

United Nations Conference on the Law of the Sea

Geneva, Switzerland
24 February to 27 April 1958

Document:
A/CONF.13/15

A Brief Geographical and Hydro Graphical Study of Bays and Estuaries the Coasts of which Belong to Different States

Extract from the *Official Records of the United Nations Conference on the Law of
the Sea, Volume I (Preparatory Documents)*

A BRIEF GEOGRAPHICAL AND HYDROGRAPHICAL STUDY OF BAYS AND ESTUARIES
THE COASTS OF WHICH BELONG TO DIFFERENT STATES

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(Preparatory document No. 12) *

[Original text: English]
[13 November 1957]

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INTRODUCTION

The International Law Commission, in paragraph 7 of its commentary to article 7 (Bays)¹ stated that it "felt bound to propose only rules applicable to bays the coasts of which belong to a single State". The Commission continued that, as to other bays, it "does not

have sufficient data at its disposal concerning the frequency of such cases or the regulations at present

* This paper was prepared at the request of the Secretariat of the United Nations but should not be considered as a statement of the views of the Secretariat.

¹ Official Records of the General Assembly, Eleventh Session, Supplement No. 9 (A/3159), p. 16.

applicable to them". A similar difficulty was experienced in drafting article 13 (Delimitation of the territorial sea at the mouth of a river) and, as the comment on paragraph 2 of that article makes clear, the rule contained in article 13 is, due to a similar lack of the necessary data, confined to cases where the coasts of an estuary belong to a single State.

The purpose of the present study is, therefore, to provide a brief geographical and hydrographical description, together with maps, of bays and estuaries the coasts of which belong to different States. It is hoped that, by so doing, the Conference might have sufficient data upon which to base a broader formulation of the relevant rules.

It will be apparent from the study that it does not pretend to comprehend all such bays and estuaries throughout the world; nor are those included necessarily suitable for navigation. However, within practical limits, each bay or estuary is described in its essential features and references are given to assist in a more detailed examination should it be required. The references are to Charts and Sailing Directions published by the Hydrographic Department of the British Admiralty; when using the Sailing Directions (Pilots), their latest supplements should also be consulted. Miles referred to in the descriptions are sea miles, each constituting one sixtieth of a degree of latitude at the place being described. Special regulations regarding navigation, etc. in the few places where they are known to exist have been included; in the others it has been assumed that the only rules which apply are those customary for "innocent passage".

The configuration of the coasts on the sides of certain bays or gulfs may affect the size of any area lying between the belts of territorial sea therein. The arcs of circles from the prominent points on the coast, or from certain features which dry between tides, control the limits of these belts. They may thus reduce the separation of the limits from a distance equal to the maximum width of the bay less the sum of the breadths of the belts of territorial sea.

Although these are primarily physical studies, the positions of international boundaries, either as terminations of the land boundaries or those through the sea, have been mentioned; these positions, where given, must, however, be considered as approximate only. No comments or suggestions have been offered regarding the continuation of the land boundaries to the high seas. These studies should prove useful examples for the consideration of wider problems of bays and estuaries in general if the existence of the state boundaries be neglected.

I. AFRICA

1. Waterway at 11°N. ; 15°W. (approx.) between French Guinea and Portuguese Guinea (Annex, map No 1)

References : Chart No. 600

Africa Pilot, Volume I, Eleventh Edition, 1953

The area in the vicinity of the position where the land boundary between Portuguese and French Guinea

meets the sea is low and swampy and, as it lies in the proximity of the deltas of several rivers, is liable to change in configuration; the chart is based on an old survey and the scale is small; exact present-day details are not available.

As charted, the terminus of the land boundary is on the north side of the River Tristao, a creek about three-quarters of a mile wide, running in a north-west, south-east direction. This creek joins the Kasset River to the mouth of the River Camponi and separates Aube Island from the mainland; it is about 8 miles long. The Kasset River, flowing past the northern end of Aube Island, is the southern end of the creek separating Katak Island from Aube Island and the mainland; it is nearly a mile wide.

Katak Island and the mainland northward and eastward of it are Portuguese territory; Aube Island is French.

The approach to Kasset River is eastward of Sene and Samba, two sandy islets joined by a drying bank, between 6½ and 3 miles south-westward of Katak Island, and westward of the breakers which extend up to 8 miles south-westward of Aube Island. Depths in this approach are charted between 1½ and 4½ fathoms, but no depths are shown in the Kasset or Tristao Rivers or in the south-eastern approach to the latter.

About 15 miles south of Sene Islet lie Alcatraz Islet and Reef; the islet is a small volcanic rock, 40 feet high. A little over a mile south-westward of this islet, Wreck Islet is charted; this was reported in 1904 to have disappeared and a depth of 2 fathoms was obtained in its position. The reefs and fould ground extend 7 miles south-westward from Alcatraz Islet and are known as Alcatraz Reef.

Conflict Reef, with numerous rocky and sandy dangers, some above water and others below, lies 19 miles south-eastward of Alcatraz Islet and about the same distance southward of the south-eastern end of Aube Island. No soundings are charted between.

There is no entry or anchorage for ships of any size in the River Tristao.

As no detailed survey has been made of the area, there may be many undiscovered dangers there.

2. Estuary of the Kunene River (Annex, map No 2)

References : Chart No. 1806

Africa Pilot, Part II, Tenth Edition 1951

The Kunene, or Cunene, River separates Angola from South West Africa. Near its mouth, it passes through a sandy desert region which is almost rainless, although at times there are heavy dews. It only reaches the sea during the inland rainy season, at other times it is effectually barred by a sandbank on which the sea breaks furiously. The coasts on both sides of the mouth are comparatively straight, but in its immediate vicinity there is a slight inward curvature over a distance less than 5 miles with a penetration from the general line of less than a mile. Roughly half the coastline of the indentation is Portuguese. The area is uninhabited and there are no navigable channels. Great caution is neces-

sary in navigating near the coast as the surveys are very imperfect.

