

*HANDBOOKS PREPARED UNDER THE DIRECTION OF THE
HISTORICAL SECTION OF THE FOREIGN OFFICE.—No. 36*

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SPITSBERGEN

LONDON:
PUBLISHED BY H. M. STATIONERY OFFICE.

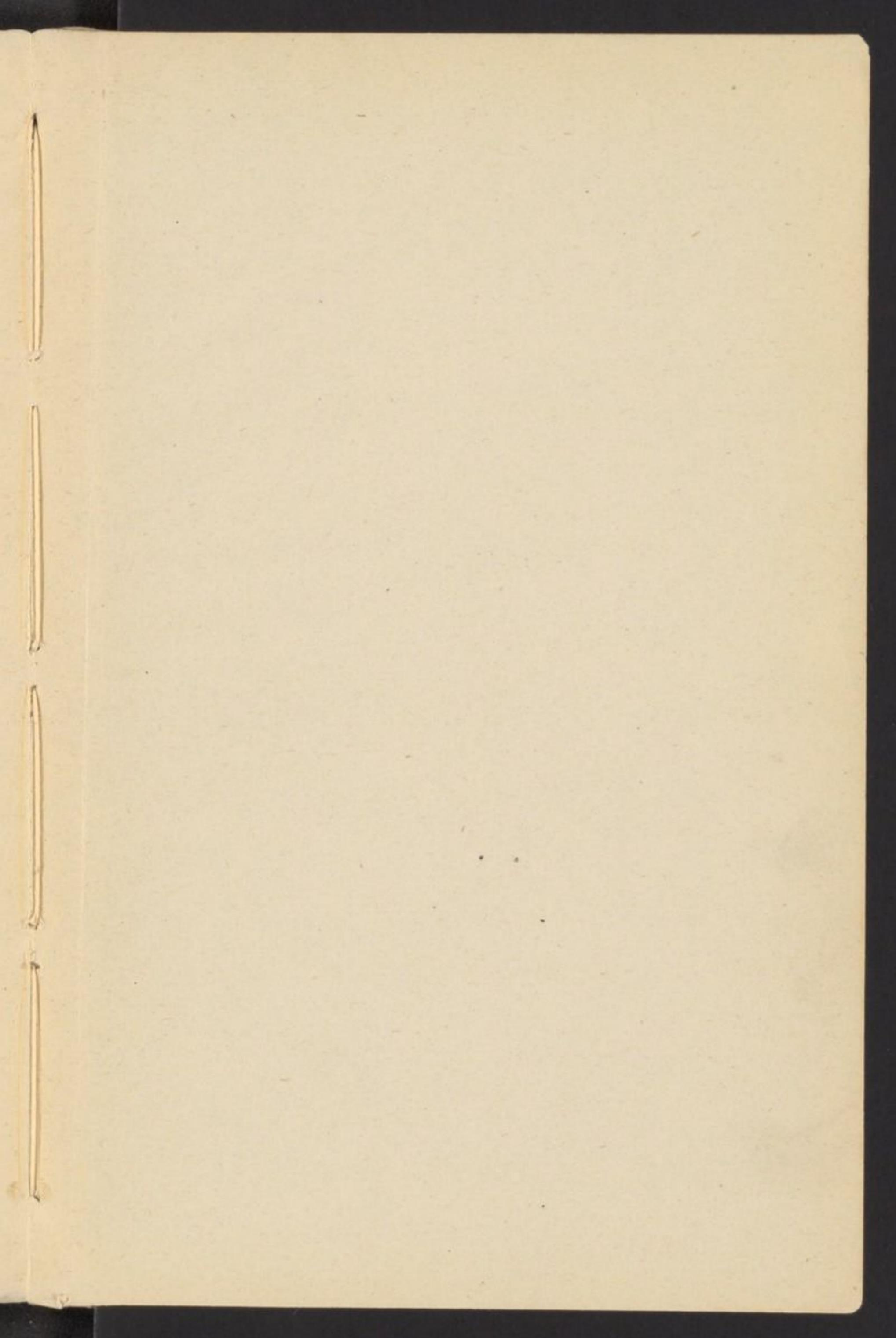


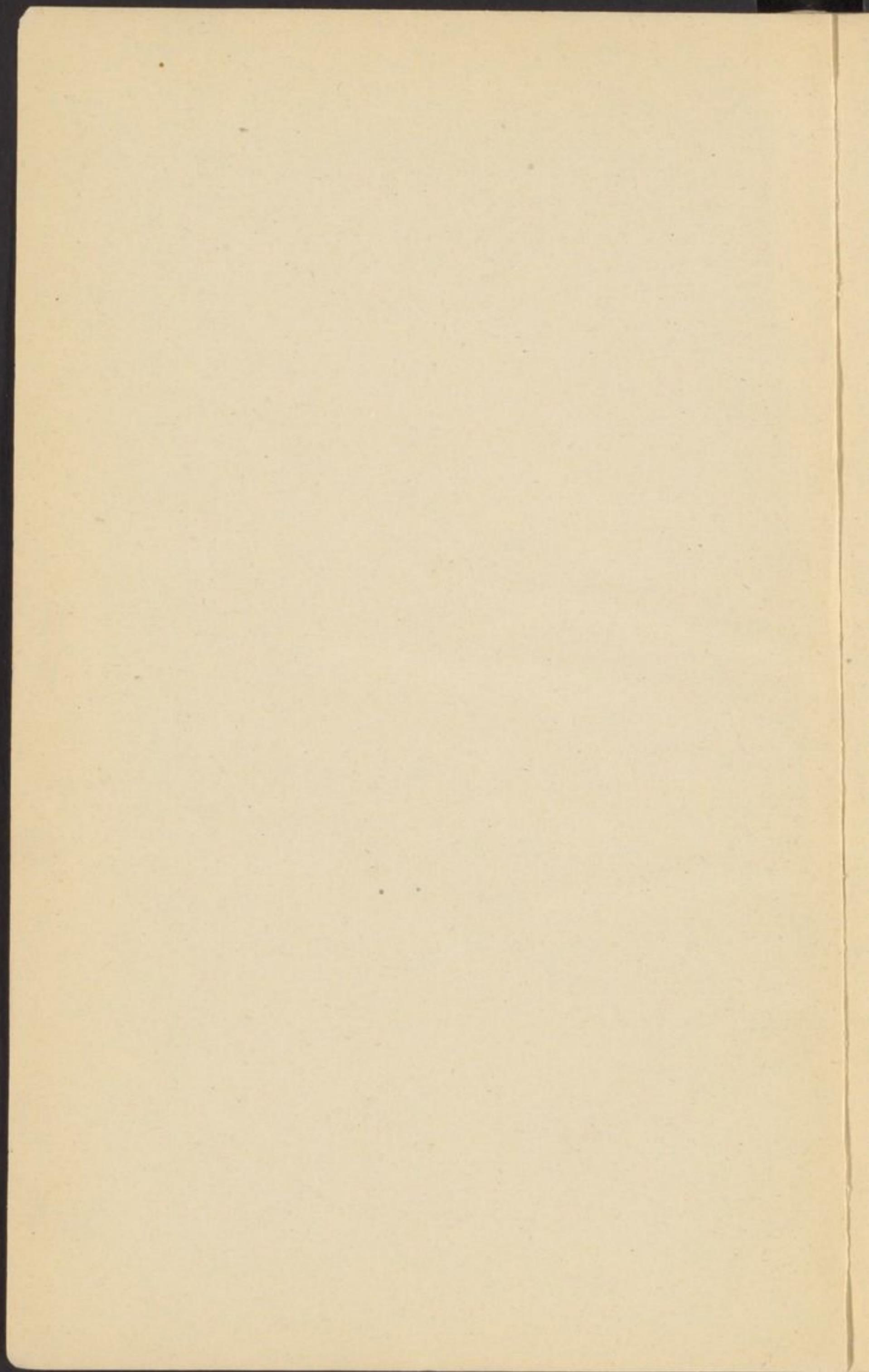
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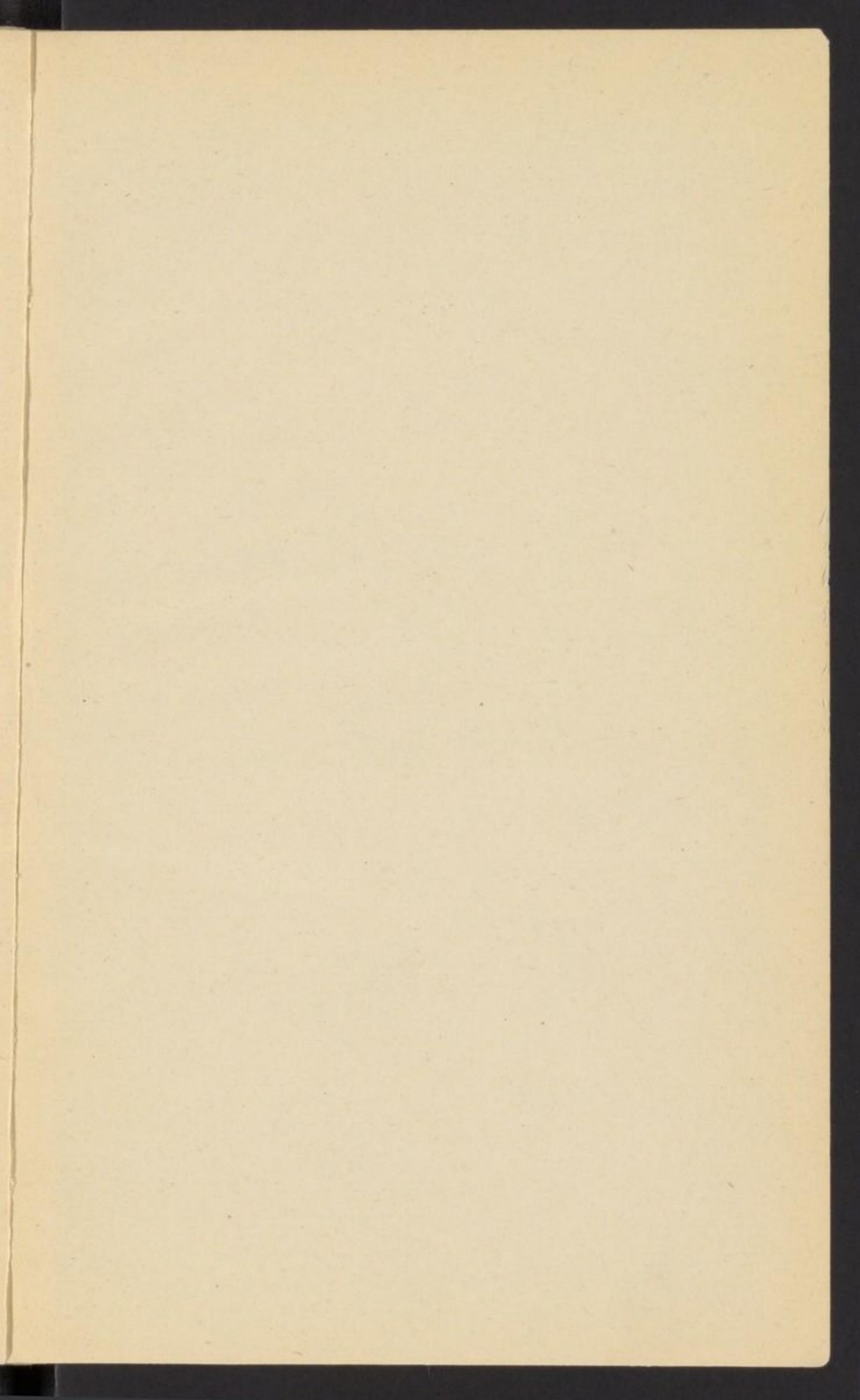


