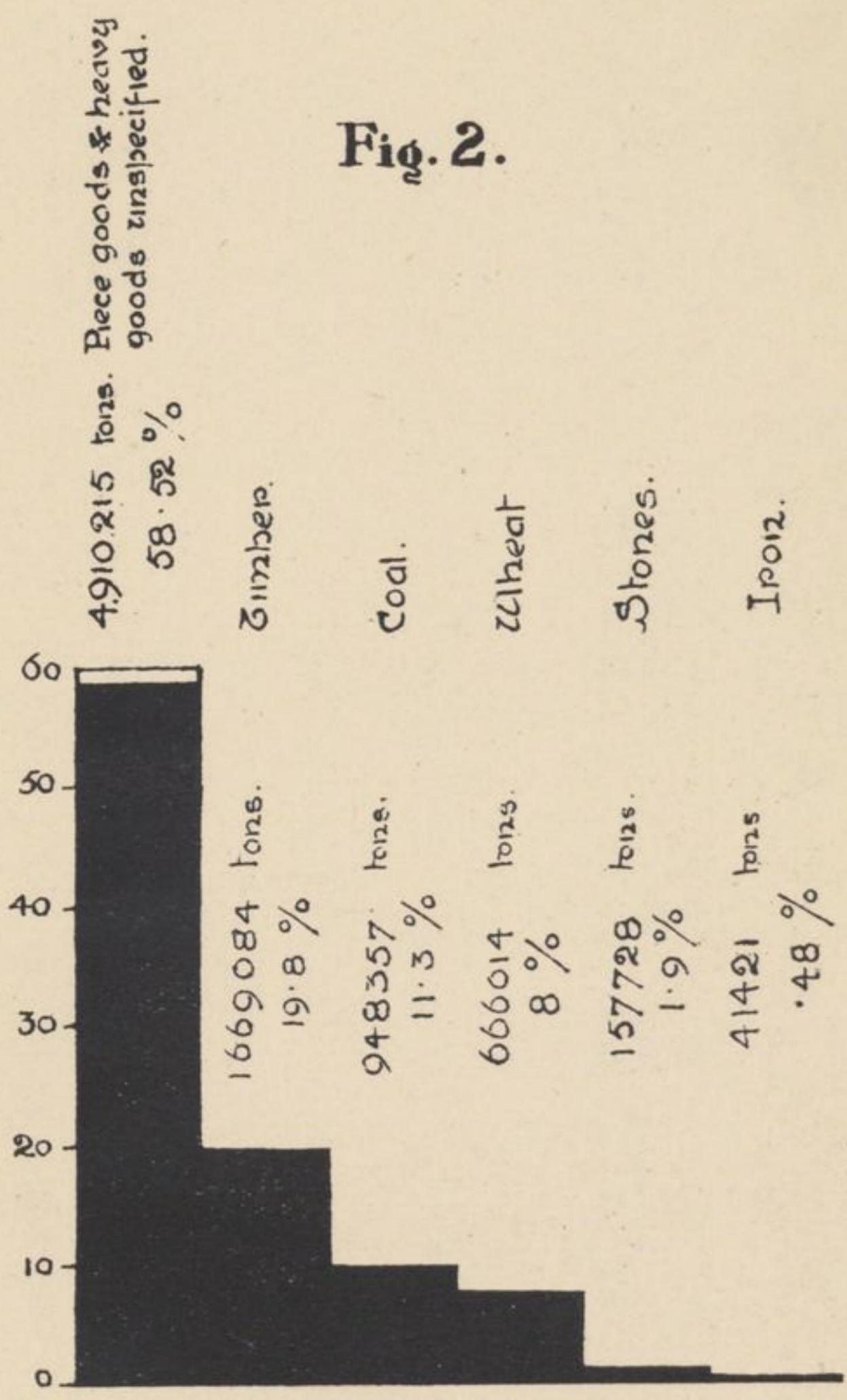
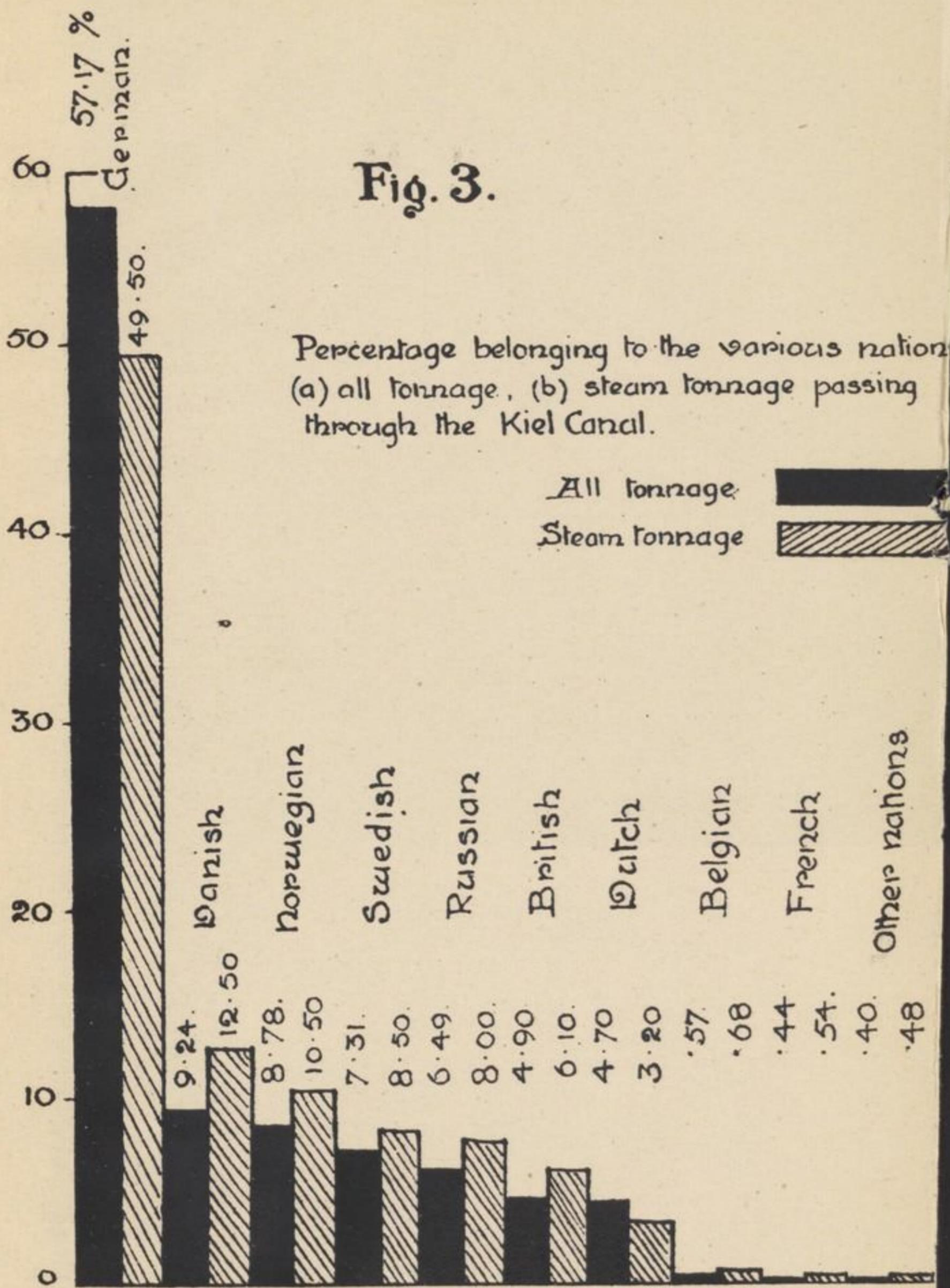