3. Estuary of the Kolente or Great Skarcies River (Annex, map No 3)

References : Charts Nos. 601, 686

Africa Pilot, Part I, Eleventh Edition, 1953

This estuary may be considered to lie between Sallatuk Point in French West Africa and Ballo Point in Sierra Leone, about $15\frac{1}{2}$ miles south-south-eastward. The coast is low, fronted by trees and mangroves and is cut into by many creeks. The Great Skarcies and Little Skarcies, or Kabra, River enter the estuary at its south-eastern end. From the mouth of the latter, the coast trends $17\frac{1}{2}$ miles north-westward to Sallatuk Point and $7\frac{1}{4}$ miles westward to Ballo Point. The whole of the area is shoal and is cluttered with drying mudbanks, the natures of which are continually changing. There are many breakers in the area. Yelibuya Island, low and about 3 miles across, lies close offshore about 5 miles south east of Sallatuk Point; Kortimaw Island, with an extensive drying bank seaward of it, lies $3\frac{1}{2}$ miles further south-eastward, with an islet between it and the coast north-eastwards. In 1933 there was an above-water mudbank 3 miles south-westward of Kortimaw Island; the drying portion of this bank extended 2 miles westward and nearly 3 miles south-westward. The main entrance channel to the rivers allows access to small craft of 9-foot draught; it lies between Yelibuya and Kortimaw Islands and thence between the latter and the coast. Another channel leads between Kortimaw Island and Ballo Point, an extensive bar of shoals, shifting sand and mud, renders it difficult of access.

The boundary between Sierra Leone and French West Africa follows the Kolente River for a considerable way but, before reaching the estuary, branches westward to meet the coast about a mile south-eastward of Sallatuk Point.

4. The mouth of the Manna, or Mano, River (Annex, map No 4)

References : Charts, Nos. 1363, 2478

Africa Pilot, Volume I, Eleventh Edition, 1953

The boundary between Sierra Leone and Liberia reaches the sea at the mouth of the Manna, or Mano, River. The coast on both sides is comparatively straight, and runs in a general north-westerly and south-easterly direction for a number of miles. For the last $2\frac{1}{2}$ miles of its journey, the river flows north-westwards parallel to the coast and is separated from the sea by a narrow strip of tree-covered sand. The mouth of the river is, in effect, closed, and breakers extend around its mouth. The remains of an old factory can be seen near the mouth.

5. Tana River (Annex, map No 5)

References : Chart No. 1359

Africa Pilot, Volume I, Eleventh Edition, 1953

The boundary between Ghana and French West

Africa follows the Tana River to the Tana or Tendo Lagoon, the northern coast of which is French territory, and the eastern end of the southern coast is the territory of Ghana. The French boundary crosses the lagoon in a southerly direction to meet the land boundary which crosses the low spit, about $1\frac{1}{2}$ miles wide, separating the lagoon from the sea, in a southerly direction, to reach the coast close west of the village of Newtown.

The sea coast is comparatively straight for many miles. Access to the lagoon from the sea is about 7 miles west of Assini, situated $12\frac{1}{2}$ miles west of Newtown. Owing to the nature of the bar there, passage into the lagoon is only possible during the Harmattan season.

6. Cavally River (Annex, map No 6)

References : Charts, Nos. 1980, 1365

Africa Pilot, Volume I, Eleventh Edition, 1953

The "thalweg" of the Cavally River forms the boundary between Liberia on the west and French West Africa on the east. The river, about 100 yards wide only on its entrance to the sea, cuts at right angles through a straight length of coastline about 9 miles long, which at both ends bends away in a convex curve. The entrance to the river is between two sandbanks about 20 feet high. There are submerged rocks about a quarter of a mile offshore and three-quarters of a mile south-westward of the entrance.

It is reported that the river can be navigated by small power vessels for about 50 miles; the entrance channel, however, is constantly changing, and its bar has the reputation of being the most dangerous on the coast; surf boats are often capsized and many lives lost annually. Vessels can anchor in depths of 7 to 9 fathoms about a mile south of the entrance. There is a French customs house close to the entrance.

7. Estuary of the Rio Muni (Annex, map No 7)

References : Charts, Nos. 1356, 1887

Africa Pilot, Part II, Tenth Edition, 1951

The "thalweg" of the Rio Muni where it enters the sea forms the boundary between Spanish Guinea and French Equatorial Africa. The Rio Muni flows into the north-east corner of Corisco Bay, and the River Mondah into the south-east corner. This bay has an entrance 33 miles wide and a penetration inland of 17 miles. The coast at the north-east corner of the bay is roughly in the shape of a semi-circle with a diameter of $12\frac{3}{4}$ miles; the Rio Muni enters through the south-eastern side. The breadth across the mouth of the river is about a mile. Within about $5\frac{1}{2}$ miles south-westward of the mouth are the two Spanish islands of Elobey. Isla de Corisco lies midway between the entrance points of Corisco Bay.

Depths in the bay are for the most part shallow, with the exception of the approaches to the two rivers; the approach to Rio Muni has a least depth of about 4 fathoms and runs in a straight line, passing about $2\frac{1}{2}$ miles south of the southernmost point of the coast at the northern end of the bay; the approach to the

River Mondah passes north and east of Isla de Corisco ; both these channels are buoyed.

Other islets in the bay are : Leva, about a mile south of Isla de Corisco ; Conga, with a small drying rock half a mile south-westward, $3\frac{3}{4}$ miles south-south-eastward of Isla de Corisco ; Bane, with detached drying banks up to $1\frac{3}{4}$ miles eastward and $2\frac{3}{4}$ miles north-eastward, about $5\frac{1}{2}$ miles south-east of Isla de Corisco. Other drying banks are : Banc Acanda, $1\frac{1}{2}$ miles north of the western entrance point of River Mondah ; Recife Buyumba, about $1\frac{1}{2}$ miles offshore and about $10\frac{1}{2}$ miles east of Isolote Bane ; a bank and reefs extending $1\frac{1}{4}$ miles south of Isla Elobey Chica and about a mile east of Isla Elobey Grande ; and Piedra Ugoti, about $1\frac{1}{4}$ miles offshore westward of Punta Corona, at the north-western end of the bay.