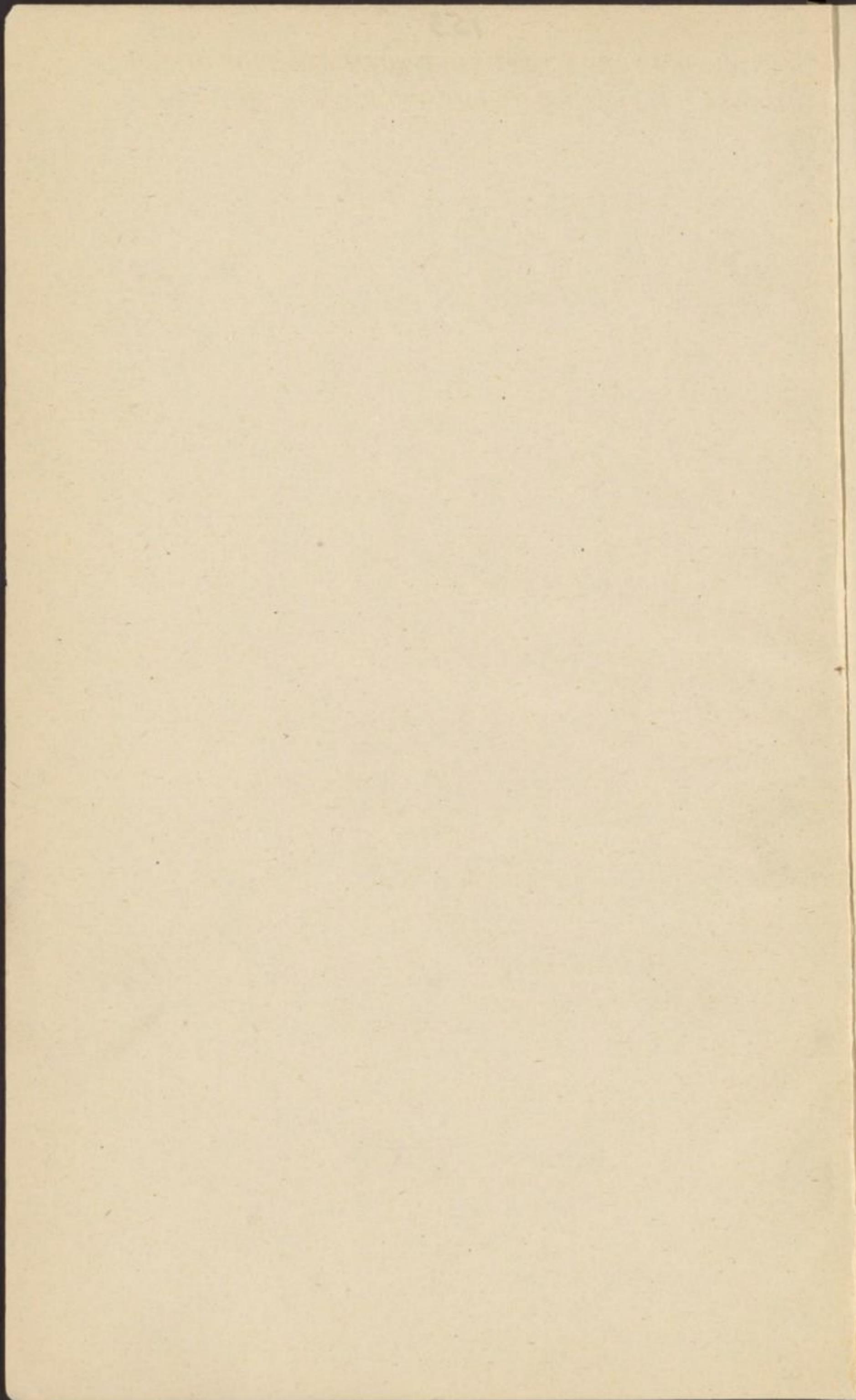
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EDITORIAL NOTE

IN the spring of 1917 the Foreign Office, in connexion 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 inquiries 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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I. GEOGRAPHY PHYSICAL AND POLITICAL

(1) POSITION AND AREA

SPITSBERGEN is an archipelago of two large and many small islands lying about 400 miles north of Norway between latitudes $76^{\circ} 25'$ north and $80^{\circ} 50'$ north, and longitudes $10^{\circ} 30'$ east and $37^{\circ} 20'$ east. The chief islands of the group are the Mainland, often called West Spitsbergen, hereafter called Spitsbergen or Central Spitsbergen; North-east Land; Barents Island; Edge Island; and Prince Charles Foreland. Outlying islands are Bear Island, 127 miles south-south-east of the Mainland; the Wiche Islands, 40 miles south-east of North-east Land; and Hope Island, about 55 miles south-east of Edge Island. Spitsbergen lies on the continental shelf of northern Europe and therefore, in its physical relationships, is part of that continent.

The total land area of the archipelago is about 25,000 square miles, or a little less than the area of Scotland. Bear Island contains 70 square miles.

(2) SURFACE, COASTS, AND RIVERS

Surface.—The greater part of Spitsbergen is a plateau averaging about 3,000 ft. in height, cut by deep, wide valleys and long branching fjords into ridges and mountain peaks. The mountains of the west display sharp peaks and have given Spitsbergen its name. Those in the interior and east are steep-sided but as a rule flat-topped, built of more or less horizontal strata

of newer rocks. It is in these rocks that the valuable mineral deposits of Spitsbergen occur. Peaks over 4,000 ft. are rare. There are no active volcanoes in Spitsbergen or Bear Island, but hot springs exist in Bock Bay, off Wood Bay (Central Spitsbergen).

Except for some raised beaches here and there along the coast and several wide valleys free from ice (p. 3) there are few extensive plains. The largest in the west is the plain in the south of Prince Charles Foreland known as the Foreland Laichs. It stretches from west to east of the island and averages 30 to 80 ft. above sea-level, covering an area of 30 to 40 square miles. This plain continues as a narrow strip all along the west of the Foreland. In the north-east it expands to another plain of about 20 square miles extending from Vogel Hook to Richard Lagoon. At the entrance to King's Bay, Diesset Plain stretches north along the coast for about 5 miles. It is two miles wide and very swampy. Diesset Plain is linked by a low open valley to the low ground at Port Signe in Cross Bay. These plains and the connecting valley were considered by Count Zeppelin, after personal inspection, to form an admirable site for an airship base (*see* p. 28).

An ice-cap masking the surface features covers all North-east Land except the low western and northern shores, Gillies Land, and Victoria Island. On the Mainland there is probably no true inland ice, but glaciers and *névés* are common. Many of the glaciers reach sea-level, but none of them, except in North-east Land, gives origin to large icebergs. Glaciers are most frequent in the north-west, in the north-east, and in the region south of Bell Sound; in the centre, north and south of Ice Fjord, there are small glaciers or none. The smaller islands of the archipelago, excluding those already mentioned, have a few glaciers; but Bear Island and Hope Island are free from ice. Most

Spitsbergen glaciers are practically impossible to cross in summer. The upper reaches of the glaciers and the *névés* are often smooth and uncrevassed.

The ice-free valleys of Central Spitsbergen are wide and swampy, and each has a fairly large river in summer. The Sassendal leads from Sassen Bay to the east coast, with a branch by the Brent Pass to Adventdal. De Geer Valley also leads from Sassen Bay to Adventdal and Advent Bay. From Adventdal there is an ice-free route southward to Lowe Sound. Thus several of the regions of most economic importance are linked by land routes.

The surface everywhere is rough, except on the hard, firm, raised beaches of fine stones, or on the bare ice of the glaciers. Conditions in most places at low levels vary between jagged upturned strata or stony alluvial fans of spring torrents and sodden bog-land sometimes with a foot or more of peat. At the depth of a few feet the soil is permanently frozen. The absence of humus, the cold water-logged surface, and the shortness of the summer make agriculture impossible.

Water is plentiful everywhere from May to October. The water in glacier rivers is too muddy for use, but springs filtering through stony material occur frequently. In winter all water must be obtained by melting snow or ice.

Coasts.—The coasts of Spitsbergen are often steep and beset with outlying dangers. On very few stretches of the coasts have the waters been charted. On the south-west, east, and north-east the position of the coast-line, as shown on the charts, is only approximately correct. Many long branching fjords intersect the land and afford sea-channels into the heart of the country, thus to a large extent rendering the difficulties of land routes unimportant. Stor Fjord on the east coast, which separates the Mainland from

Barents and Edge Islands, is connected by Heley Sound and Freeman Strait with Olga Strait. The most important fjords, however, are on the west. Ice Fjord is 55 miles long and has many branches. Bell Sound, King's Bay, and Cross Bay are important in relation to the economic development of the country. In the north-west and north are many fjords, but they are now less important than they were in the period of whaling.

There are many safe natural harbours. At present only those on the west and north are well known; and some of them are still inadequately charted. The eastern harbours are little known, and none is surveyed in detail. Among many good harbours on the west coast the following are probably the best: Recherche Bay, Green Harbour, Advent Bay, Bjona Haven, English Bay, Coal Harbour (in King's Bay), Port Möller, South Gat, and Danes Gat. On the north coast are Fairhaven, Vulcan Harbour, and Treurenburg Bay. There is no good harbour in Bear Island or the Wiche Islands.

The difficulty in finding anchorage in many fjords is due to their great depth. In many cases the only anchorage is too near the shore for safety. The bottom generally shelves rapidly, and vessels are liable to drag their anchors. Ice is another consideration. Bergs from the glaciers are usually small, although hard enough to injure a vessel's propellers or crush small boats. This puts some anchorages near crumbling glaciers out of count. Pack-ice may block any harbour at any time of the year, but this is an unusual occurrence on the west coast during summer. Harbours from Ice Fjord northward are the least likely to be blocked in summer. King's Bay is probably accessible summer and winter.

No artificial harbours have been constructed, but a few loading-jetties have been built by mining companies. Wooden jetties without stone underwork are liable to be carried away by ice. A Norwegian firm

proposes to build an artificial harbour on the north of Bear Island near the coal deposits, but it is doubtful if the project is practicable.

Many good but small harbours could be improved by the fixing of mooring buoys. In one or two cases, notably at Bjona Haven, a rock should be removed.

Most of the good harbours on the west and several of the best on the east are on British estates.

Rivers.—These are numerous but usually short. The only long rivers are in the ice-free valleys of Central Spitsbergen—Sassendal, Adventdal, de Geer Valley, &c. Sassen River alone might be navigable by boats or steam launches. But all these rivers are turbid with glacial mud and studded with mud banks on their lower courses. Their mouths are shoal and unapproachable. They are seldom deep, but are difficult and even dangerous to ford on account of their rapid flow, the deep and glutinous mud in their beds, and the swamps which fringe their banks. All rivers are frozen in the winter. They are at their greatest volume in June, and lowest in September when frost on the higher ground stops some of the source streams.

There are a few waterfalls from hanging glaciers in summer, but they are not, as a rule, in accessible places, and their flow is too irregular to be of any value as a source of power.

(3) CLIMATE

The climate is less rigorous than the high latitude of Spitsbergen would suggest, and compares favourably with islands in lower latitudes to east and west. Summer lasts from June to September. In June the winter snow is still on the ground; and in September the temperature falls rapidly and snow is common. July and August are the only months with temperatures well above freezing-point. In these two months the sun temperatures are

often high, and days oppressively warm for physical exertion are not unusual. Winter lasts from October to May. February and March are the coldest months.