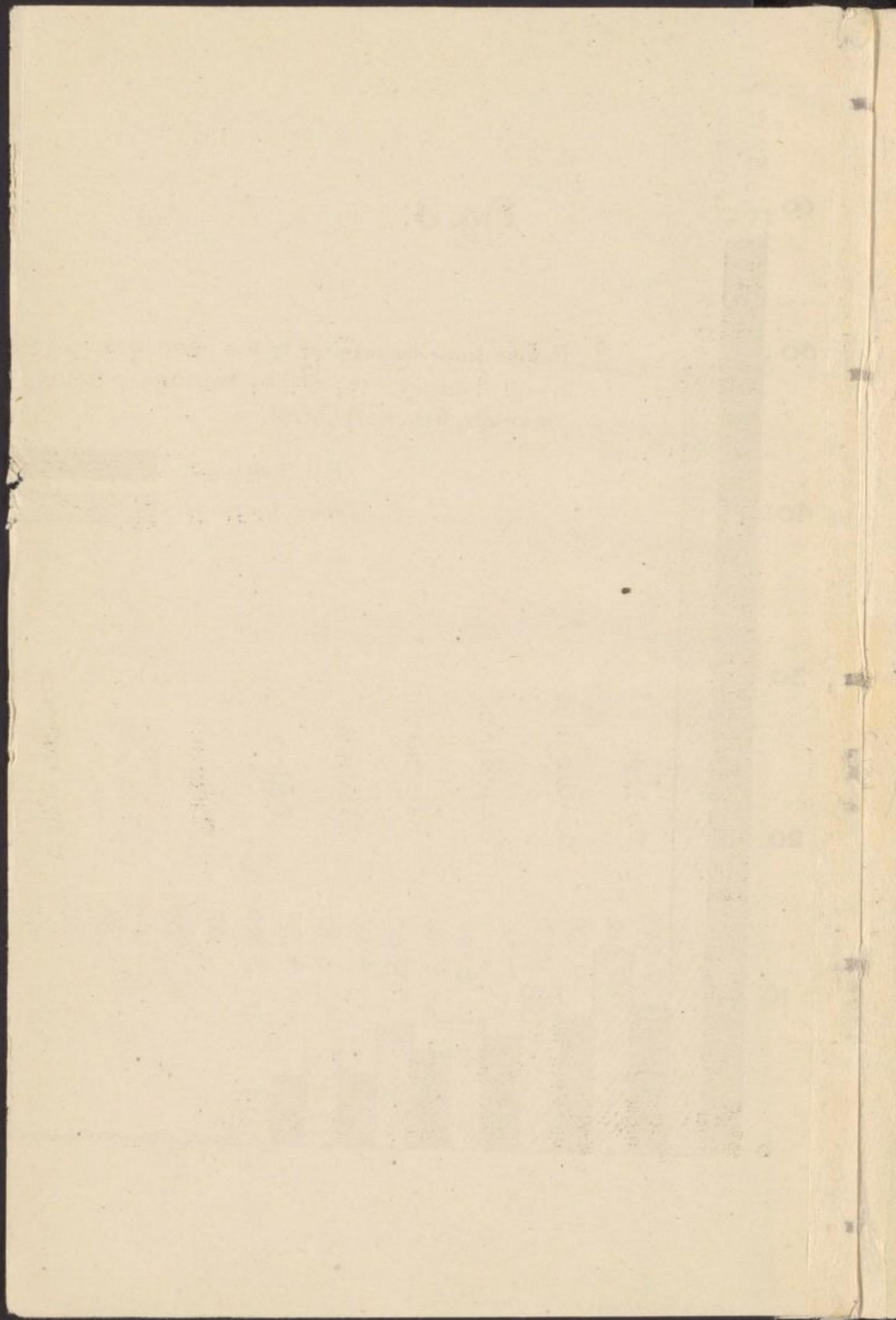
Fig. 2.