Both the whole of Corisco Bay and the bay forming its north-eastern end formed between Punta Mosquitos and Pointe Elobey conform to the International Law Commission's definition of a "bay" in article 7 of the 1956 report. About a fifth of the coastline of this smaller bay is French ; about a third of the coastline of the whole of Corisco Bay (excluding that of the islands and islets) is Spanish.

There are no ports in the bay ; there are anchorages off the various settlements in the rivers.

8. Estuary of the Congo River (Annex, map No 8)

References : Charts, Nos. 604, 638

Africa Pilot, Part II, Tenth Edition, 1951

The river Congo flows in a westerly direction to its mouth ; the northern side is Belgian territory and the southern is Portuguese. For the purpose of this description the estuary will be considered as seaward of a line joining Pointe Bulabemba on the northern bank to the entrance to the Rio do Fuma-Fuma on the southern bank, about $2\frac{3}{4}$ miles southward. The northern side comprises the entrances to two creeks lying between Pointe Bulabemba and Pointe Française about $2\frac{3}{4}$ miles west-north-westward, thence the south-west coast of Presqu'île de Banana which continues in a north-westerly direction for 23 miles to Ponta N'gelo, near which is the boundary with the Portuguese territory of Cabinda. The southern side continues in a westerly direction from the mouth of the Rio do Fuma-Fuma for 8 miles, thence turns north-north-eastward for $2\frac{1}{2}$ miles to Ponta do Padrao, whence it turns abruptly south-westwards for $4\frac{1}{2}$ miles to Ponta da Moita Seca. Thus, the entrance to the estuary between Ponta N'gelo and Ponta da Moita Seca is 25 miles wide ; the width between Ponta do Padrao and the low-water line of Pointe Française is $5\frac{1}{4}$ miles, and the breadth southward of Pointe Française is $4\frac{1}{2}$ miles. The penetration inland from the line joining the entrance points is about $11\frac{1}{2}$ miles.

There are no islands in the estuary ; drying banks close to the low-water line of the coast are charted off the mouth of the Rio do Fuma-Fuma, and in the mouths of rivers $2\frac{3}{4}$ and 5 miles westward of that river ; their outer edges do not lie more than half a mile offshore. The low-water line of Pointe Française is situated nearly half a mile southward of that point.

Depths from the coast graduate to the 10-fathom contour, and then descend abruptly into a deep gully running eastward from ocean depths right into the entrance to the river ; depths in this gully, inside the estuary, exceed 300 fathoms in places.

Vessels approaching from north-westward should keep at least $5\frac{1}{2}$ miles off the shore north of the river entrance until within about 3 miles of Ponta do Padrao, when course may be shaped for the river mouth. Beyond a position south-eastward of Pointe Française, the River Congo is well buoyed.

On the northern side the principal port in the estuary is Banana, in the creek east of Presqu'île de Banana, where there is anchorage in 3 fathoms and a wharf ; there is a bar to cross with 18 feet of water over it ; tidal streams are very strong. It is a pilot station for the River Congo. Vessels bound to and from ports in the Belgian Congo must enter or clear there and pass the health officer. On the southern side is the Portuguese port of Santo Antonio do Zaire, the principal town of the district. It lies about three-quarters of a mile within a creek south-east of Ponta do Padrao. There is a bar with only 7 feet of water over it and the river current flows strongly across the entrance.

Vessels awaiting daylight to make the entrance can find good anchorage one to two miles off Ponta da Moita Seca, also half a mile off shore south-west of Ponta do Padrao and $2\frac{3}{4}$ miles west of Pointe Française.

9. Mouth of the Orange River (Annex, map No 9)

References : Charts Nos. 897, 632

Africa Pilot, Part II, Tenth Edition, 1951

The Orange River, near its mouth, separates South West Africa, on its western and northern sides, from the Union of South Africa. The river, within its mouth, is over a mile wide but is full of ready islets ; in the dry season shoals and sandbanks are everywhere visible in its channel. The river breaks through a long sandy spit to reach the sea ; its mouth is only about 175 yards wide, and the sea breaks right across it. For many miles north-westward of the entrance, the coast is comparatively straight and sandy. This nature continues south-eastward for about 2 miles when the coast is fronted by drying rocky ledges. About 7 miles from the mouth, the coast turns from its general south-easterly trend to a south-south-westerly direction for 2 miles to form Peacock Roadstead, where it is reported that some shelter from the swell and the prevailing south-south-westerly wind may be obtained. The boundary is the north and west bank of the River.

II. AMERICA

1. Passamaquoddy Bay (Annex, map No 10)

References : Chart No. 464

Nova Scotia and Bay of Fundy Pilot, Ninth Edition, 1947

The boundary between the United States of America and Canada passes through Passamaquoddy Bay to the sea. The entrance to the bay lies between West Quoddy

Head and Bliss Island, 13 miles north-north-eastward, and is obstructed by Campobello and Deer Islands, both large, and by numerous smaller islands and dangers. The penetration inland of the bay varies between about 10 and 18 miles.

There are three navigable approaches to the inner part of the bay which gives access at its north-western end to the St. Croix River, down which the boundary runs, viz (i) between the coast north-westward of West Quoddy Head and the south end of Campobello Island, thence between the latter island and Moose Island, thence between the latter island and the south-western end of Deer Island; (ii) north of Campobello Island, thence between that island and the east coast of Deer Island and then between the south-west coast of the latter and Moose Island; (iii) between Macmaster Island, with the islets and dangers south-eastward, all lying northeast of the northern end of Deer Island, and the mainland coast further north-eastward. Least depths in the fairways of these channels are: (i) dredged to 12 feet over a width of 500 feet; (ii) 17 fathoms; and (iii) $4\frac{3}{4}$ fathoms. Local knowledge is essential for the navigation of (i) and (iii) for, besides being narrow, these fairways are tortuous and the tidal streams are strong. The rise and fall of the tide is about 20 feet. In general, depths in the middle of the main part of Passamaquoddy Bay are between about 10 and 24 fathoms.