In winter the prevailing winds are south and south-east; in summer they are south and south-east or north and north-west. At all seasons the winds are light, and gales are rare except on the west coast. Calms are especially frequent in winter, and lessen the inconvenience of the low temperatures.

Precipitation is low, varying from 7 to 12 inches a year. On the west coast it is probably more. Most falls as snow, except in July and August, when rain is usual but not invariable. The whole country is snow-covered from September to June. During July and August there is little snow below 400 or 500 ft.

Overcast weather is common on the west coast, where the clouds descend to 200 or 300 ft. In the interior clear weather is usual. During open summers thick mists are frequent on the west coast, but not elsewhere. Thunderstorms are rare.

Continuous daylight lasts from May till the end of August, and continuous darkness from November to the end of February.

The climate of Bear Island is much the same as that of Spitsbergen, but winter temperatures are higher, rain is more frequent, and there is a great deal of fog in summer.

Mean Monthly Temperatures at Green Harbour,
Lat. 78° 2' N., Long. 14° 14' E.

	° F.	° C.		° F.	° C.
Jan.	- 0.6	-18.1	July	39.9	4.4
Feb.	- 4.5	-20.3	Aug.	40.1	4.5
March	- 4.0	-20.0	Sept.	32.0	0.0
April	10.4	-12.0	Oct.	21.2	- 6.0
May	20.7	- 6.3	Nov.	6.8	-14.0
June	34.5	1.4	Dec.	- 0.2	-17.9

Ice.—Ice conditions in Spitsbergen seas are controlled by two factors—the warm Atlantic drift washing the west shores, and the prevailing winds. Under normal conditions the west coast is free from pack-ice and accessible at most seasons of the year; but persistent north-east winds, especially in summer, are liable to bring pack from the Arctic Ocean down the east coast of Spitsbergen, round South Cape to the west coast, besides driving the ice against the north coast. All the pack-ice round the archipelago comes from this source and never from the Greenland coast. The south-west coast is very liable to be blocked in May and June; and even Ice Fjord may, in bad ice years, be inaccessible in early summer. In July and August the whole west coast is usually clear; and from September onwards throughout the winter pack-ice is unusual in the west. The north coast is seldom navigable without risk except from July to September; and, even then, a vessel can seldom round North-east Land. The east coast is generally blocked throughout the year; August is probably the best month for navigation. Stor Fjord is most likely to be open in August and September. It often happens in bad ice years, when the west coast is obstructed by ice in summer, that Stor Fjord is comparatively open.

Bear Island is generally free from pack from July to October, and often throughout the winter.

The west-coast fjords and bays are generally frozen from December to May or June; but, unless pack has frozen together, the ice is seldom very thick and could not resist a modern ice-breaker. Probably, with the help of ice-breakers, navigation could be maintained throughout most of the year with Ice Fjord and harbours to the north, possibly also with Bell Sound, but lighthouses would have to be erected for use in winter. From May to the end of August the continuous daylight is a great help to navigation.

(4) SANITARY CONDITIONS

The climate in both summer and winter is extraordinarily bracing and stimulating. To a person in good health frost-bite is the only inconvenience due to extreme cold. Snow-blindness can easily be avoided. Russian and Norwegian hunters have frequently died of scurvy in winter; but scurvy is easily preventible by a diet of fresh food, plenty of open-air exercise, and personal cleanliness. There are no other illnesses in Spitsbergen. Even ordinary colds do not occur. The stillness and monotony of the polar night are apt to cause depression in some people; and, in consequence, a continuous residence of more than one or, at the outside, two years is not advisable. The Arctic Coal Company had a doctor on their staff at Longyear Valley Camp, but his position was a sinecure except in the case of accidents.

(5) POPULATION AND SETTLEMENTS

There has never been any native population in Spitsbergen or Bear Island, but the early Dutch and English whalers had summer stations for boiling down blubber and occasionally wintered a few men. From 1730 to about 1830 the Russians may almost be said to have colonized Spitsbergen, so widespread were their winter huts, though the number of hunters was not large. There are still a few Norwegian huts.

At present the only settlements are the mining camps. There are large camps, each of several substantial log-houses, at Longyear Valley in Advent Bay (formerly American, now Norwegian), at King's Bay (British), at Advent City (formerly British, now Norwegian) and Hjorthavn (Norwegian) in Advent Bay. All these have tramway tracks to the shore. Smaller settlements are at Coles Bay, Green Harbour, Mimers

Bay, and Braganza Bay. In addition there are many scattered huts on various mining estates, chiefly British. The Swedish Government claims three houses originally erected for Swedish scientific expeditions at Cape Thordsen, Treurenburg Bay, and Mossel Bay. There are abandoned Russian and German stations at Horn Sound and Ebeltoft Haven respectively.

Proposals have been made in Norway to build a church in Spitsbergen.

The total summer population of Spitsbergen is perhaps 1,000, and the winter population 200 to 300.

A Norwegian summer tourist hotel of modest dimensions was open at Advent Point in 1896 and 1897; and one has since been projected in Bjona Haven by a British company.

II. ECONOMIC CONDITIONS

(A) MEANS OF COMMUNICATION

(1) INTERNAL

THE fjords are excellent waterways, and to a large extent obviate the necessity for overland travel, which is always difficult.

The ice-free valleys of Central Spitsbergen afford the only practicable routes through the interior. Other inland routes entail climbing over *névés* and glaciers. In many places there is no route along the coast even at low tide, and it is seldom possible to follow the shore past a glacier face.

Winter is the best time for travelling, for the snow affords a good surface for ski and sledges, but the cold and darkness are inconveniences. Early spring is the worst season, for all the low-lying snow is then melting and the ground is sodden. Raised beaches and river terraces of fine shingle afford the best going where available.

Overland transport is difficult. A low cart with two low, broad and very strong wheels is probably the least unsatisfactory method. If at all possible, human transport works best.

(2) EXTERNAL

(a) *Sea Routes*

There are no regular sailings to and from Spitsbergen except the motor-sloop carrying the Norwegian mails in summer (see p. 12). Passage can generally be had on one of the vessels of the mining companies, most of which call at Tromsö.

For many years tourist steamers have visited Spitsbergen every summer, calling at the chief bays on the west coast unless prevented by ice. The Orient Co. and the P. & O. Co. used to take part in this traffic, but of late years it has been confined to Norwegian and German, with occasional Austrian and French, boats. The German boats were generally large vessels of the *Norddeutscher-Lloyd* or *Hamburg-Amerika* lines, and sailed from Hamburg *via* Leith, the Faroes, Iceland, and Norwegian ports. The Norwegian boats, which always sail two together for the sake of safety, were vessels belonging to the *Nordenfeldske*, *Bergenske*, or *Vesteraalen* companies. They used to start from Hamburg and call at Newcastle, but latterly have sailed only from Bergen and other Norwegian ports.

(b) *Posts and Telegraphs*

In 1911 the Norwegian Government erected a wireless station (Telefunken system) at Green Harbour, for which the Storting voted £14,000. It has masts 200 ft. (60 metres) high, and a range of 480 nautical miles. The station usually communicates with one at Ingö in the north of Norway, but can receive messages from Christiania, Paris, and Berlin in winter. A staff of six men is maintained all the year round, but there is little business except the daily dispatch of meteorological data. The receipts for telegrams from July 1912 to June 1913 were said to be £1,000.

A wireless station communicating only with Green Harbour was erected in 1913 in Advent Bay by the Arctic Coal Co. It is now Norwegian property. In 1916 the Swedes erected in Braganza Bay a short-range wireless station, communicating only with Green Harbour and Advent Bay. There is another installation at King's Bay, not now working.

In 1912 a German wireless station and meteoro-

logical observatory were erected at Ebeltoft Haven, Cross Bay, which was Count Zeppelin's base in 1910. This station, which was said to communicate only with Green Harbour, was working summer and winter till September 1914, when the staff is said to have dismantled the station and returned to Norway. There is no cable to Spitsbergen.

Since 1912 a motor-sloop subsidized by the Norwegian Government has carried mails between Tromsö and the wireless station in Green Harbour, which is a Norwegian post office. It makes six double journeys during the period from June to September. Norwegian postal rates are in use. In 1912 about 3,700 postal packets passed through the Green Harbour post office, the majority sent by tourists. There is no delivery or collection of letters beyond Green Harbour, and the large mining camps keep up their own postal service by means of their steamers to and from Norway.

(B) INDUSTRY

(1) PLANTS AND ANIMALS

Plants.—Vegetation is scanty and unevenly distributed. In places there are patches of luxuriant growth, an acre or more in area, bright with flowers in summer. Such places occur in sheltered nooks open to the south and fertilized by streams from bird-rookeries. They often afford ample grazing for a few ponies. Several of the ice-free valleys of the interior are specially rich in vegetation, which generally takes the form of creeping willows, moss, and saxifrages. There are no trees in Spitsbergen. The only woody plant besides the creeping willow is the dwarf birch, which is rare and only a few inches in height.

There are few plants of economic value, and agriculture is impossible. The crowberry and the mountain

raspberry seldom bear ripe fruit. Scurvy-grass and mountain-sorrel are fairly abundant and are useful as antiscorbutics. In places a poor form of peat occurs, which can be used as fuel with difficulty.

Driftwood, carried by the polar current from Siberia, is very plentiful on some coasts, and affords fuel, building material, and even spars.

Animals.—The land animals are the reindeer, polar bear, and two kinds of fox. The reindeer frequents ice-free valleys, but is now rare in the west and on Ice Fjord owing to excessive hunting. The blue and brown fox, the latter white in winter, used to be very abundant on all coasts, but they are now almost exterminated in the west. The polar bear is a winter visitor, coming from the north with the pack-ice; but, owing to over-hunting, he is seldom seen in the summer except in the east during bad ice years. All these animals are hunted for their winter furs.

Sea mammals are whales, seals, and walrus, but the last has been hunted almost to extinction. The right or Greenland whale used to frequent the western coast bays, but is now rarely found even in the open sea. Finners, bottlenoses, and humpbacks, valuable chiefly for oil, occur west of Spitsbergen, but their chase has now been abandoned (see below, p. 14). The small white whale is sometimes found in the western fjords. Seals are hunted in early summer; there are no fur-bearing species.

Fish do not appear to be abundant. In the past both cod and Greenland sharks were fished for the sake of their oil, but the industry has been abandoned. Salmon occur in a few rivers which are free of mud, and in some of the lakes.

There are enormous numbers of sea birds, most of which come to Spitsbergen to breed. All except gulls are eatable and form valuable food resources. The

only game-bird is the ptarmigan. Eider ducks are valuable for their down and eggs.

At several of the mining camps ponies, horses, pigs, and cattle have been kept successfully, but principally on imported fodder. Poultry are said not to thrive well.

(2) FISHERIES

English whalers of the Muscovy Company of London began the chase of right whales and walrus in the early years of the seventeenth century, and were closely followed by the Dutch. Danish and Biscayan whalers were soon on the scene, but the industry remained chiefly in English and Dutch hands. There was much rivalry over the use of the bays, and frequent fights occurred. Eventually, however, a *modus vivendi* was reached and, except for occasional disputes, maintained until the decline of the bay whaling about the middle of the seventeenth century. The industry then moved to the seas west of Spitsbergen, as the whales forsook the land waters. It was pursued by English, Dutch, and German vessels for many years, but for the last 30 or 40 years of its existence by Scottish vessels only. They ceased about the end of the nineteenth century. The prohibition of whaling in Norwegian waters in 1905 led to a revival of whaling in Spitsbergen seas; and several Norwegian companies, with bases in convenient bays, began to hunt finner and bottlenoses with modern steam-whalers. At first the industry met with success, but in a few years the catch fell off, and in 1912 the two companies still remaining ceased operations.