Total tonnage of goods, 8,392,819 tons.  
 passed through the Kiel Canal, 1913~1914.

504

Fig. 3.





*Origin of Shipping entering the Canal in 1913-14.*

	Percentage of total tonnage.
Elbe ports ... ..	7.1
German North Sea ports ... ..	16.1
British ports ... ..	7.7
Dutch, Belgian, and Rhine ports...	9.3
French ports ... ..	0.8
Other western and southern ports	4.2
German Baltic ports ... ..	21.1
Russian Baltic ports ... ..	19.2
Danish ports ... ..	3.8
Norwegian ports ... ..	0.1
Swedish ports ... ..	10.6

*Destination of Shipping leaving the Canal in 1913-14.*

	Percentage of total tonnage.
Elbe ports ... ..	17
German North Sea ports ... ..	7.2
British ports ... ..	11.6
Dutch, Belgian, and Rhine ports	15.4
French ports ... ..	4.7
Other western and southern ports	1.1
German Baltic ports ... ..	19
Russian Baltic ports ... ..	12.8
Danish ports ... ..	6.1
Norwegian ports ... ..	0.1
Swedish ports ... ..	5

*Advantages of the Canal to Merchant Traffic.*—The table given below shows how far a saving in distance and time is effected by ships from various ports going to the island of Bornholm, in the Baltic, *via* the Canal, instead of round the Skaw. An average speed for a large tramp steamer is 9 knots and for a combined passenger and goods steamer 13 knots. The mean of these two, viz., 11 knots, has been taken as a basis for calculating the saving in hours for ships of

1,000 tons. Such ships, however, are rarely found in the Canal. The ocean liners from America do not, as a rule, go further than Hamburg, where goods consigned to the Baltic are trans-shipped. Danish, Russian, and Swedish liners on their way from Copenhagen, Libau, and Gothenburg to New York do not go through the Canal. German liners from Stettin to New York go round the Skaw. The steam vessels using the Canal are, on an average, of about 400 tons; and for these 6 to 8 knots is a fair rate. The mean of these, viz., 7 knots, has been taken as a basis for calculating the saving in time for vessels of that size. Allowance must, of course, be made for the crucial fact that while in the Canal vessels are restricted to a very low rate of speed, the average time taken on the passage from end to end being 13 hours.

Ports.	Distance by Canal.	Distance round Skaw.	Saving in distance.	Time saved or lost for vessels of 1,000 tons.	Time saved or lost for vessels of 400 tons.
	Miles.	Miles.	Miles.	Hours.	Hours.
Hamburg to Bornholm	250	610	360	24	46
Bremerhaven ..	285	570	285	18	35
Emden ..	345	600	255	15	31
Dover ..	560	760	200	10	23
Calais ..	560	760	200	10	23
London ..	600	790	190	9	22
Humber ..	535	685	150	5	16
Hartlepool ..	585	675	90	0	7
Sunderland ..	590	670	80	— 1	6
Newcastle ..	600	670	70	— 2	5
Firth of Forth ..	650	690	40	— 4	0

Whether a saving in time carries with it a net saving in expenses depends partly upon the number of hours saved, and partly upon the size of the vessel. It has been estimated<sup>1</sup> that for ships of between 3,000 and 5,000 tons, the daily working expenses average 10 cents

<sup>1</sup> E. R. Johnson, *Panama Canal Traffic and Tolls*. Washington, 1912.

per ton. In the case of smaller ships the average would probably be nearer 12 cents (*6d.*). On this basis, the expenses of a vessel of 1,000 tons would amount to £25 a day, or £1 0s. 10*d.* an hour. As a ship of this size passing through the Canal would have to pay about £20 12s. in tolls, it follows that unless nearly 20 hours were saved, there would be no saving in expense. It appears, therefore, from the table printed above, that a 1,000-ton ship, with a speed of 11 knots, going to Bornholm from any port west of the Elbe would increase its expenses by choosing the Canal route in preference to that round the Skaw.