At the south-western end of the bay, south of Moose Island, is the only entrance to Cobscook Bay and several other irregular-shaped bays cluttered with islands.

Small ports within the area are: On the United States side—Lubec, opposite the south-west end of Campobello Island and Eastport on the south-east of Moose Island. On the Canadian side—St. Andrews, on the south-east side of the entrance to St. Croix River; Chamcook Harbour, about 3 miles north of St. Andrews; Welshpool, on the western side of Campobello Island; and Lords Cove on the north-eastern side of Deer Island.

Very approximately, about a third to a half of the coastline of the bay is United States territory (excluding that of the islands).

The Wolves, a group of five islands and a number of rocks, front the entrance to the bay towards the northern end. The southernmost is situated approximately 12 miles north-east of West Quoddy Head and the northern about $6\frac{1}{2}$ miles east of Bliss Island and $4\frac{1}{2}$ miles offshore.

The sum of the lengths of possible closing lines between West Quoddy Head-Campobello Island-Bliss Island could be 8 miles. The bay conforms to the Law Commission's definition in article 7 of the 1956 report.

The sum of the lengths of possible closing lines between West Quoddy Head-Wolves-Bliss Island total about 19 miles, and so the bay in this case would fall outside that definition.

The boundary from the St. Croix River passes in a straight line to the passage between Deer Island and the American coast, thence about midway between that island and Moose Island; after which it continues in straight lines about midway between Moose Island and

the southern end of Campobello Island, to continue between the south-western end of the island and the mainland coast to the Bay of Fundy. About midway between the coast of Campobello Island and Grand Manan Island, it turns south-westward and then runs midway between the latter island and the United States coast.

The boundary lines towards the south-west end of Campobello Island were established after consideration of the fishing and other interests of the two States and do not form a median line or "thalweg". The navigable part of the channel at one place is on the United States side of the boundary.

2. Gulf of Honduras (Annex, map No 11)

References: Charts, Nos. 1573, 1219

West Indies Pilot, Volume I, Tenth Edition, 1941

The Gulf of Honduras at the western end of the Caribbean Sea is about 50 miles across at its entrance and penetrates about 46 miles. At the south-western end is Honduras Bay, roughly rectangular in shape, with an entrance $12\frac{1}{2}$ miles across between Cape Three Points and Orange Point and a penetration of $12\frac{1}{4}$ miles in a south-westerly direction and about 20 miles in a southerly direction. The boundary between British Honduras and Guatemala is the River Sarstoon, which enters the bay on its western side about 12 miles south-westward of Orange Point. From Cape Three Points the coast trends in a straight line south-eastward for about 33 miles, then turns abruptly north-eastward for 27 miles. About 21 miles south-east of Cape Three Points, the Rio Moncagua enters the sea; this is the boundary between Guatemala and Honduras.

Fronting the coast of British Honduras up to a distance of about 5 miles off shore for a distance of 18 miles north-eastward of Orange Point are a number of sand cays and shoals. Depths in the bay shoal from about 12 fathoms in the middle gradually to the shore. A dangerous spit extends about $7\frac{1}{2}$ miles off shore from a position 7 miles south-south-eastward of Cape Three Points. There are several detached shoals charted.

From a position about 17 miles north of the mouth of the Rio Moncagua, a string of sand cays, reefs and dangers extends north-north-eastwards and northwards to front the coast of British Honduras up to 20 miles off-shore. The main shipping tracks to Honduras Bay and northwards to Belize and other ports of British Honduras pass between the cays and dangers on the northern side and the mainland southward.

The coast trends south-eastwards from the mouth of the Rio Moncagua for about 6 miles and then turns north-eastward to Omoa Harbour. The distance from the mouth of the river to the harbour is 15 miles, but the bight does not conform to the definition of a "bay" in the Law Commission's 1956 report.

There are no islands or drying features in Honduras Bay nor in the vicinity of the coast near the mouth of the Rio Moncagua.

Guatemalan ports within Honduras Bay are Port Livingstone at the entrance to the River Dulce, leading to an extensive lake—vessels drawing more than 6 feet

anchor off; Santo Tomas, in a small bight in the south-east corner of the bay, has a channel dredged to 30 feet leading to a wharf; Puerto Barrios, in the same bight, has a pier with a berth of 25 feet alongside.

The coastline of Honduras Bay measures very approximately about 70 miles, out of which about 14 miles are in the territory of British Honduras.

3. Gulf of Fonseca (Annex, map No 12)

References: Charts, Nos. 1960, 1049

West Coasts of Central America and United States Pilot, Sixth Edition, 1950

The entrance to this gulf lies between Punta Cosequina on the south and Punta Amapala, 9 miles north-westward. The gulf is shaped somewhat like that of a hand with "fingers" formed by a bay in which is Puerto La Union, Bahia Cismuyo, Bahia San Lorenzo and the "thumb" by the indentation in which is Moneypenny Anchorage and into which the Negro River, Estero Blanco and Estero Real flow. The penetration inland from the line joining the entrance points to the various "fingers" are: 30, 27, and 32; it is 32 miles to the end of the "thumb".

A large proportion of the coastline of the gulf is mangrove swamp, while other parts form the steep coastline round nearby volcanos. There are a number of islands in the gulf, the principal ones are: Farallones, about 9 miles within the entrance and 5 miles from the eastern shore; Meanguera and Meanguerita, near the middle of the "palm" 10 miles within the entrance and 6 miles from the north-west shore; Conchaguaita, midway between Meanguera and the shore and the shore north-westward; Tigre, about 3½ miles north-east of Meanguera; Martin Perez, 2 miles north of Conchaguaita, with Isla Punta Sacate three-quarters of a mile north-westwards and the same distance off shore; Exposicion, about 1½ miles north-west of Tigre with Inglesera, Violin, Coyote and Garova within 2½ miles westward of it, and all lying in the approach to Bahia Cismuyo; Sacate Grande, about a mile north of Tigre, between Bahia Cismuyo and Bahia San Lorenzo and separated from the mainland by a narrow creek.