The number of whales caught in 1905, with 16 whalers at work, was 599, yielding 18,660 barrels of oil; in 1912, with 6 whalers, only 55 were caught, yielding 2,200 barrels of oil.

There has been no fishing in Spitsbergen seas since

the cod and shark fisheries were abandoned 20 to 30 years ago. About 20 years ago a German firm investigated the fisheries, but met with little success, and after erecting a few huts in various places abandoned the work.

(3) HUNTING

The date at which the earliest Russian hunters visited Spitsbergen is uncertain. It may have been before the Dutch discovery, but at any rate Russian hunters wintered there from 1720 onwards till about 1850. Norwegian hunters began to come about 1820 in small numbers and for the summer only. Not till about 1902 did they come in large numbers and winter in the country. The Norwegians frequented principally the west coast and avoided the east because of its inaccessibility. They lived in rude huts and, like the Russians, were often the victims of scurvy. As game became scarcer and the price of furs rose they abandoned the trap and gun in favour of strychnine. This method rapidly exterminated the game without benefiting the hunters, for many poisoned animals crept into holes to die and were never discovered. Hunting has now ceased to be a profitable occupation. It must, however, be admitted that tourists and sportsmen are also to blame for the wholesale slaughter of game, especially reindeer. In 1910 the annual value of Norwegian Arctic hunting, almost entirely from Spitsbergen, was £49,600 ; in 1911 it had dropped to £37,600.

A British company has considered the project of a fox farm, but the scheme is unworkable in the present lawless state of Spitsbergen.

(4) MINERALS

(a) *Natural Resources*

The mineral deposits of Spitsbergen are chiefly in the Secondary and Tertiary formations of the interior

and east. The old rocks of the west coast have few minerals, but valuable outliers of newer rocks occur among them. Bear Island and the west of Spitsbergen have been fairly well prospected. The less accessible east is little known, but the range of geological formations suggests valuable mineral deposits.

(i) *Discovery and Exploitation.*—Coal was discovered in Spitsbergen and Bear Island by Poole in 1610, and small quantities were often used by whalers. It is said that a little was brought to Norway early in the nineteenth century. Swedish and British explorers sometimes reported discoveries of coal, and exploring vessels occasionally made use of it. In 1899 a Norwegian company brought 1,000 tons to Norway, and in the following year made a claim in Green Harbour. From 1903 to 1908 the Spitsbergen Coal and Trading Company of Sheffield was working a mine in Advent Bay. This was the first serious mining enterprise in Spitsbergen, but was abandoned for various reasons, chief among which was the poor quality of the Jurassic coal (see below, p. 19). Advent City was a settlement of several well-built log-houses; it has since been annexed by a Norwegian company. In 1905 an American company (the Arctic Coal Company of Boston) bought undeveloped Norwegian claims in Advent Bay dating from 1899 and started serious operations. Longyear Valley City soon became the capital of Spitsbergen mining, and in a few years was exporting coal and coaling tourist vessels which called at Advent Bay. In 1912 this company sold land in Coles Bay to a Russian company, but refused an offer for Longyear mine. In 1916, however, they sold all their remaining estates to a Norwegian company and retired from Spitsbergen.

British companies had meanwhile been prospecting for coal, gypsum, and marble in various parts of Spits-

bergen; and several claims to land were made. In 1906 the Spitsbergen Mining and Exploration Company made claims in various parts. The company, however, was dissolved in a few years' time, and the claims were abandoned, but not before a good deal of preliminary work had been done. The Scottish Spitsbergen Syndicate made claims in 1909 and prospected its properties in that and subsequent years. Work was begun with marble quarrying in King's Bay in 1910 by the Northern Exploration Company. This company subsequently extended its claims to other parts, prospected widely, and exported marble.

Small Norwegian claims in Green Harbour lay dormant until the Norwegian company above-mentioned (*Store Norske Spitsbergen Kulkompani*) bought them along with the American estates in 1916. In 1912 another Norwegian company (*Nordiske Kulgrube Kompani*) had 'annexed' Advent City.

The Swedes, after a short-lived attempt to mine phosphates in 1872 (see below, p. 21), made no claims till 1910, when several small estates were taken, chiefly in Mimers Bay, in Braganza Bay, and subsequently in Advent Bay. The estate in Advent Bay has now been abandoned by the Swedes and is claimed by a Norwegian company. The construction of a railway from Braganza Bay through British estates to the west coast has been suggested in order to facilitate export. A good deal of preliminary work has been done in both places. In 1917 further claims, which partly overlapped British claims, were made at the head of Klaas Billen Bay. The company is now known as *Spetsbergens Svenska Kolfält Aktiebolaget*.

The Russian Grumant Company has a few small estates, of little value except in Coles Bay. It has done little but experimental work so far. A few men were working near Green Harbour in 1917. Several attempts

to extend the company's claims by annexation or purchase were unsuccessful.

It was stated by the Norwegian Consul to Siberia (*The Times*, March 12, 1918) that, before the Russian Revolution broke out, the Russian Government had agreed to give a subsidy of five million roubles to a Russian company, probably the Russian Grumant Company (see pp. 23, 45), which had been working for several years in Spitsbergen.

German claims to mining estates in Bear Island were made in 1898. The claims were extensive, but were abandoned the next year. This estate is now being worked for what it is worth by a Norwegian company. German offers in 1912 to buy some British claims in Cross Bay, and in 1913 to buy Norwegian claims, were refused. A German attempt in 1913 to discover oil-bearing rocks failed. In 1917 a German claim on Cape Thordsen, where phosphates have been found, was registered at the German Foreign Office.

(ii) *Coal*.—The main coal deposits, so far as present knowledge goes, are in the plateau region of the interior. There is some Carboniferous and Jurassic coal, but the best is of Tertiary age.

Carboniferous coal occurs in Klaas Billen, Temple, and Sassen Bays, and may have a wider extent below sea-level. There are outliers in Bell Sound and near the mouth of Ice Fjord. It is worked by a Swedish company in Mimers Bay off Klaas Billen Bay in a 6-ft. seam, which is one of several at heights between 260 and 560 ft. A British company has prospected a 4-ft. seam in Bell Sound. In recent years Russians have been working a small deposit at the western entrance to Green Harbour. The coal is hard, shaly, and not of great value. An analysis of a Swedish sample gives: Carbon, 75.7; hydrogen, 4.6; oxygen and nitrogen, 9.22; sulphur, 0.45; ash, 10.0 per cent.

The calorific value is 7,500 calories. The probable extent of the Carboniferous coalfield is 240 square miles, and the probable content 6,000,000,000 tons. Coal of either Carboniferous or Devonian age occurs in Bear Island. A Norwegian company is working a 5½-ft. seam, which, however, is of poor quality and is badly placed as regards loading facilities. A few hundred tons were exported in 1917. The estimated total area of the coalfield is 33 square miles, and the content 8,000,000 tons.

A Jurassic coalfield extends over all Spitsbergen south of Ice Fjord, except the coast ranges in the west; but much of it is below sea-level, and in other places it is overlain by more valuable Tertiary coal. The seam is about 4 ft. thick, but often interbedded with seams of sandstone, making much screening necessary. It used to be worked at Advent Bay, about 330 ft. above sea-level, by a British company. The coal is hard and lustrous, but not of high quality. An analysis is as follows: Carbon, 76.0; hydrogen, 6.0; oxygen and nitrogen, 9.0; sulphur, 1.5; ash, 7.5 per cent. The calorific value is 7,375. The probable area of Jurassic coal is 230 square miles, and the total content 750,000,000 tons.

Tertiary coal is the most valuable, and, unlike coal of that age in most parts of the world, is true coal, and not lignite. It has been investigated and mined in Advent Bay (Norwegian, late American), Coles Bay (Russian), Green Harbour (Norwegian), King's Bay and Lowe Sound (British), and Braganza Bay (Swedish). It probably occurs elsewhere, on estates which are mostly British. At the American mine in Advent Bay (Longyear Valley City), recently sold to Norwegian owners, the seam varies from 2½ to 10 ft., averaging 4 ft., and is at 400 ft. above sea-level, lying almost horizontally. The same conditions obtain throughout

the Tertiary coalfield. The coal burns easily with a bright flame, and is a good steam coal, but, in common with other Spitsbergen coals, it will not coke. An analysis gives: Carbon, 81.5; hydrogen, 3.7; oxygen and nitrogen, 11.6; sulphur, 0.7; ash, 2.5 per cent. The calorific value is 7,700. The total area is about 460 square miles, and the total content at least 2,000,000,000 tons, and possibly much more.

All the coal in Spitsbergen lies in level or nearly level beds outcropping on the sides of the fjords, and can be reached by horizontal galleries or adits. There are no shafts. The high situation saves engine-drawing, and makes loading to vessels easy by means of wire ropeways. The low and uniform temperature in the mines prevents flooding, and so saves pumping. It also helps to maintain a secure roof. Pit props last well, and few are required. There is little gas in the mines. Lastly, there are no land-taxes or mining dues. On the other hand all material and stores, including food, must be imported, and quay construction is expensive. Labour in the past has been chiefly recruited in Norway, Sweden, and Finland, but it is unskilled and not altogether satisfactory. At the British and American mines Yorkshire foremen were employed under British or American engineers. Miners have continued work throughout the year at several mines.¹

(iii) *Iron*.—Magnetic iron ore is reported on the estate of a British company in Recherche Bay. An assay gives 64.4 per cent. of iron, 0.02 per cent. of phosphorus, very little sulphur, and scarcely a trace

¹ According to statistics published in 1913, the total coal resources of Spitsbergen were computed at 8,750,000,000 tons, thus placing Spitsbergen practically on a par with Spain (8,768,000,000 tons), and—with the latter—next in importance after Belgium (11,000,000,000 tons) among coal-producing European countries.

of titanium. Loading facilities are excellent. Swedish reports, however, take a less favourable view of these deposits; and this view was confirmed by the Ministry of Munitions in December 1916. No ore has yet (Sept. 1918) been exported. Low-grade ores occur in other parts of the west coast, including St. John's Bay; and it is not improbable that other deposits of high-grade ores will be found.

(iv) *Other Minerals*.—Gypsum in enormous quantities and of exceptional purity occurs on a British estate in Temple Bay and Klaas Billen Bay, in thick horizontal strata, 200–300 yards from good anchorage.

Marble and breccia of a great range of colour and texture have been mined since 1910 by a British company on Blomstrand Peninsula (Marble Island) in King's Bay. It is easily quarried, and export is facilitated by a good harbour.

Phosphatic rocks near Cape Thordsen were mined many years ago by a Swedish company; but the mine was abandoned after the first year, as the deposits proved unprofitable.

Lead, copper, and molybdenum ores and graphite are said to occur on certain British estates, but have not been investigated. Zinc blende, lead ore, and barytes have been found in small quantities on Bear Island. They promise to be of some value.

Oil-bearing rocks are known to occur on one of the British estates. They have not yet been thoroughly investigated.