In the case of smaller ships, however, the Canal route is more advantageous. For a ship of 400 tons, the working expenses, at the rate already quoted, would be £10 a day, or 8s. 4*d.* an hour, and the Canal tolls approximately £11 15s. A saving of  $28\frac{1}{4}$  hours would therefore compensate for the Canal charges; so that a 400-ton vessel, with a speed of 7 knots, bound for Bornholm from any of the German North Sea ports would save expense by using the Canal. If, however, the port of departure were further west or south, it would be cheaper to go round the Skaw.

These calculations, though somewhat abstract in character, are sufficient to show why the Canal has not been successful from a commercial point of view. They have, however, necessarily left out of account certain considerations which cannot be expressed by figures, and which explain why the Canal route has gradually increased in favour. It is evident that for ships carrying passengers or perishable goods, a saving of time is of great value, even if it involves an increase in immediate expense. Moreover, the voyage round the Skaw is dangerous. Between 1858 and 1891 there were on that route more than 8,000 shipwrecks, an average of 5 per week. In five years 92 German ships were lost with crews numbering 708 persons. Further, bad weather often causes damage to cargo even when

the ship escapes harm. Thus for small vessels the safety offered by the Canal is a great attraction.

*Comparison with the Suez Canal.*—A brief comparison with the Suez Canal will throw light upon the future economic value of the Kiel Canal.

By 1895 the Suez Canal had cost £22,238,097, and since then considerable sums have been spent on enlarging it. In 1910, though 94 per cent. of the vessels using it had a draught of less than 26 ft., it could accommodate vessels drawing 28 ft.; and 1 per cent. of those using it were of this draught. In 1912 a scheme was undertaken to give the Canal a depth of 36 ft., a minimum bottom width of 137 ft., and a greater breadth through much of its course. The Canal can thus accommodate very large ships, and the average size of vessels using it has, in fact, increased from 898 tons in 1870 to 3,688 tons in 1911.

In the early years of the Canal's history the traffic was small, for when it was opened most of the freight between Europe and countries in and beyond the Indian Ocean was carried in sailing vessels. These could not go *via* Suez, on account of the rocks in the Red Sea, and therefore continued to use the Cape route. Gradually, however, the freight steamers which were built for the Suez route secured the traffic with the Far East and Australasia. Between 1880 and 1890, which was a decade of trade expansion in Great Britain and other European countries, the traffic rose 126 per cent. Between 1890 and 1900, which was a period of depression, the increase was only 43·20 per cent. Since then, however, traffic has risen more rapidly, and in 1910 the net tonnage was 18,324,794 tons, a rise of 70·2 per cent. above the figures for 1900.

The tolls charged by the Suez Canal are 65·25 fr. per net register ton, with a charge of 10 fr. for every passenger above 12 years of age. This charge, which is high in comparison with that of 60 pf. per net register ton made by the Kiel Canal, is made possible by the situation of the Suez Canal. Very little of the traffic that goes through the latter is on the margin of advan-

tage. For instance, the time saved between London and Bombay is 24 days. Calculated according to the estimate cited above (p. 16), the gross saving of running expenses made by a 3,000-ton ship using the Canal is therefore £1,500, while the tolls paid to the Canal for tonnage (apart from passengers) are £750, so that there remains a net saving of £750, besides the advantage of the saving in time. It is evident, therefore, that for many ships the Suez Canal charges might be raised, although the new route through the Panama Canal, by placing a certain class of ships on the margin of advantage, will tend to bring them down, since for a ship going from Liverpool to Sydney the route *via* Panama is only 150 miles longer than that *via* Suez.

It is thus clear that the Kiel Canal, which at best saves only 46 hours, is in a far less advantageous position than the Suez Canal for charging higher rates with a view to increasing its revenue.

#### (c) POSSIBILITIES OF FUTURE DEVELOPMENT

The future prosperity of the Kiel Canal depends on three factors: (1) a considerable growth of traffic between the North Sea and the Baltic, some part of which would use the Canal; (2) an increase of passenger traffic, for which the saving of time would be an advantage too great to be neglected; (3) an increase in the traffic in perishable goods, for which, again, a saving of time would be important; (4) the provision of a better trans-shipping harbour on the Baltic side of the Canal.

(1) *Baltic—North Sea Traffic.*—The Baltic lies off the main routes of commerce, and its shipping has not developed as fast as that of the North Sea. In 1830, of German shipping 34·45 per cent. belonged to the North Sea and 65·55 per cent. to the Baltic ports. In 1900 the proportions had been completely changed, 86·6 per cent. belonging to the North Sea and 13·4 per cent. to the Baltic. This change was partly due to the general direction in which commerce

was expanding, but there were also special reasons for the shrinkage in certain kinds of Baltic trade. For instance, the export of wheat from the German Baltic ports to England has ceased now that the growth of the population in Germany has made it necessary to keep wheat grown in the country for home consumption.