The boundary between El Salvador and Honduras meets the gulf in the entrance to Rio Goascoran, on the north side of the "finger" in which is Puerto La Union; the boundary between Honduras and Nicaragua meets the sea in the "thumb" in the vicinity of the mouths of the Negro River and Estero Blanco. Of the islands, Meanguera, Conchaguaita, Martin Perez and Isla Punta Sacate are territory of El Salvador and Sacate Grande, Tigre, Exposicion, Inglesera, Violin, Coyote and Garova are territory of Honduras.

Depths in the entrance to the gulf are about 20 fathoms, these in general graduate to the shores; north-eastwards, northwards and north-westwards of Meanguera depths are everywhere less than 6 fathoms. In the "fingers" drying banks extend off shore as far as 1½ miles in places, with shallow depths a considerable way seaward of the low-water lines. Nearly the whole of the western side of Bahia San Lorenzo is filled by an extensive detached drying bank. Another

small drying bank lies south of this bay and 3½ miles east of Tigre. Except for a few channels, the whole of the northern end of the gulf is shallow.

Ports within the gulf are: Amapala, a port of entry and the only accessible one on the Pacific coast of Honduras, at the north-west corner of Tigre. It has an open anchorage in depths of 7 fathoms, but limiting depths in the approach are 3½ fathoms. The fairways lie on either side of Meanguera.

Puerto La Union, or Cutuco, in the north-west "finger" of the gulf, is a land-locked harbour and the principal port of entry for El Salvador; there is a wharf with 30 feet of water alongside, but the limiting depth is 24 feet on the bar in the approach; the fairway runs between Conchaguaita and the mainland westward.

Estero Real in Nicaragua is navigable for about 20 miles by vessels which can cross the bar, which has 18 feet over it. There are a few trading stations in this river. Well-sheltered anchorage may be obtained in Moneypenny Anchorage in the approach to this river.

As a very approximate estimation, about half the coastline of the gulf is territory of Honduras and the other two States have about a quarter each.

In 1916-1917 the question of the status of the Gulf was brought before the International Court of Central American Republics. Briefly, the Court in its Judgment stated that the gulf was an "historic possessed of a character of a closed sea", and that, outside the three-mile limits of territorial waters enclosing the exclusive property of each of the three States, co-partnership should exist in the ownership of the remaining waters.

4. Salinas Bay (Annex, map No 13)

References: Charts, Nos. 587 (Plan), 1049, 2145

West Coasts of Central America and United States Pilot, Sixth Edition, 1950

The boundary between Costa Rica and Nicaragua meets the sea on the northern side of Salinas Bay on the Pacific side of Central America.

The bay, running in a general east-south-easterly direction, is entered between Punta Sacate and Punta Arranca Barba about 2½ miles north-north-westward. It has a length of 4½ miles, and minimum and maximum widths of 2 and 3 miles. About 1¼ miles east of Punta Sacate, and three-quarters of a mile off shore, lies the island of Salinas; south-eastward of this, and extending up to half a mile off shore, lies a group of detached drying rocks. A group of smaller rocks, some above-water and others drying, lies 400 yards off shore, half a mile east of Punta Arranca Barba. The head of the bay dries out in places for nearly half a mile.

Depths in the entrance are from 11 to 15 fathoms, further in towards the middle of the bay, they are 6 to 9 fathoms; the coastal banks, with less than 3 fathoms over them, extend up to half a mile off shore and rather more than a quarter of a mile east and south of the island of Salinas. On the latter, and 200 yards north-west of the island, is a small above-water rock and a drying rock about 400 yards east of the island. Good sheltered anchorage from a westerly blow may be obtained south-

south-westward of the island of Salinas. There are no ports in the bay.

The international boundary meets the coast about two-thirds of the way along the northern shore, thus about one-third of the coastline is Nicaraguan territory.

The bay conforms to the definition in article 7 of the Law Commission's 1956 report.

A promontory, of which Punta Sacate forms the northern point, separates Salinas Bay from Elena Bay, the south-western entrance point of which is Punta Blanca, about 11 miles south-westward of Punta Sacate. A line 15 miles long running northwards to the Nicaraguan coast, would enclose an area of sea which conforms to the Law Commission's definition of a "bay" in its 1956 report. Considering these two bays as one indentation, about one-quarter of the coastline would form Nicaraguan territory.

5. Chetumal Bay (Annex, map No 14)

References : Chart No. 1204

West Indies Pilot, Volume I, Tenth Edition, 1941

Chetumal Bay, the entrance to which lies about 25 miles north of Belize, runs in a general northerly direction. Its western side is formed by the coasts of British Honduras and Mexico, its eastern side by the Mexican coast and by the west coast of Ambergris Cay, which is territory of British Honduras. The entrance to the bay lies between the south end of Ambergris Cay and the coast of British Honduras 12 miles westward. The penetration of the bay is 57 miles. The general width is about 13 miles and the extreme width about 20 miles.

Ambergris Cay is about 19 miles long in a north-north-easterly direction, and has an average width of about $3\frac{1}{2}$ miles; between this and the mainland are a number of cays, the principal of which are Mosquito, Guana, Blackadore Swab and Deer Cays. Other islets are Shipstern Cay, close to the mainland coast of British Honduras and 24 miles within the entrance; Tamalca Island on the west side, close off the Mexican coast and 43 miles within the entrance; also an unnamed cay, about a mile north-west of Ambergris Cay.

Rivers flowing into the bay, each forming a highway for inland communication, are, on the west side, New River, Hondo River and Rio S. Jose; on the north side, Rio Kirk. New River is in British Honduras; the Hondo River forms the land boundary and the others are in Mexico.

The whole of the bay is shallow. A bar of mud, with depths of 5 feet over it, extends right across the entrance to the bay; channels within the bay leading to the mouths of the rivers are marked by beacons and have depths of from 8 to 12 feet.