(b) *Output, &c.*

The output of coal, since it was first sent to Norway in commercial quantities in 1908, has been short of the demand. The Arctic Coal Company of Boston, U.S.A., who until 1916 were practically the sole exporters, sent 40,000 tons a year to northern Norwegian ports. The

coal is preferred to English coal, even if slightly dearer; and the steamship companies serving the north of Norway are willing to place contracts for large amounts. The Narvik Railway is also a customer. About 300,000 tons of coal are annually exported from Britain to ports between Narvik and Vardö. The whole of this market is open to Spitsbergen coal. A further market which will have growing demands is Port Murman (Northern Russia), the port for the new Murman Railway.

Down to the present time the only formality to be followed by a mining company in annexing unclaimed land has been the erection of claim boards and notification to the Foreign Office of the country of the subjects concerned. The system works badly in practice, for there is no impartial authority to adjudicate between rival and overlapping claims and no power to enforce respect of rights and property. Claim-jumping is common, and increases year by year as the most valuable land is taken up. At present there is no speedy and certain mode of redress. During the war work on British claims has necessarily been in abeyance, and it is probable that they have not been respected.

An instance of such trespass occurred in 1916, when attempts were made in Norway to float the Spitsbergen Guano Company to exploit reported guano deposits at Middle Hook in Bell Sound on British estates. The Foreign Office protested, and at the time the Norwegian claim was abandoned, but was revived in 1917 as an asbestos mine. These conditions are not conducive to successful development of the various estates and hamper the acquisition of the necessary capital. In 1914 mining companies of all nationalities were agreed that the lawless state of Spitsbergen should be brought to an end.

The following is a list of the mining companies at

present claiming estates in Spitsbergen. Claims admitted to have been abandoned and those untenable by previous occupation are omitted.¹

British estates :

Northern Exploration Company, 1,680 sq. miles.
Scottish Spitsbergen Syndicate, 1,650 sq. miles.
Spitsbergen Coal and Trading Company,² about
30 sq. miles.

Norwegian estates :

Store Norske Spitsbergen Kulkompani, 450 sq. m.
Nordiske Kulgrube Kompani, 400 sq. miles.
A/S Björnöen Kulkompani in Bear Island, about
20 sq. miles.

Swedish estates :

Spetsbergens Svenska Kolfält Aktiebolaget, 375 sq.
miles.

Russian estates :

Russian Grumant Company,³ area doubtful, per-
haps 70 sq. miles.

Norway's source of coal before the war was Britain ; and the curtailment of that supply has stimulated her energies in Spitsbergen during the last two years. The *Store Norske Spitsbergen Kulkompani* hopes by 1920 to have an annual export of 200,000 tons. In 1917 it had an export of 24,000 tons. *Spetsbergens Svenska Kolfält Aktiebolaget* aims at an annual export of 1,000,000 tons, but this is not likely to be reached.

¹ More recent information is given in the Appendix, pp. 41 *et seq.*

² This Company in May 1917 disposed of their undertaking in Spitsbergen to the Nordiske Kulgrube Kompani of Christiania.

³ In 1918 this company was trying to sell its estates to British or Norwegian companies for a sum of four million Norwegian crowns. They appear now (September 1918) to be let to a Mr. Lewin, who is working them.

The following are the approximate distances in nautical miles to Spitsbergen from various ports:

Tromsö to Bell Sound	. . . . .	490
Bergen to Advent Bay	. . . . .	1,150
London to King's Bay	. . . . .	1,863
Port Murman to Coles Bay	. . . . .	650
Norway to South Cape (land to land)	. . . . .	370

To sum up:

1. The coal-mines are owned by British, Russian, Swedish, and Norwegian Companies, but the last named appear to be the most active.
2. Operations are becoming much more extensive, and the output is likely to be considerably increased in the near future.
3. Norway is at present the chief market, but there should be a considerable demand for Spitsbergen coal in Sweden and Northern Russia; and these three countries could absorb the whole of the possible output.
4. The deposits of iron ore are mostly in the hands of the Northern Exploration Company (British). Development of this company's operations has been hindered by the war, but increased activity is contemplated in the near future.¹
5. The oil-bearing rocks and gypsum are on the estates of the Scottish Spitsbergen Syndicate. This company's operations have been temporarily suspended by the war.
6. The holdings of the two British companies are more than twice as extensive as those of all the other companies combined.

¹ An expedition, under the command of Sir Ernest Shackleton, went to Spitsbergen in the summer of 1918, to prospect and to arrange for the export of iron and coal, on behalf of the Northern Exploration Company.

III. POLITICAL HISTORY

CHRONOLOGICAL SUMMARY

- 1194 Possible discovery by Icelanders.
- 1576 Possible Russian reference to Spitsbergen.
- 1596 Dutch discovery by Barents and Dutch annexation.
- 1612 Denmark claims Spitsbergen as being part of Greenland (the date may be earlier).
- 1614 British annexation.
- 1700 Approximate end of whaling in Spitsbergen bays.
- 1773 Modern exploration begins with British expedition.
- 1852 Russian trapping ceases.
- 1871 Russia objects to Norway and Sweden exercising protection over Spitsbergen.
- 1899 First large cargo of coal brought to Norway.
- 1902 Norwegian hunters begin wintering.
- 1903 First serious mining started (British).
- 1905 American mining started.
- 1907 Powers invited by Norway to submit suggestions as to control on the principle of a *terra nullius*.
- 1909 Norway submits proposals.
- „ British company acquires mining estates.
- 1910 Preliminary conference at Christiania.
- „ Swedish company acquires mining estates.
- „ British company acquires mining estates.
- „ German expedition under Prince Henry of Prussia and Count Zeppelin.
- 1912 Conference at Christiania.
- 1914 Conference at Christiania.
- 1916 All American interests sold to Norwegian company.

(1) DISCOVERY AND EXPLORATION

IN May 1596 the Dutch navigators, Barents and Heemskerke, discovered Bear Island and Spitsbergen. It is probable that Spitsbergen had been discovered before and forgotten, but the early history is vague.

The Icelandic annals written in the fourteenth and fifteenth centuries record casually that in 1194 'Svalbard' was discovered. Svalbard means the cold side or coast. The Icelandic *Landnamabok* or Book of Settlements, written early in the thirteenth century, states that from Langanes, on the north side of Iceland, it is four days' sail to Svalbard 'on the north in Hafsbotn'. The literal meaning of Hafsbotn is the end of the sea. From Langanes to Spitsbergen is about 840 miles in a north-easterly direction, which would entail a speed of about nine knots, not impossible for an early Viking ship in those regions of strong south-westerly winds. The objection that the course is given north instead of north-east is of little weight, since for other courses given in the same paragraph of the *Landnamabok* only the chief points of the compass are given, although the courses are clearly intermediate. It is difficult to identify Svalbard with any land except Spitsbergen.

There is evidence that Russians may have known Spitsbergen before the Dutch, but subsequently to the Icelandic discovery. Early in the sixteenth century, if not before, Russians from the White Sea and Murman coast hunted in polar seas; and it is said that even before 1435 Novgorod emigrants to the White Sea coasts had huts in Spitsbergen.¹ More precise evidence exists of Russian knowledge in 1576 of an Arctic land called Grumant.² Grumant is a

¹ A. F. Shidlovski, in *Записокъ по Гидрографіи*, vol. 34 (1912).

² A. M. Philippov, in *Литературній Вѣстникъ*, vol. 1, part 4 (1901).

name often used in modern Russian for Spitsbergen. Its origin is obscure, but if, as maintained by Scandinavian philologists, it is the equivalent of Grönland, it might be applicable to Spitsbergen, for long after its discovery by the Dutch that country was considered to be part of Greenland. The facts will not agree with Grumant being the Greenland of modern usage. On the other hand there is evidence to show that Grumant was also the name of Novaya Zemlya. The claim that Spitsbergen was discovered in 1553 by Sir Hugh Willoughby and Richard Chancellor has no foundation in fact, and originated in the early days of whaling, merely as an argument against the Dutch claim, when the Muscovy company took possession for King James. It appears, however, that in 1607 Henry Hudson, with an English expedition, landed in King's Bay, and that 'in consequence of this voyage the Merchant Adventurers made Spitsbergen their whaling base for a series of years thereafter' (Conway, *Times*, March 13, 1918). In 1613 the Muscovy Company received a charter from James I, giving them a monopoly of the Spitsbergen fishery. A Dutch whaling company was formed in 1614, and laid hands on the NW. corner of Spitsbergen (ibid.).

During the seventeenth century the exploration of Spitsbergen proceeded mainly through the efforts of English whaling captains, several of whom, such as Poole, Fotherby, Marmaduke, and Edge, laid the foundations of the chart. The Dutch did little exploration. The Russian trappers of the eighteenth and early nineteenth centuries, and their later Norwegian successors, were practically all illiterate men, and left no records of their discoveries.

The era of scientific exploration of Spitsbergen began in 1773 with the British expedition in H.M.S. *Racehorse* and *Carcass*, under the command of the Hon. John

Phipps. It was followed in 1807 by a valuable expedition under W. Scoresby, junior; in 1818 by Captains Buchan and Beechey in H.M.S. *Dorothea* and *Trent*; in 1823 by Sir Edward Sabine in H.M.S. *Gripper*; and in 1827 by Sir Edward Parry in H.M.S. *Hecla*. British exploration in the nineteenth century was continued by James Lamont and Leigh Smith, who were the first to follow the early whaling captains on the east coast; also by A. Pike, Sir Martin Conway, W. S. Bruce, and many others.

Scandinavian exploration was begun by the Norwegian geologist, Keilhau, in 1827, and the Swede, Loven, in 1837. The Norwegians did no more till the twentieth century, but the Swedes from 1858 onwards led many expeditions, mainly for geological and cartographical work, including those under the leadership of Torrell, A. E. Nordenskjöld, A. G. Nathorst, and G. de Geer. All these materially added to our knowledge, especially of the Ice Fjord region, the north coast, and North-east Land. In 1882-83 a Swedish meteorological expedition, part of the international meteorological scheme of that year, wintered at Cape Thordsen. In 1897 Andrée ascended in his balloon at Danes Island on his disastrous expedition.

There has been little French exploration, though French officers assisted the Prince of Monaco, who several times since 1898 visited Spitsbergen in his yacht the *Princesse Alice*, and conducted detailed exploration of several parts. On his later visits he landed British and Norwegian expeditions to carry out independent work, and on other occasions has helped to finance expeditions.

German expeditions did much work in 1868 and 1871 on the east coast, and again in 1910. In 1910 there was also an expedition to Cross Bay under Prince Henry of Prussia and Count Zeppelin to conduct

experiments with dirigible balloons. In 1912 a well-equipped German expedition met with almost complete disaster on the north coast. The only Dutch expedition of recent years was one sent in 1910 to put in order the graves of Dutch whalers on Danes Island, Amsterdam Island, and the vicinity.

In recent years the chief exploration has been done by Norwegians, who since 1906 have made an annual expedition to Spitsbergen; by W. S. Bruce in Prince Charles Foreland and elsewhere; and by Swedes in many small geological expeditions. The measurement of an arc of meridian in Spitsbergen, originally proposed by Sabine in 1823, was jointly undertaken by Russia and Sweden between 1898 and 1902.

This summary includes only the chief expeditions, but for the last eighty years scarcely a year has elapsed without one or more expeditions doing some exploration in Spitsbergen. The last ten or twelve years have also witnessed numerous prospecting expeditions, British, Norwegian, Swedish, American, Russian, and German, and the annual visits, till the outbreak of war, of tourist steamers of various nationalities.