The development of the countries using the Baltic ports, and their better connection with the sea by canal and rail (as in the case of industrial Silesia and Stettin), may possibly lead to increased trade between inland towns and those ports; and some of this trade may ultimately go through the Kiel Canal. The improved connection by canal between Berlin and Hamburg undoubtedly diverted the grain traffic from the route Riga—Stettin—Berlin to that of Riga—Kiel Canal—Hamburg—Berlin, as the following figures show:—

*Wheat from Baltic Ports for Berlin*

—	1894.	1897.
	Metric Tons.	Metric Tons.
By Stettin ..	139,700 (87·3 %)	115,500 (47·6 %)
By Hamburg ..	21,300 (12·7 %)	127,000 (52·4 %)

On the other hand, the newer canal system will work to the detriment of the Kiel Canal. The Spree—Oder Canal, completed in 1891, has given a direct route from Hamburg to Breslau, to the disadvantage of the Kiel—Stettin route.

*Import of Petroleum to Breslau*

—	1894.	1897.
	Metric Tons.	Metric Tons.
By Stettin .. ..	33,300	20,800
By Hamburg .. ..	2,400	22,600

*Import of Sugar and Molasses to Breslau*

—	1891.	1897.
	Metric Tons.	Metric Tons.
By Stettin .. ..	44,600	23,400
By Hamburg .. ..	24,700	58,700

Indeed, all the traffic from Silesia westward, and from Lorraine and Westphalia eastward, tends towards this route. It is, therefore, not surprising that the Stettin authorities, alarmed at the competition of Hamburg, proposed in 1901, by enlarging their Canal, to enable ships of 600 tons to reach Berlin from the Baltic *via* Stettin. This might, of course, divert some of the North Sea traffic from the Hamburg—Berlin route into the Kiel Canal—Stettin—Berlin route; but other canals similarly intended to combat the competition of Hamburg can only divert traffic from Kiel. The Elbe—Trave Canal, for instance, completed in 1900, connects Lübeck with the Elbe, and so with Hamburg, to the detriment of the Kiel Canal. So also the projected *Mittelland* Canal, joining the Elbe, Weser, Ems, and Rhine, will certainly divert coastwise, and possibly Kiel Canal, traffic to internal waterways.

There is, however, one projected canal which could only benefit the Kiel Canal, viz., the much-discussed canal from Riga to Kherson by the Dvina and Dnieper rivers. This canal would divert some of the Ukraine grain traffic from the Black Sea to the Baltic; and, if that portion intended for Great Britain were so diverted, it would use the Kiel Canal, especially in the winter months, when the passage round the Skaw is difficult. In addition to the wheat export, there would be a traffic from Eastern Russia to the Baltic in eggs, oilseeds, wool, coal, ores, salt, sugar, and petroleum, and from the North Sea and the Baltic to East Russia in chemicals, fertilisers, cement, machinery, and iron and steel goods.

(2) *Passenger Traffic*.—It might be expected that, with the development of prosperity in Russia, there would be a large growth of passenger traffic, for which the saving of time would be important, and which consequently would use the Canal. There is, however, every prospect that a shorter route from Hull to Petrograd will be adopted *via* Gothenburg, Stockholm, and Åbo. This journey, it is estimated, can be accomplished in two and a half days; and, as the present route *via* the Kiel Canal takes four and a half days, there would be a net saving of two days.

(3) *Perishable Goods Traffic*.—The same route would compete for perishable goods. There is a proposal to create a great free port at Åbo on the lines of Hamburg and Copenhagen. The scheme involves the construction of railway ferries of 10,000 tons dead-weight, which would carry loaded trucks from Åbo to Stockholm. Goods could thus be transported between Scandinavia, North-West Europe, and Great Britain without undue interruption. It is even suggested that ferries might be run between Gothenburg and Hull, so that it would be possible to ship goods between the eastern states of America and Moscow, only breaking bulk once, at Liverpool.

(4) *Trans-shipping Facilities*.—As headquarters of the German Navy, Kiel is not a very suitable spot for a commercial harbour. Since the construction of the Kiel Canal, a free trans-shipment harbour with very light harbour dues has been constructed at Copenhagen; and it is stated that the Kiel Canal has been injured by this competition. It is now proposed to convert Eckernförde into a trans-shipping port and to connect it by canal with the Kiel Canal. This, it is believed, would induce liners conveying freight for the Baltic to proceed by the Kiel Canal through this new route to Eckernförde instead of direct to Copenhagen. It is, however, doubtful if this would in any way diminish the competition of Hamburg.

*(d)* GENERAL SUMMARY

The amount of mercantile tonnage passing through the Kiel Canal has not justified the expectations that were formed at its opening. Unlike the Suez Canal, it is not used by large liners, although its dimensions would now accommodate the largest vessels; and, as its use does not save much time, it cannot, like the Suez Canal, charge high tolls. Its revenue has not yet been sufficient to pay adequate dividends and establish a sinking fund. It is, however, of great value to the small vessels which chiefly use it, since the bad weather round the Skaw sometimes causes great delay and damages cargo. Some of the coasting trade may, in the future, be diverted from it by the system of east to west canals, now projected in Germany; but, on the other hand, the diversion of Russian export and import traffic from the Black Sea to the Baltic by projected canals, the growth of Russian trade, and the establishment of free ports in Russia may exercise a favourable influence on the Kiel Canal by considerably increasing the traffic between the Baltic and the North Sea.

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## HELIGOLAND

### I. GEOGRAPHY PHYSICAL AND POLITICAL

#### (1) POSITION

THE island of Heligoland (*i.e.*, Holy Land) is situated off the mouths of the Elbe and Weser, being 36 and 50 miles from Cuxhaven and Bremerhaven respectively, where those rivers enter the sea, and about a hundred miles from both Hamburg and Bremen.