There are settlements at Corosal near the mouth of the New River and at Consejo, about 6 miles north-eastward, in British Honduras; and at Payo Obispo or Chetumal, close north of the Hondo River, at Calderitas and Ubero, about 4 and 10 miles, respectively, northward of that river, in Mexico.

The boundary through the bay has been laid down

in straight lines as indicated on the chartlet; it meets the sea after passing through the narrow channel, named Boca Bacalar, between the north end of Ambergris Cay and the southern tip of the Mexican coast. A narrow canal is charted cutting through this southern tip of the Mexican coast and thus giving access to the Mexican part of the bay entirely through Mexican territory.

Very approximately, half the coastline is in the territory of each state.

6. San Juan River (Annex, map No 15)

References : Chart No. 1139

West Indies Pilot, Volume I, Tenth Edition, 1941

The San Juan River forms the boundary between Costa Rica and Nicaragua on the Caribbean side of Central America. The river reaches the sea through a delta and the boundary follows the principal branch, close to the mouth of which is the small port of San Juan del Norte or Greytown Harbour. Owing to silting, this port is almost disused now. Southward of the delta, the coast runs in a south-south-easterly direction for many miles and is comparatively straight. The coast, at the delta itself, trends at right angles to this stretch for about 5 miles whence the main coasts run northwards and north-north-eastward to form a narrow indentation with a length across its entrance of nearly 40 miles and a maximum penetration of about 12 miles. This in no way conforms to the definition of a "bay" in article 7 of the Law Commission's 1956 report.

The delta is formed primarily of swamp, low sand and mud bars, and is fronted by spits, on which the sea continually breaks heavily, enclosing shallow lagoons; all are liable to frequent changes. In 1937, the main channel entrance had but 5 feet over the bar.

The best anchorage is about $2\frac{1}{2}$ to 3 miles northward of a disused light tower towards the western end of the delta, in depths of about 10 fathoms, and always at least a mile outside the breakers, which extend up to half a mile off shore. Eastward and southward of the delta, depths of 100 fathoms lie 7 or 8 miles off shore, but 5 miles northward they are 15 miles off. There are no dangers in the approach other than the coastal banks.

7. Mazanillo Bay (Annex, map No 16)

References : Charts, Nos. 463, 486; U.S.H.O. No. 2646

West Indies Pilot, Volume III, Fourth Edition, 1946

Mazanillo Bay may be considered to lie between Iacos Point and the eastern extreme of the entrance to Fort Liberté Bay about 6 miles south-westward, and to lie in the angle of the coast where the north coast of the Dominican Republic turns from a general south-westerly direction to the westerly direction of the coast of Haiti. The penetration inland is 5 miles. Iacos Point is situated on the north-west side of a peninsula of which Monzillo Point is the southern extreme. For this extreme, the coast turns north-north-eastwards for $2\frac{1}{2}$ miles and thence trends southward for about $5\frac{1}{4}$ miles to the entrance to Estero Balza, a shallow lagoon, the entrance of which is now closed by mangroves, thence the coast

turns abruptly westward. The mouth of the Massacre River, which forms the boundary between the Dominican Republic and Haiti, is $1\frac{1}{2}$ miles west of the entrance to Estero Balza.

Mangrove swamps form the northern and eastern sides of the bay; in the latter side are two shallow indentations or lagoons, most of which lie behind the coast, the southern of these is fronted by a mangrove islet named Barriga de Vaca.

The bay is deep except on its northern and eastern sides. There are depths of 320 fathoms in the entrance, and depths of 100 fathoms are found less than half a mile from the southern shore, within a mile of Monzillo Point and about $1\frac{1}{4}$ miles from the south-east corner of the bay. East and south-east of the promontory on which is Monzillo Point is a shallow coastal bank with depths of less than 3 fathoms; depths to 10 fathoms extend up to half a mile from this bank. About a mile east of the mouth of the Massacre River is Puerto Libertador, a small settlement with a pier, 745 feet long, having a depth of 46 feet at its outer end, decreasing to 10 feet at its inner end.

Approximately one-third of the coastline of the bay as described above lies in the territory of Haiti.

North and north-west of the promontory at the northern end of the bay are the Seven Brothers, small islets lying at the western end of the extensive shallow Monte Cristi Bank. Arenas, the outermost, lies 7 miles offshore and Torotu, the innermost, is $2\frac{1}{2}$ miles offshore.

Close beyond the bay westwards is the narrow entrance, about $1\frac{1}{2}$ miles long, leading to Fort Liberté Bay, which is land-locked with a length of about 5 miles and a general width of about a mile. There is a good anchorage in depths of 9 fathoms off the settlement of Fort Liberté.

8. Gulf of Paria (Annex, map No 17)

References: Charts, Nos. 1480, 1801, 483A
West Indies Pilot, Volume II, Tenth Edition, 1955

The Gulf of Paria is an extensive gulf roughly rectangular in shape, with an east-west length of about 70 miles and a north-south breadth of about 30 miles. It is entered near its north-east corner through the Dragon's Mouth, and near the middle of the southern side through the Serpent's Mouth. Both these entrances are described in the study on "Straits which constitute Routes for International Traffic" (A/CONF.13/6)².

The north-eastern, eastern and approximately half the southern shore are formed by the coasts of Trinidad and the remainder by the coast of Venezuela.

Depths in the middle of the Gulf are from 16 to 10 fathoms. The western and south-western shores are fronted by extensive, shallow coastal banks, depths of less than 3 fathoms being found in places up to 10 miles offshore. The western and south-western sides form part of the delta of the Orinoco River.

Guiria, on the Venezuelan coast on the north side of the Gulf, is a port of entry for the San Juan River which empties into the western end of the gulf. There is a pier 200 feet long with a depth of 15 feet alongside. The important oil shipping of Caripito is 53 miles up the San Juan River; vessels with a draught of 32 feet in fresh water can berth there.