(2) DIPLOMATIC HISTORY

Early Claims—English and Danish

On his discovery of Spitsbergen in 1596, Barents set up a post bearing the Dutch arms in about $79^{\circ} 50' N.$ lat., either on Cloven Cliff or Vogelsang. This act appears to have signified a claim to the country. In 1612 Poole, one of the Muscovy Company's captains, removed this post. About the same time, Denmark claimed and received tribute from Dutch and English whalers, on the ground that Spitsbergen, being part of Greenland, belonged to Denmark. By 1613, however, the Muscovy Company's captains had decided

that this claim was false, and they ceased to pay tribute. In 1614 the Muscovy Company obtained an Order in Council to uphold the king's right to Spitsbergen, and erected tablets at Magdalena Bay, Hakluyt's Headland, Red Bay, Point Welcome, and other places, taking possession of 'King James His New Land'.¹ This act was hotly disputed by the Dutch States-General; but Holland confined her claim on Spitsbergen to the right to use its bays and harbours.

Denmark continued to assert her claim, though other nations refused to recognize it when once the distinction between Greenland and Spitsbergen was recognized, as it was about 1613. In 1615 Danish men-of-war were sent to Spitsbergen to maintain Denmark's sovereignty over this 'part of Greenland'; and for many years the rival Danish and English claims were occasionally reasserted.

In 1618 King James agreed to suspend for three years from 1619 his interdict of 1613 against Dutch whalers (which had never been of much avail), but stipulated that the suspension was without prejudice to the English claim to the whole land. A Dutch proposal to divide Spitsbergen at the latitude of Cape Cold was not entertained, but an agreement was reached between English and Dutch commissioners, by which the west-coast bays should be divided between the two nations.² The Danes were not parties to this agreement, but Danish whalers, which were always few in number, were tolerated in Dutch bays. In a letter to King Christian IV (March 1618), King James said he had notified English whalers that Danes had the right to fish in Spitsbergen waters, provided they did not transfer their rights to other nations, and did not sell

¹ *Calendar of State Papers, Domestic*, Add. 1580-1625, p. 539.

² *State Papers, Domestic, James I*, vol. 109, Nos. 122, 135.

their produce in British markets.¹ This arrangement was offered again by King James in 1621 and accepted by King Christian, with the limitation of Danish sovereignty which it implied.² King Christian failed to secure the inclusion of a clause relating to Spitsbergen in the Treaty of Commerce between Denmark and Great Britain, signed on April 29, 1621. Denmark does not appear on any later occasion to have questioned the English rights to fish in Spitsbergen waters.

In 1622 the agreement by which both Dutch and English were to have access to the whale fishery expired; and King James announced that he would consider any infringement upon the fisheries a breach of treaty.³ The Dutch, however, treated this as an idle threat and continued their voyages. In 1623 the King of Denmark reaffirmed his claim to Spitsbergen, finding a pretext on the grounds that certain Biscayan whalers, turned away by the English and Dutch, were in Danish employ. The dispute dragged on for several years and was then dropped.

Denmark, by this time, seems to have abandoned her assertion that Spitsbergen was part of Greenland, and vainly endeavoured to rename it Christiansbergen. Neither English nor Dutch paid much attention to the Danish claim; and Denmark gained nothing by the dispatch, in 1638, of three men-of-war to Spitsbergen except the revival of a profitless correspondence on the subject. In 1641 the King of Denmark agreed to the freedom of the fishery. In 1663 a treaty was concluded between Denmark and France (February 14, 1663), which contained an article giving French whalers full privileges in Norway and other lands belonging to Denmark. At the time this was taken to include Spits-

¹ *State Papers, Foreign, Denmark*, 1612-24, pp. 156-7.

² *Ibid.*, Nos. 261-2.

³ *State Papers, Domestic*, 1619-23, p. 485.

bergen (*Arch. dan. Frankrige*, B, 1662-4). After that date little more was heard of the Danish claim, for in a few years the whales began to retreat from the coasts to the open seas, and the bay whaling declined. However, the Treaty of Lund in 1679, between Norway (Denmark) and Sweden, contained a clause giving Swedes the freedom of the Spitsbergen fishing.¹ The last assertion of the Danish claim was in 1692, when Denmark insisted on the right to tax Hamburg whalers going to Spitsbergen. In 1741 Denmark vainly attempted to reopen the issue in some negotiations with Holland concerning the Iceland fisheries.

The English whalers, in decreasing numbers, continued to use the Spitsbergen bays for about fifty years after the Dutch had abandoned the inshore whaling. But by about the end of the seventeenth century they also ceased, and the English claim was forgotten.

Early Claims—Russian

In the days when Russian trappers frequented Spitsbergen, Russia seems to have made no claim to the sovereignty of the country. A large Russian expedition in 1764 built several houses in Bell Sound, probably on Axel Island, and left a wintering party. This was probably the place where, according to tradition, the earliest Russian hunters had their base. Neither this expedition nor those that followed it in the two succeeding years had any ostensible aim, and they announced no claim to Spitsbergen; yet there seems little doubt that Russia was renewing her interest in Spitsbergen.

Modern Claims

From the days of the bay whaling the status of Spitsbergen was left in abeyance till 1871. In that year the Swedish explorer, A. Nordenskjöld, asked the

¹ *Pergamentsamlingen*, Sverige, No. 357, Copenhagen.

Government of Sweden to extend Swedish protection to a settlement he meant to establish at Cape Thordsen in connexion with a phosphate mine. Sweden addressed the Governments of Europe, asking each if it had any objection to Norway and Sweden taking possession of Spitsbergen. The only objection was raised by Russia, on the ground that Spitsbergen had been known and inhabited by Russians before its discovery by the Dutch. Russia preferred that it should remain a *terra nullius*. Holland agreed, provided no other Power opposed. Sweden, therefore, took no further steps at the time. In 1899 a Russian cruiser hoisted the Russian flag over the ruins of a Russian hut and grave on the north coast of Bear Island. There was no suggestion that this act signified a claim to the whole island. Investigation of the German activity on the island was probably the real aim of the visit.

In 1899 Sweden and Norway suggested to Russia that an international conference should be called to devise some form of control in Spitsbergen, at the same time leaving the country open to the subjects of all nations for commercial enterprise. The reply was unfavourable; and, in view of the growing differences between Norway and Sweden at the time, the matter was dropped. After the separation of the two countries in 1905, Norway revived the question, and in 1907 addressed Britain, France, Russia, Holland, Belgium, Sweden, Denmark, and Germany on the subject, declaring that she herself had no intention of altering the status of Spitsbergen as a *terra nullius*. The Powers addressed were unanimous as to the desirability of regulating affairs in Spitsbergen, and expressed their willingness to consider proposals for an international agreement upon the lines proposed.

From this point, however, progress was retarded,

principally by the mutual suspicions and jealousies of the three Powers generally admitted to be particularly interested in Spitsbergen, viz. Norway, Sweden, and Russia. The general position was that Norway was more interested than any other Power in establishing some form of law and order in Spitsbergen, since the great majority of the residents in the islands were Norwegian subjects; she believed herself to have reason to fear that either Sweden or Russia might at some time seize a naval base in the islands for an attack on some of her northern ports, and therefore desired that Spitsbergen should be neutralized, but was afraid that any system of international administration by the three Powers must necessarily give Russia a predominant position. This last feeling was to some extent shared by Sweden; but the relations between Sweden and Norway had by no means recovered from the effect of the separation, and Sweden was not, or was believed not to be, willing to co-operate with Norway in bringing about a settlement. Russia, on the other hand, was not altogether disposed to look with favour on co-operation between Norway and Sweden, lest this should result in less importance being attached to her own interests than she considered right.

In 1909 Norway submitted to the Powers concerned a memorandum, which dealt chiefly with the system of law to be established in Spitsbergen, and pointed out that there were two alternatives: (1) that an international judicial system should be set up; (2) that the Powers concerned should charge one of their number (which must in the circumstances be Norway) with the duty of conferring on one of her own courts civil and criminal jurisdiction in matters arising in Spitsbergen. Norway expressed a decided preference for the latter course, but this did not find favour with some of the other Powers concerned.

Meanwhile the United States of America, in view of their mining claims, had become interested in Spitsbergen. In its sitting of December 15, 1909, the Committee for Foreign Affairs of the United States Senate recommended the extension of American protection to ownerless islands where American subjects had discovered coal or other minerals. This suggestion, whatever its precise meaning, clearly concerned Spitsbergen, but it came to nothing so far as that land was concerned.

The attitude of Great Britain throughout was that she had no political interests in Spitsbergen, and was only concerned to see that the duly-acquired rights of British subjects in the islands were respected; that the Powers chiefly concerned were Norway, Sweden, and Russia; and that the proper course was for those three countries to agree upon a scheme which was acceptable to all of them, to be submitted afterwards to the other Powers concerned. Accordingly the difficulties referred to above were so far removed that delegates of the three Powers met at Christiania in 1910, and, largely owing to the conciliatory attitude of the Russian representatives, were able to agree upon a scheme. On being submitted to the other Governments concerned, this scheme met with considerable criticism on legal and other grounds; and, in consequence, a second meeting of the three Powers took place in 1912, when a revised scheme was produced. This scheme was again submitted to the other Powers and commented on by them. It was then arranged that a conference of all the Powers concerned should take place to consider the revised scheme in the light of the latest observations of the Governments concerned, and if possible to agree definitely upon a Convention.

This conference, after some postponements, took place

at Christiania in June 1914. Immediately before it assembled, delegates of Norway, Sweden, and Russia met to consider the observations of the Governments concerned on the last edition of their scheme, and produced a revised draft to be submitted to the Conference. The effect of this scheme was in general as follows: Spitsbergen was to remain *terra nullius*, to be open to the subjects of all nations, and to be neutralized. It was to be administered by an International Commission of three members, one nominated by Russia, one by Norway, and one by Sweden, which was to sit in the country of its president. The Commission was to have power to make regulations, which became effective if approved by a majority of the signatory Powers; and it was to have power to levy certain taxes and duties, any deficit on the cost of administration being made up by the signatory Powers. An international police force was to be established under a Commissioner, in whose appointment the Commission were to take account of the nationality of the majority of the inhabitants of Spitsbergen. The Commissioner was to have jurisdiction in certain minor criminal matters; more serious offences were to be dealt with by the national courts of the accused; there was also to be a judge with a limited jurisdiction in civil matters, in which he was to apply the Swiss code, subject to the terms of the Convention and to any local regulations, with an appeal to an international tribunal to be appointed for each case. No right of ownership was to be acquired in the soil of Spitsbergen, but only a right of occupation and exploitation. Hunting and fishing were to be free to all, subject to measures to prevent undue destruction of animal life. Disputed claims to land which had arisen before the entering into force of the Convention were to be referred to a special tribunal of arbitration.

The Powers represented at the conference at which this proposal was considered were Russia, Norway, Sweden, Great Britain, Germany, France, Holland, Denmark, and the United States. It soon became evident that Germany intended to claim a far more prominent part in the proposed system of administration than either her interests in the islands or her previous attitude seemed to justify. In particular the German delegates demanded either that all the acts of the Commission which were of a certain importance should require the unanimous approval of the signatory Powers, or that the latter should have the right to be represented on the Commission. These demands were strenuously resisted by the Russian delegation. It was practically certain from the first that what Germany really wanted was representation on an enlarged Commission. It is possible that a solution might have been found in placing representatives of Germany, France, and Great Britain on the Commission; and this would have been welcomed by Norway and Sweden, who feared that, if left alone with Russia, they would constantly be subjected to pressure. The British Government had, however, serious objections to being represented on the Commission; and, as the Russian delegates definitely refused to admit German representation, and no other solution could be found, matters finally reached a deadlock, and the conference adjourned on the eve of the outbreak of war.