#### (2) SURFACE AND COAST

The island consists of a triangular mass of rock known as the Upland or Cliff, rising almost perpendicularly to a height of about 200 feet, and a slowly diminishing foreland of sandy beach at the south-east end, known as the Lowland. Communication between the two levels is effected by means of a wide and convenient wooden stairway with nearly 200 steps and an electric hoist. The maximum length of the Upland is about a mile and a furlong, and its greatest width about a third of a mile. East of the island, less than a mile away, lies Dune Island, which is hardly more than a sandbank, about a mile and a quarter long and a fifth of a mile wide. Formerly it was a part of Heligoland; but in 1720 the sea broke through the connecting neck of land. Dune Island contains a large bathing establishment, which is Heligoland's special attraction in summer to visitors from the mainland. There are two harbours, between the island and the Dune; only small vessels, however, are able to land

their passengers at the quay, though the largest vessels find good anchorage off the Dune.

### (3) ETHNOLOGY AND LANGUAGE

The great majority of the inhabitants are Frisians, who speak the Frisian dialect, while High German is the language of official intercourse, as well as of church and school.

### (4) POPULATION

Since the transfer of the island to Germany the population has largely increased, whereas between 1860 and 1890 there had been a slight decline. The number of inhabitants enumerated in the German census of the latter year (December 1) was 2,086, viz., 953 males (45·7 per cent.) and 1,133 (54·3 per cent.) females, of whom 1,479 lived on the Upland and 607 on the Lowland. The number in 1900 had increased to 2,307, and the census of 1910 showed a population, exclusive of the military, of 3,027, viz., 1,728 males and 1,299 females. The males, however, included between 600 and 700 imported labourers engaged on harbour works; and the settled population is estimated to have been about 2,400, and the relative numbers of the sexes approximately the same as twenty years before.

In the summer months the population is greatly swelled by visitors from the mainland, who frequent the island for the sake of the sea bathing. The staying visitors (*Kurgäste*) numbered 12,700 in the year of the cession, 22,200 in 1901, 30,000 in 1908, and 35,000 in 1911; but there were in addition many thousands of passing tourists and trippers. The bathing season lasts from June to the end of October. At the time of the cession the number of houses was about 400, of which all but 60 were situated on the Upland. The number is now estimated at over 530, of which 380 are on the high and 150 on the low level.

## II. POLITICAL HISTORY

### CHRONOLOGICAL SUMMARY

- 1714 Heligoland ceded to Denmark.  
1806-7 Berlin and Milan Decrees and British Orders in Council.  
1807 Denmark at war with Great Britain.  
1814 Treaty of Kiel. Heligoland ceded to Great Britain.  
1884-85 Germany sounds Great Britain as to proposed transfer of Heligoland.  
1890 Heligoland transferred to Germany.  
1900 German Civil Law introduced.

#### (1) DANISH RULE

HELIGOLAND is one of the Frisian islands, and, as part of Slesvig, was included in the dominion of the Dukes of Slesvig-Holstein-Gottorp until 1714, when it passed to Denmark. Its occupation by Great Britain nearly a century later was an incident of the Napoleonic Wars.

When, by the Berlin Decree of November 21, 1806, and the Milan Decree of December 17, 1807, Napoleon instituted the "Continental System," British forces occupied various maritime points in Europe whence endeavours were made to break the blockade. Heligoland, whose Danish ruler had been forced into hostilities with England after the Peace of Tilsit (July 7, 1807), was one of those bases. The English took possession of the island in September 1807.

At that time Heligoland became an important depot for English merchandise, which was systematically smuggled into German ports, insomuch that Napoleon annexed the north-west coast of Germany, including the mouths of the rivers Jade, Weser, and Elbe (December 10, 1810), with a view to suppressing the active trade in contraband which was being carried on.

### (2) BRITISH RULE

On the fall of Napoleon, though independently of the general Continental settlement which followed it, Denmark, by the Treaty of Kiel (January 14, 1814), ceded the island to the British Crown; and it remained in British possession for three-quarters of a century. During this period British authority was represented on the island by governors, who for a long time exercised almost unrestricted administrative powers, though later these powers were shared with a council. The Governor's official residence, the separate Heligoland postage stamp, and several batteries of small guns were the principal outward symbols of British possession.

### (3) GERMAN RULE

The island was ceded to the German Empire under the Anglo-German Agreement of July 1, 1890, in consideration of territorial concessions made by that country to Great Britain in East Africa. Some years before Bismarck had twice sounded the British Foreign Office—first in May 1884, and then in January of the following year—on the question of giving up the island. As an inducement he had first held out the prospect of the conversion of the island into a "good harbour of refuge" which was always to be open to British ships, though upon the second invitation the admission was made that the island, if it changed hands, would be strongly fortified. On each occasion Lord Granville had declined to commit himself or to submit the matter to his colleagues, though he has left it on record that it had sometimes occurred to him "whether it [*viz.*, Heligoland] would not be a price worth paying if it would secure a perfectly satisfactory end to the Egyptian financial mess."<sup>1</sup>

The cession of the island was made by the succeeding Government, that of Lord Salisbury. In notifying to the British Ambassador in Berlin (June 14, 1890) the

<sup>1</sup> See Fitzmaurice, *Life of the Second Earl Granville*, vol. II, pp. 351, 362, and 425. See also above, p. 4.

decision of the Government, Lord Salisbury (who was then at the Foreign Office) wrote:—

“ It [Heligoland] was probably retained by this country in 1814 because of its proximity to Hanover, the Crown of which was then united to that of England. It has, however, never been treated by the British Government as having any military or defensive value, nor has any attempt or proposal been made to arm it as a fortress. Her Majesty's Government are of the opinion that it would constitute a heavy addition to the responsibilities of the Empire in time of war, without contributing to its security. There is no reason, therefore, for refusing to make it part of a territorial settlement, if the motives for doing so are adequate.”