Pedernales and Capure on the south side of the Gulf have important oil installations near them.

Ports in Trinidad are Point Fortin and Brighton on the south shore, Point à Pierre on the east shore and Port of Spain on the north-east shore. All are oil-loading ports and can accommodate deep draught vessels.

In 1942, a treaty was signed between the Governments of the United Kingdom and Venezuela dividing the submarine areas of the Gulf. This dividing line runs approximately in a straight line from the south-western end of the Dragon's Mouth to the Serpent's Mouth. This has no relation to the status of the waters above the continental shelf.

The following regulations are enforced by Venezuela: in Venezuelan territorial waters the Venezuelan flag must be displayed continuously at the fore; at night, on demand, the name of the vessel must be signalled by morse lamp.

9. Bay of Ancón de Sardinias (Annex, map No 18)

References: Chart No. 2257
South America Pilot, Volume III, Fourth Edition, 1954

Bahia de Ancón de Sardinias is a shallow bight in the coast between the mouth of Rio Vainillita and Punta Mangles, 33 miles north-north-eastward. Its penetration is about 12 miles. In the bight are four large openings which resemble river mouths and are the entrances to a complex system of creeks resembling a delta.

From south to north these are: R. Santiago, the entrance to which is reputed to be shallow; La posa del Puerto, about 4 miles long in a south-easterly direction and three-quarters of a mile wide, with depths of from $2\frac{1}{2}$ to 4 fathoms, but depths in the approach are 2 fathoms; Bahia San Lorenzo, also with depths of 2 fathoms in the approach, is about 4 miles long with widths varying between $1\frac{1}{2}$ miles and half a mile and it has depths of from 6 to 10 fathoms; Panguapi Bay, about 2 miles wide, is the estuary of the River Mataje which forms the boundary between Ecuador and Colombia; no details are available, but the estuary appears to be shallow. North of Panguapi Bay is the southernmost mouth of the delta of the River Ancón.

The whole of the eastern side of the bay is filled with shallow and drying banks and local knowledge for navigation to the entrances named above is essential; the whole coast is low and featureless. Vessels should not normally approach the coast within depths of 10 fathoms, which lie between 4 and 8 miles offshore.

Población de la Tola, a small port, lies about a mile within the River Santiago. Puerto de San Lorenzo lies at the head of Bahia San Lorenzo and about 12 miles east-north-east of La Tola; it has rail communication with Quito, the capital of Ecuador.

² *Supra*, p. 114.

Including only the most seaward coastlines of the outer islands, about one-third of the coastline of the bay lies in Colombia.

Available charts are inadequate for a fuller description.

10. Bay of Oyapok (Annex, map No 19)

References : Chart No. 1802

West Indies Pilot, Volume II, Tenth Edition, 1955

The Bay of Oyapok is the estuary of the River Oyapok which forms the boundary between French Guiana on the west and Brazil on the east. The coast of the estuary on its eastern side trends north-north-eastwards to Cape Orange, the natural entrance point, where it turns south-eastwards; that on the western side trends northward to a prominent point abreast Mont d'Argent, and then trends north-westwards, past a point fronting a hill called Fausse Mont d'Argent, about 5 miles from Mont d'Argent. With the exception of these hills, the whole coast is low and fronted with mangroves. Cape Orange is a rounded cape; the low-water line is charted as lying up to 3 miles northward of it.

The entrance to the estuary may be considered as lying between the low-water line off Cape Orange and the point close to Mont d'Argent, a distance of 10 miles, or between that cape and the coast off Fausse Mont d'Argent, a distance of about 12½ miles. The penetration to where the River Oyapok narrows to about 2 miles is in the first case about 12 miles, and in the second about 15 miles.

The River Uassa enters the estuary on the eastern side about 6 miles south-south-west of Cape Orange; it has depths in its entrance of 8 feet.

The River Uanares flows into the western side of the estuary about 8 miles south of Mont d'Argent; it also is shallow.

The estuary is encumbered with shoals on which the sea breaks heavily during the winter; it has not been completely surveyed and navigation in it is difficult and dangerous. The 3-fathom depth contour is charted 7 miles offshore in the approaches. Two drying banks are charted off the mouth of the River Uanares, but the survey is old and there is little doubt that depths and drying features in the estuary are liable to frequent changes.

Vessels of less than 10-foot draught can anchor about a mile off the coast near Point d'Argent, where there is a small jetty. Vessels of light draught can ascend the River Oyapok for about 30 miles to St. George.

About half the coastline is Brazilian territory.

11. Estuary of the Maroni River (Annex, map No 20)

References : Charts, Nos. 534, 1802

West Indies Pilot, Volume II, Tenth Edition, 1955

The River Maroni forms the boundary, near its mouth, between French Guiana and Surinam; it enters the sea through a comparatively straight stretch of coast-

line which runs in a general west-north-westerly direction for many miles. The entrance to the river proper lies between Pointe Française on the east and Galibi Point about 2 miles westward. From the latter point the coast runs north-north-westward for 5¾ miles to Kaaimanshoofd, the western natural entrance point of the estuary, and thence turns westward. From Pointe Française, the coast turns abruptly east to form the mouth of Rivière La Mana which, flowing west-north-westwards, is separated from the sea by a narrow neck of land terminating at Pointe Isère, the eastern natural entrance point, about 3 miles east-north-east of Pointe Française. The low-water lines of the coast extend about 1½ miles and half a mile north of Pointe Isère and Kaaimanshoofd respectively. The estuary thus has an entrance about 8½ miles wide, with a penetration of about 4½ miles.

The estuary is shallow, but the tide rises about 8 feet at spring tides. It is approached between Tijger Bank on the west and Banc Français on the east. The former, with depths of less than 6 feet, extends about 8 miles north of Galibi Point—there is a drying patch about 3½ miles north of that point; the latter, with similar depths, extends about 6 miles north of Pointe Française. In 1955, least depths on the recommended track through the estuary were 7 feet, and ships of about 15-foot draught could reach Albina in Surinam and St. Laurent in French Guiana, both about 15 miles above Galibi Point, Rivière La Mana can be navigated by vessels of about 12-foot draught to Mana, a French settlement, about 10 miles within Pointe Isère.