It will be seen from this sketch that throughout the consideration of this question it had been generally agreed that Spitsbergen should remain *terra nullius*, and should be administered by an International Commission under an International Convention to that effect between the countries concerned.

In March 1918 the question assumed a new aspect

owing to the insertion in the Treaty of Peace between the Central Powers and Russia of the following provision :

‘The contracting parties will direct their efforts to having the international organization of the Spitsbergen Archipelago, which was contemplated at the Spitsbergen Conference in 1914, carried out on a footing of equality for both parties. To this end the Governments of both parties will request the Norwegian Government to bring about the continuation of the Spitsbergen Conference as soon as possible after the conclusion of a general peace.’¹

This appeared to indicate that Germany intended to secure Russian support for an endeavour by her to obtain a seat on the Commission for the administration of Spitsbergen when the question came up for decision at the end of the war. The German representative, if supported by the Russian, would be in a position to dominate the Commission if the only other countries represented were Norway and Sweden, and Germany would thus secure the prominent position in the administration of the islands which she failed to obtain at the Conference of 1914. The result of the war has put an end to these schemes.

¹ The mention of this article in the *Times* of March 7 and 11, 1918, produced a correspondence in that journal extending over March 11-14, and including (on March 13) the copy of a communication on the subject of Spitsbergen addressed by the Royal Geographical Society to Mr. Balfour on January 10, 1917, with Mr. Balfour's reply. On March 14 the *Times* printed a Reuter's message from Amsterdam, giving the comments of the German semi-official news agency and of various newspapers in this correspondence, and ending with a quotation from the *Vossische Zeitung*, which said : ‘The Treaty of 1618, by which the British, Dutch, and Danes divided the Walfisch coast of Spitsbergen, has to-day no legally binding force, as at both the Conferences at Christiania in 1910 and 1914 Spitsbergen was recognized as “no-man's-land”.’ The treaty referred to does not appear to have ever been made (see above, p. 30).

IV. GENERAL OBSERVATIONS

(1) BASIS OF CLAIMS TO SOVEREIGNTY

THE only four nations with claims to Spitsbergen at the present time are Great Britain, Norway, Sweden, and Russia. Holland never reasserted her claim after the seventeenth century, and practically repudiated it by her answer to Norway-Sweden in 1871. The basis of the claim of each of the four nations is as follows.

The British annexation in 1614 was never formally renounced. British sailors were the first explorers, and late in the eighteenth century inaugurated the scientific exploration. They were the first to exploit the animal resources, and a British company was the first to start serious mining operations. At present British companies have estates covering 3,360 square miles, a space more than twice as extensive as that held by the subjects of any other country. Most of the best harbours on the west, and several of the best on the east coast, are on British estates.

Norwegian claims are based on proximity and natural geographical affinity with Norway, a vague and unsubstantiated claim to discovery, and the use to which Norwegian hunters have put the country. Norway's succession to the Danish claim of the seventeenth century is not insisted on. Since 1906 she has been at great pains to increase her stake in Spitsbergen. The detailed survey of part of the interior has already been mentioned. A wireless station and post office, which can never pay for their upkeep, have been established; and in 1916 a Norwegian company acquired the chief coal mine. This acquisition arose out of economic need in Norway, and was facilitated by the desire of the United States to sell on account

of freight difficulties. Norwegian estates have an area of about 870 square miles.

Sweden has always insisted on the amount of detailed exploration done by her subjects, whose expeditions far outnumber those of any other country during the last sixty to seventy years. Excepting one abortive attempt in 1872, Sweden was the last of the four countries mentioned to be interested in the commercial development of Spitsbergen. Swedish estates cover an area of about 350 square miles.

Russian claims may be based on the early use to which Russian hunters put the country. Although there is no proof that this preceded the English whaling days, the Russians were the first to settle in numbers on most of the coasts, and they continued to do so for a century or more. Russian estates in Spitsbergen are small and of recent acquisition.

Claims to Bear Island are on the same footing. English pioneer exploration and whaling were succeeded by Russian, and later by Norwegian hunting and Swedish scientific exploration. A Norwegian company is the only one to make serious claim to land in Bear Island; and no other company has started mining on a commercial scale. The one previous attempt was German; and on that occasion, despite the company's claim, the German Empire semi-officially disclaimed any intention of annexing Bear Island.¹

(2) OPINION OF MINING COMPANIES

The mining companies are agreed that the present state of affairs is most unsatisfactory and prejudicial to the development of their estates. The proposal of 1912 for joint control, with the Hague tribunal as an arbiter in disputes, evoked no enthusiasm, as it does not promise to solve the problem.

¹ *Norddeutsche allgemeine Zeitung*, June 24, 1899.

APPENDIX

Two consular reports from Tromsö were forwarded from Christiania on July 13 and August 26, 1918, from which the following information is taken :

Coal

There are at present four mining companies actually working on Spitsbergen, viz. :

1. De Store Norske Spitsbergen Kulkompani.
2. The Russian Spitsbergen Coal Company.
3. The King's Bay Kulkompani.
4. A/B De Svenska Spitsbergen Kolfälta.

Other companies or persons to be mentioned are :—

The Northern Exploration Company.

The Scottish Spitsbergen Syndicate.

A/S De Norske Kulfelter.

A/S Svalbard Kulgruber.

A/S Isefjord.

A/S Grumant.

Candidat Jacobsen.

Lewin & Company.

A/S Björnöen Kulkompani (Bear Island Coal Company).

The more important of the above companies mainly originated from the following three, viz. :

1. Spitsbergen Coal & Trading Company, of Sheffield.
2. Northern Exploration Company, of London.
3. Arctic Coal Company.

The *Spitsbergen Coal and Trading Company* was formed in 1904. In the following year an expedition was sent out. . . . Work was definitely given up in 1908, when the interests in the mine were transferred to the Norske Kulfelter, their territory adjoining Advent Bay.

The *Northern Exploration Company* originated in 1904, though not actually formed till 1910.

The *Arctic Coal Company* was started by John M. Longyear of Boston. Longyear had an option on territory in Spitsbergen adjoining Advent Bay. . . . The original holders were the Trondhjem Spitsbergen Coal Company. In 1904 Longyear (with Ayer

as sleeping partner) bought the claim for the sum of Kr. 68,000, payment being made in Kr. 18,000 cash and the balance in shares. . . .

In 1913 or 1914 a Herr Walther and a Dr. Voight went to Spitsbergen. . . . The former was the financial representative of certain German banks, while Voight accompanied him as a scientific expert. The two managed to inspect the property of the Arctic Coal Company, and secured an option.

In 1916 the mines were transferred to the Store Norske Spitsbergen Kulkompani, which is now (Aug. 1918) working them. This latter company has also bought all conflicting interests except A/S Isefjord, among them being those of Chr. Anker and F. Hiörts and Hoel and Staxrud.

The Arctic Coal Company also ceased working their claims on the Sassendal property. There are several other claimants, but no work has been done there. . . . The Arctic Coal Company further ceased working their claims in the Cape Boheman district in 1909, the present claimants being the A/S Isefjord of Tönsberg, represented by A. E. Nilsen, who was the original claimant before the Arctic Coal Company. Only a small quantity of coal has been taken out of this mine recently.

The following details as to existing companies are of interest :

De Store Norske Spitsbergen Kulkompani.—This company purchased the interests of the Arctic Coal Company in 1916, together with all conflicting claims, except those of A/S Isefjord. Work has been seriously undertaken and carefully planned out ; and this company has done more to develop coal mining on Spitsbergen than any other. In 1916 the company shipped 21,000 tons of coal to Norway. Between the autumn of 1916 and December 1917 the company mined and shipped some 33,000 tons, employing during the whole summer of 1917 six or seven ships between Norway and Spitsbergen. Unfortunately for the company there were considerable labour difficulties, and about 200 workmen—Swedes and Finns—had to be brought back to Norway and repatriated. This year (1918) work is proceeding without difficulties of this kind. 300 Norwegians are being employed during the summer and 200 will be retained for the winter, and although they are not skilled miners they are more satisfactory workers. Seven ships are being used, and coal is being shipped to various ports between Kirkenes

and Trondhjem. It is estimated that 40,000 tons will be shipped in all. The whole of this year's output has been sold in advance to the Norwegian Government.

A tertiary seam of coal runs from Advent Bay (where it is at 600 ft. above sea-level) to Green Harbour (500 ft. above), coming out at sea-level at Coles Bay.

The Russian Spitsbergen Coal Company.—The claims of this company lie in the coast strip about 3 miles wide between Green Harbour and Coles Bay.

The original company was apparently Norwegian with strong German interests; the director was von Veimarn, Russian Naval Attaché at Christiania. At the outbreak of the war von Veimarn was on Spitsbergen with some German engineers. Early in 1915 a meeting took place in Christiania between von Veimarn, Piehl and Philling of Lübeck, and a certain Ulman, a Russian subject of Petrograd. At this meeting the interests in the mine were transferred to the present company, but the Germans paid the sum of 75,000 kroner into the new company and von Veimarn still remains manager.

In 1915 a contract was made between the company and a mining engineer by the name of Arthur Lewin, who secured the rights to the coal worked on the property in return for the developments he made. This contract has been renewed until October 10, 1919, but the Russians retain the right to work, though they may not interfere with Lewin without buying him out.

The coal on this property is tertiary and the same seam as that of the Store Norske mines. So far work has been mainly confined to the mine at Cape Heer. This locality is unsatisfactory, as it affords absolutely no harbour, and the coal must be loaded into lighters. The mine is at sea-level and the gallery close to the shore. 800 tons were mined in 1917. About 2,000 tons have been produced and shipped since—mainly to Hammerfest.

The best mining is to be done at a point some $1\frac{1}{2}$ miles farther up the fjord—at Gladdal. Here the coal is of the first quality; there is a good harbour and ships can lie alongside so that a funicular railway (which should by this time be working) can allow the coal to be run straight from the gallery on board—a distance of about 500 yds. Some coal has been worked here

but none so far shipped. Preparations are being made for harbour works, &c.

Green Harbour is ice-free before, and remains so longer than, any other mining centre in Spitsbergen.

King's Bay Kulkompani.—This company started work in 1917 on territories which, in part, are claimed by the Northern Exploration Company, mining the coal on the southern shore of King's Bay and making use of huts, dynamite, and other property belonging to the English company. 12,000 tons of coal were mined ready for shipment during the winter 1917–18.

A/B De Svenska Spitsbergen Kolfälta.—These claims, lying chiefly on the shores of Lowe Sound and Braganza Bay, were bought by the present company from the A/S Isefjord of Bell Sound and an interchange of shares (£5,000 each) took place between the Swedish company and the Northern Exploration Company.

In 1917 an expedition under Bror Granholm was sent out to Braganza Bay and work was planned. One mine is being worked about 245 ft. above sea-level, the average height of the claim being 325 ft. The coal is tertiary of good quality, but ice conditions are very unfavourable. The coal is being supplied to the Swedish railways *via* Narvik. 50 to 100 men are working in the mines.

Further claims bought by this company lie north-west of Klaas Billen Bay and on the peninsula between that bay and Sassen Bay. No work has been done here. The claims in the latter district are contested by the Scottish Spitsbergen Syndicate.

The Northern Exploration Company.—This company has claims on the northern and southern shores of Lowe Sound and King's Bay. The coal on the northern shore of Lowe Sound is tertiary and lies about 600 ft. below sea-level. On the southern shore there are reported to be iron fields on the eastern side of Recherche Bay.