It is interesting to recall the fact that Count von Caprivi, who was Imperial Chancellor at the time of the cession, had been at the head of the Admiralty at the time of Bismarck's overtures in 1884 and 1885; a fact which suggests that the transfer was from the first regarded as a condition antecedent to a policy of naval expansion.

By the agreement of cession the German Government allowed to all natives of the island the right of opting for British nationality by means of a declaration to be made by themselves, or in the case of children under age by their parents or guardians, within a period expiring on December 31, 1892. All natives of the ceded territory and their children born before the date of the agreement were to be free from the obligation of service in the military and naval forces of Germany. Existing native laws and customs were, “as far as possible,” to continue undisturbed; the customs-tariff then in force was not to be increased until January 1, 1910; all rights to property acquired by private persons and corporations in the island in connection with the British Government were to be maintained (such rights to include the right of signalling enjoyed by Lloyd's); the resulting obligations were to be transferred to the German Emperor; and the rights of British fishermen to anchor in all weathers, to take in provisions and water, to make repairs, to trans-ship goods, to sell fish, to land, and to dry nets, were to remain undisturbed.

### III. SOCIAL AND POLITICAL CONDITIONS

#### (1) ADMINISTRATION

THE island was for a short time regarded as Imperial territory (*Reichsland*) like Alsace and Lorraine; but before the end of 1890 it was transferred to Prussia, and attached for administrative purposes to the province of Schleswig-Holstein. It was not until 1900 that the German Civil Law was introduced in its entirety. One immediate result of that measure was an important modification of the island's immemorial marriage law, as a result of which Heligoland ceased to be a German *Gretna Green*.

#### (2) GENERAL OBSERVATIONS

German writers admit that during the English occupation of the island the administration was clement, and that much was done for the welfare of the inhabitants. Among the later memorials of the occupation are the new lighthouse, rising to a height of 266 feet above sea level (now supplied with a flashlight of 30,000,000 candle power), the schoolhouse, the "conversation-house" (a sort of *kursaal*) for the use of visitors, the theatre, a new stairway from the Lowland, and the fog-signalling and lifeboat stations. Since the German occupation many changes have been introduced. In particular, the island has been strongly fortified. The old English batteries have been superseded by strong armoured towers and mortar batteries,

with subterranean casemates, the lower and upper defences being connected by a tunnel. In addition, a biological station, a wireless station, a North Sea museum, an aquarium, and an aviary have been established; the hotels have been both multiplied and enlarged, the public bathing establishment has been extended, and, except for its elaborate defence works, Heligoland has more and more assumed the aspect of the conventional German seaside resort.

## IV. ECONOMIC CONDITIONS

### OCCUPATIONS AND INDUSTRIES

Most of the adult male inhabitants make a frugal livelihood as pilots, mariners, fishermen (the oyster and crab fisheries are still important), general labourers, and in summer as attendants on the Dune. The summer visitors are the mainstay of the island, for not only do they support many hotels and pay liberally for all the available house accommodation, but they provide the bathing establishment on the Dune with a large revenue.

There is a meagre pasturage on the island for a few cows and sheep; a little barley is cultivated, and potatoes are grown by the islanders in large quantities on their plots for home consumption. For supplies in general the inhabitants rely upon the towns of Hamburg, Bremen, Cuxhaven, and Geestemünde, with which there is regular steamship communication. There are no horses or any means of conveyance on the island beyond barrows and hand-carts. For water supply the inhabitants rely in the main upon rain-water, though there are also some wells.

## APPENDIX

ARTICLE XII of the Anglo-German Agreement relative to Africa and Heligoland is printed as follows in Foreign Office Paper C. 6046, July 1890, and the Parliamentary Act of Assent:—

1. Subject to the assent of the British Parliament, the sovereignty over the Island of Heligoland, together with its dependencies, is ceded by Her Britannic Majesty to His Majesty the Emperor of Germany.<sup>1</sup>

2. The German Government will allow to all persons natives of the territory thus ceded the right of opting for British nationality by means of a declaration to be made by themselves, and [or] in the case of children under age by their parents or guardians, which must be sent in before the 1st January, 1892.

3. All persons natives of the territory thus ceded and their children born before the date of the signature of the present Agreement are free from the obligation of service in the military and naval forces of Germany.

4. Native laws and customs now existing will, as far as possible, remain undisturbed.

5. The German Government binds itself not to increase the customs tariff at present in force in the territory thus ceded until the 1st January, 1910.

6. All property rights which private persons or existing corporations have acquired in Heligoland in connection with the British Government are maintained; obligations resulting from them are transferred to His Majesty the Emperor of Germany.<sup>2</sup> It is understood that the above term "property rights" includes the right of signalling now enjoyed by Lloyd's.

7. The rights of British fishermen with regard to anchorage in all weathers, to taking in provisions and water, to making repairs, to trans-shipment of goods, to the sale of fish, and to the landing and drying of nets, remain undisturbed.<sup>3</sup>

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<sup>1</sup> The German text correctly says "the German Emperor."

<sup>2</sup> The translation of the German should run as follows: "All property rights which private persons or existing corporations have acquired in Heligoland as against the British Government remain in full force; the obligations resulting therefrom are transferred to the German Emperor."

<sup>3</sup> The translation of the German should run as follows: "The rights of British fishermen to anchor in all weathers, take in provisions and water, make repairs, trans-ship goods, sell fish, land and dry nets, remain unaffected."

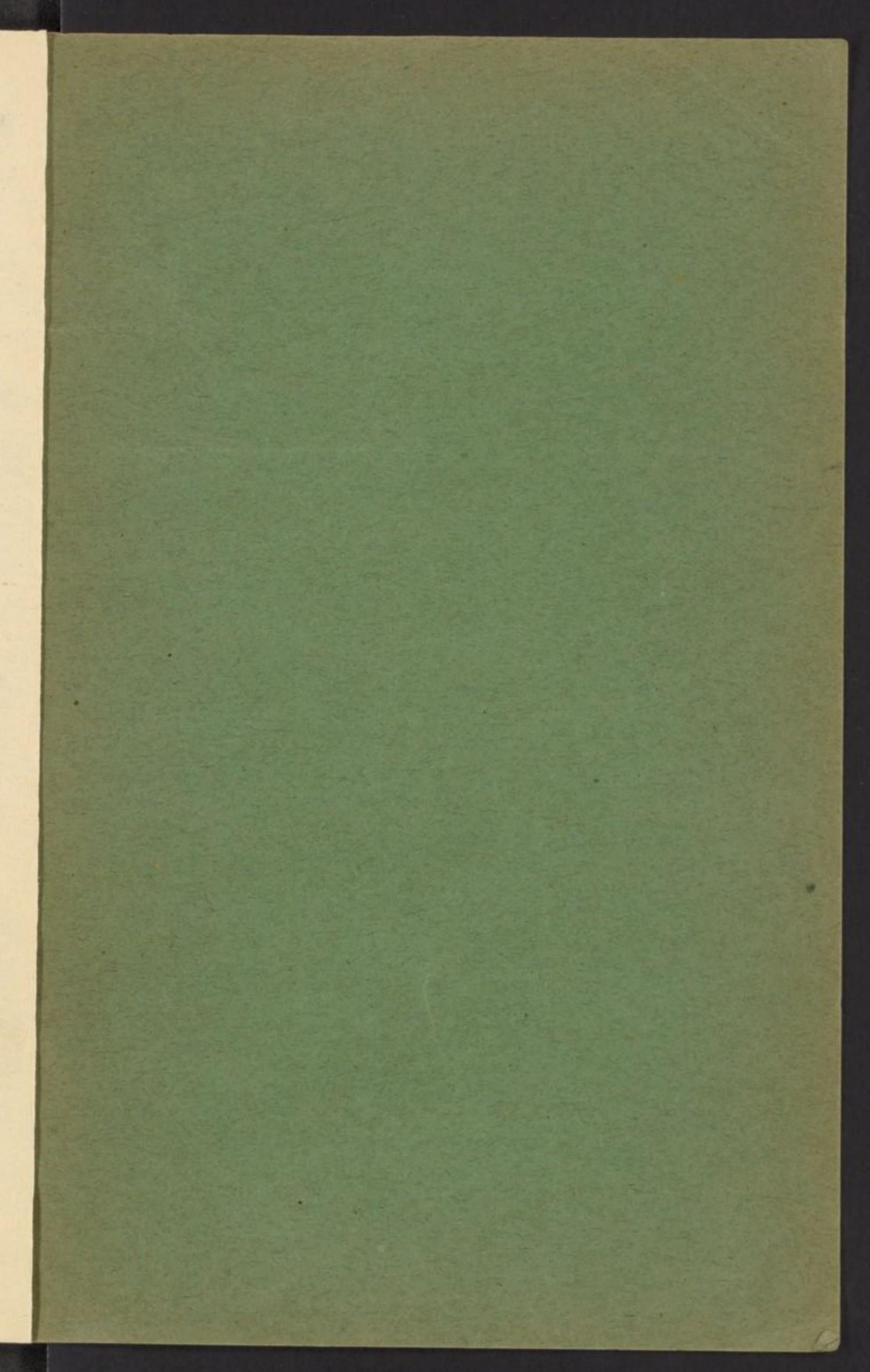
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## MAPS

The Kiel Canal and Heligoland are covered by a sheet (Hamburg; N. 32) of the War Office Map (G.S.G.S. No. 2758) on the scale of 1:1,000,000.

A special map (G.S.G.S. No. 2900) has been issued by the War Office (December 1918) showing the Kiel Canal, Heligoland, and the Schleswig-Holstein coast.



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