In King's Bay the company has on the southern shore coal mines which have since been claimed by the King's Bay Kulkompani. The latter has also appropriated huts and material. The marble fields belonging to the company lie on the northern shore of King's Bay.

This company has claims also in Horn Sound, where nickel

is reported. Both here and in Recherche Bay the claims have been trespassed upon during the war.

Of the other companies mentioned the *Norske Kulfälter*, whose claims lie on the east side of Advent Bay at Advent City, has not done much work. Advent City possesses no harbour; and Hiorthhavn cannot be considered good.

A/S Svalbard.—In 1916 and 1917 this company, backed by Hoel and Staxrud, prospected and claimed territory lying east and south of the Store Norske property, which had apparently been claimed already by the Northern Exploration Company. No actual mining has been done.

The fields possess no shipping facilities of any kind and are at a considerable distance from the sea. The company is stated to claim up to the shore of Advent Bay. The mines are 1,600–2,000 ft. above sea-level. The coal is tertiary.

A/S Isefjord.—This company (represented by A. E. Nilsen of Tönsberg) has claims in the Cape Boheman district. There is jurassic coal at sea-level, but the seam is probably not more than 1½ ft. thick. No work is being done.

In the same district claims are made by a certain Schröder, who took out a small expedition of five men at the end of June 1918. There is very little coal in these claims.

A/S Grumant.—This company staked claims on the west side of Coal Bay in 1911. They have done nothing beyond a little prospecting.

Candidat Jacobsen.—In or about 1912 Jacobsen signed an agreement with the Northern Exploration Company by which in return for his salary he made over to the company all his claims on Spitsbergen, past, present, and prospective. As the last clause appeared doubtful, a supplementary agreement was made by which prospective claims were purchased by the company for a sum of money, which was actually paid.

Lewin & Co..—This company is represented by Arthur Samuel Lewin, father of the engineer of the same name, and acting manager at Tromsö for the Russian Spitsbergen Coal Company. Lewin & Co.'s claims are on the peninsula west of Green Harbour and east of Dickson Bay. The claims are unworked.

Bear Island Coal Company.—This company works a seam of poor coal under adverse ice and weather conditions.

Coal mining on Spitsbergen has at present many advantages. The coal is on the whole of good quality. The mines are free from gas and water, and the coal occurs in seams at or nearly at sea-level. Galleries can be driven instead of shafts sunk. These galleries in some places open out directly at the sea-shore. There are natural facilities for cheap power—electricity. There are no taxes, dues, customs, &c. It is, however, recognized that as shipment, unless powerful ice-breakers are employed, can take place for at most four months of the year—except for the most favourably situated mines—and as there is no return cargo to Spitsbergen, coal mining cannot pay as such except possibly for supplying extreme North Europe. Shipment to Murman and Archangel has, in fact, been contemplated. But, considered from another point of view, coal mining might be very successful, viz. for the development and smelting of the iron deposits.

Coprolites

Superfosfatfabrik A/B (of Stockholm).—In 1917 Candidat Steenschö, a scientist of the Geological University at Upsala, staked claims in the Dickson Bay district and later sold them to the above company. An expedition proceeded to Spitsbergen this summer (1918) under the leadership of Johnson, a Swedish mining engineer. The district at Cape Thordsen was to be prospected, specimens taken, and possibly claims staked. Visits may be made to the claims in the Dickson Bay district, where good deposits of coprolites are reported. The claims here, however, trespass upon those of the Scottish Spitsbergen Syndicate. The expenses of this expedition are shared by the Swedish Government, who have supplied bunkers and provisions for the vessel.

The actual position of the above claims is given by the following :

- 16° 7' E. by 78° 51' N.
- 16° 13' E. by 78° 51½' N.
- 17° 8' E. by 78° 42' N.
- 16° 40' E. by 78° 39' N.

Asbestos

A/S Kulspids.—This company first staked claims in Recherche Bay in 1911—the claims being, however, contested by the

Northern Exploration Company. The asbestos so far found, however, is too short and too brittle.

The company has further undisputed claims on the coast strip between St. John's Bay and Ice Fjord.

An expedition of about thirty men has been sent out this year (1918).

The manager of this company is Overretssakfører Lund of Christiania.

Gypsum

This mineral is found in considerable quantities in the peninsula between Dickson Bay and Klaas Billen Bay and between the latter and Sassen Bay. In 1911 a Swedish company brought back 100 tons to Sweden, but the market price of the commodity—10 francs a ton—was far too low to make the venture a success.

Arthur Lewin, who has the right to work the coal on the Russian Spitsbergen property, has staked claims on the gypsum fields on the peninsula between Ekman Bay and Dickson Bay.

The gypsum fields in Bunsow Land are claimed by the Svenska Kolfälta Company, though these claims are disputed by the Scottish Spitsbergen Syndicate.

Copper

Copper is to be found in various parts of Spitsbergen and a German mine exists at Cross Bay. The ore is of too poor quality to yield very successful results—less than 5 per cent. being pure copper.

Gold

There has been some talk of the possibility of gold being found in the Sassendal district, and the three brothers Svedrup, miners from Klondyke, have prospected.

The area surrounding Horn Sound from the coast 3 miles inland contains quartz supposed to be gold-bearing. Captain H. B. Damm of Christiania registered a claim in 1912, but the district had been previously claimed by the Northern Exploration Company.

Scientific

A geological expedition led by Hoel and Rörvig went out to Spitsbergen in 1917 and again in 1918. Last year (1917)

surveying and topographical work was undertaken in Ice Fjord, while this year (1918) work is being done in Horn Sound. The expedition has a small Government grant, but it is otherwise dependent on private contributions.

Political

From the political standpoint it may be of interest to note that a short time ago a Russian consular officer proposed planting a small colony of Lapps and Samoyedes on Spitsbergen, but his proposal was not favourably considered by the Russian authorities, and the matter has been entirely dropped.

More important is the Norwegian attitude regarding Spitsbergen. It appears that during the war Norwegian companies and individuals have been staking and extending claims and appropriating claims and property counterclaimed by the Northern Exploration Company.

The following translation of an extract from a Tromsø newspaper of recent date appears to show the general attitude of Norwegians regarding Spitsbergen.

'Tromsø should already consider Spitsbergen as its own "hinterland" ("opland"). Tromsø has always been, and it depends entirely on ourselves whether the town shall continue to be, the centre of everything concerning the Arctic sea. Between Nova Zemlya and Greenland our town has a larger "hinterland" than any other town on the globe, and although its population is somewhat scanty it is by no means poor. Even though the earth be not fertile in polar regions yet it has riches in its bosom.'

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MAPS

Three special maps of Spitsbergen have been compiled under the direction of the Geographical Section of the War Office in connexion with this series, viz.:

(a) 'Spitsbergen,' including the rest of the Archipelago; scale 1:1,000,000 (G.S.G.S. 2877).

(b) 'Spitsbergen,' same map, showing location of estates (G.S.G.S. 2877 A).

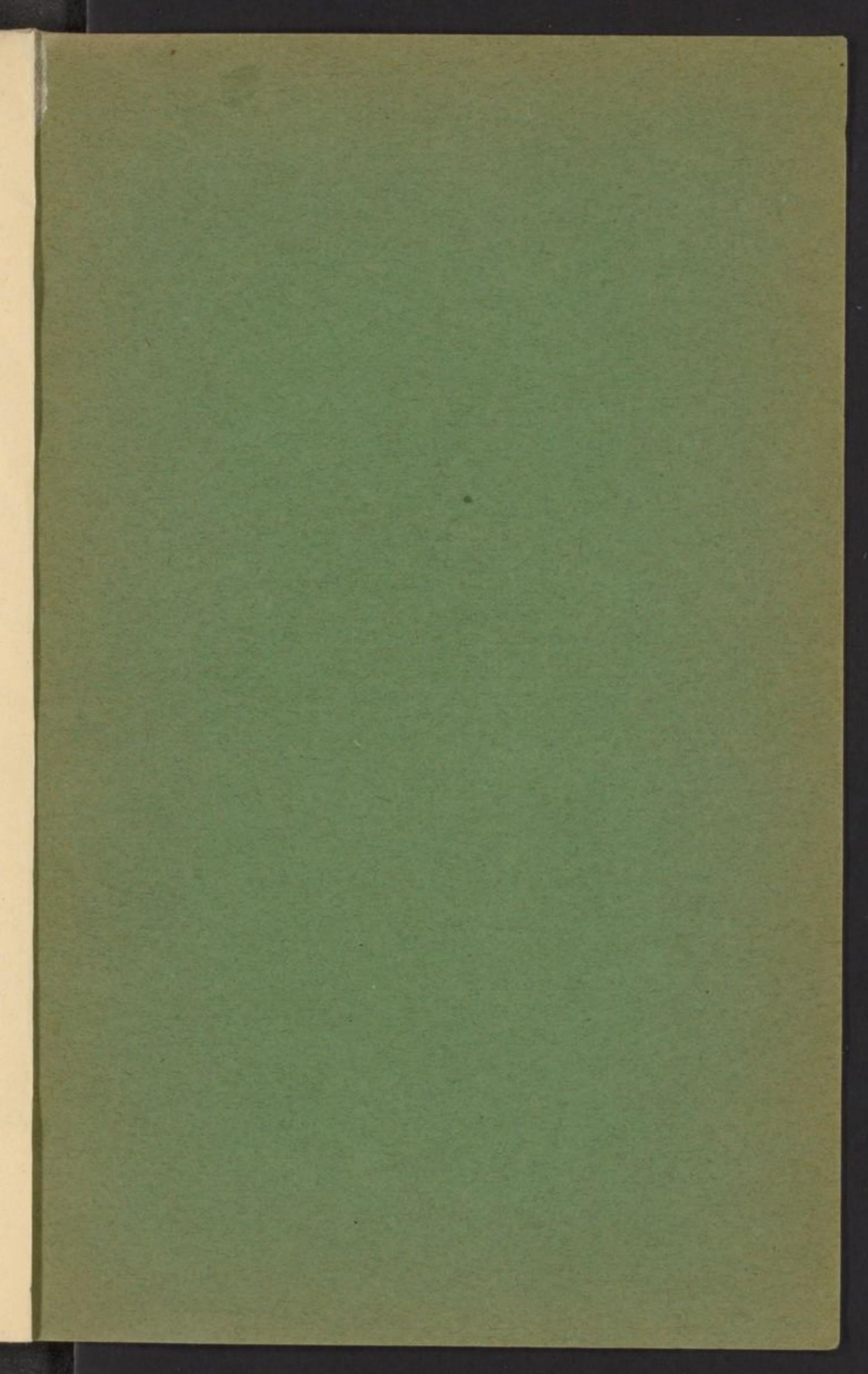
(c) 'Spitsbergen (Provisional Geological Map)'; scale 1:1,000,000; with inset, Bear Island, scale 1:214,285 (G.S.G.S. 2878).

There has been no complete survey of Spitsbergen, but these maps are the most up-to-date compilations so far published.

They are derived from the scattered local surveys, of which two stand out as specially important, viz. :

(a) Spitsberg, Partie Nord Ouest, by Captain Gunnar Isachsen, on the scale of 1 : 200,000, in two sheets, accompanying the scientific results of his expedition. (Captain Isachsen has also drawn a small scale compiled map of Spitsbergen, on the scale of 1 : 1,500,000, published in the *Geographical Journal*, 1915.)

(b) Prince Charles Foreland, by W. S. Bruce, on the scale of 1 : 140,000, published with the support of the Prince of Monaco.



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