The recommended track into the Maroni River passes close to the French shore at and within Pointe Française. The track from seaward is marked by buoys, which are moved to conform with the alterations in depths between and over the banks. Local knowledge is essential.

About one-third of the coastline of the estuary is French.

12. Estuary of the Corentyn River (Annex, map No 21)

References : Charts, Nos. 99, 1801

West Indies Pilot, Volume II, Tenth Edition, 1955

The boundary between British Guiana and Surinam follows the Corentyn River near its mouth. The estuary of the river may be considered to extend seaward from a line joining Bluff Point on the east bank to a position on the British Guiana coast 4½ miles westward. The coast from Bluff Point trends north-eastward for 7 miles, and then turns eastward; Turtle Bank, which dries, extends up to 2½ miles offshore from this latter bend in the coast. The Nickerie River enters the estuary on its south-eastern side about 3 miles north-east of Bluff Point. The coast from opposite Bluff Point trends northward for about 5 miles, and then gradually trends in a curve north-north-westward and north-westward. The outer end of the estuary may be considered as a line joining the north-west corner of Turtle Bank to a position on the coast of British Guiana 15 miles west-north-westward.

The estuary is shallow; the 3-fathom contour lies about 2 miles north of Turtle Bank and continues in a north-westerly direction across the approach to the estuary; at the north-western end it is about $8\frac{1}{2}$ miles off shore. Near the middle of the estuary are two banks, close together and shallower than the rest of the estuary; navigation channels lie both east and west of them. Depths in the channels across the bar are about 8 feet and the rise of the tide is about $8\frac{1}{2}$ feet. Tidal streams are strong near the river mouths.

Five drying banks are charted in the estuary; these lie $1\frac{3}{4}$ miles north-west of Bluff Point; 4 miles west-north-west of that point and three-quarters of a mile off shore; $5\frac{1}{4}$ miles north-west of the point and three quarters of a mile off shore; $5\frac{1}{2}$ miles north-west of the point and nearly $1\frac{1}{2}$ miles off shore; and $4\frac{3}{4}$ miles north-west of the point and $2\frac{3}{4}$ miles off shore.

In the winter, heavy seas occur in the estuary and ships of 9 feet draught only can enter the river—in the summer a draught of 16 feet is possible. The river gives access to the settlement of Tropica in Surinam about 60 miles up the river.

The small ports of Niew Nickerie and Wageningen lie about $2\frac{1}{2}$ and 24 miles within the Nickerie River. They can be reached by vessels with a $13\frac{1}{2}$ -foot draught.

About half the coastline of the estuary is Surinam territory.

13. Boca de Capones (Annex, map No 22)

References: Charts, Nos. 586, 1813

South America Pilot, Volume III, Fourth Edition, 1954

The boundary between Peru and Ecuador runs northwards to meet the coast in Boca de Capones, a narrow inlet running approximately east and west between the mainland on the south side of Golfo de Guayaquil and several islands close off shore. The eastern end of Boca de Capones connects with Estero Grande, a similar, but wider inlet, and its western end with the Pacific Ocean.

Abreast the termination of the land boundary, the waterway is about a mile wide between the mainland and the south side of Isla Templeque, but is obstructed near its middle by an islet about a mile long and half a mile wide. About a mile west of the boundary, the waterway is constricted to about half a mile in width. It then continues westward between the north side of Isla Mato Palo and the south coast of an unnamed island of which Punta Payana is the north point; Boca Payana separates this island and Isla Templeque. The waterway thence widens to a general breadth of nearly $1\frac{1}{4}$ miles and continues westward for about $3\frac{1}{2}$ miles; it is, however, obstructed by Isla Correa, about 3 miles long and half a mile wide, and by three islets in the channel south of the island and two islets and two drying mud flats north of the island. The waterway thence continues north-westward for about 2 miles to its entrance into the Pacific, having a general breadth of rather more than half a mile. Within three-quarters of a mile seaward of the entrance are two drying mud banks. South of Isla Correa, a creek named Estero del Salto leads west-south-westward to Bahía de Tumbes.

Depths in both Boca de Capones and Estero Grande are shallow and in general vary between one and 7 feet. The rise of the tide is about 6 feet.

It is most probable that the coastline and depths in the area are subject to continual change.

There are no ports within the area.

Accepting that the islands north of Boca de Capones are territory of Ecuador, the coastlines are about equally divided between that state and Peru.

14. Rio de la Plata (Annex, map No 23)

References: Charts, Nos. 2522, 3064, 3561, 1749, 2039

South America Pilot, Part I, Ninth Edition, 1945

Rio de la Plata is an extensive, funnel-shaped estuary formed by the confluence of Rio Parana and Rio Uruguay; the latter river forms the boundary between Uruguay and Argentina. The northern shore of the estuary is Uruguayan territory and the south-western Argentinian. As generally accepted, the entrance lies between Punta del Este and Cabo San Antonio, 120 miles south-westward; the penetration inland is about 160 miles. The estuary is remarkably shallow. The outer part seaward of Montevideo and Punta Piedras, about 57 miles south-westward, is divided into two channels by the extensive shoals Rouen Bank, 50 miles north-east of Cabo San Antonio, and Banco Ingles, together with Archimedes Bank, about 35 miles further northward. Several islets lie off the Uruguayan coast between Punta del Este and Montevideo, the most seaward of these are I. de Lobos, $4\frac{1}{2}$ miles south-south-east of Punta del Este, and I. de Flores, about 6 miles off shore and about 12 miles east of Montevideo.

The inner part is encumbered with extensive shallow banks with less than 3 fathoms over them, which almost fill the estuary. The principal of these are Banco Ortiz, extending from the northern shore; Banco Chico, midway between that bank and the coastal bank extending from the Argentinian shore; and Playa Honda, filling the north-western end of the estuary. Channels, marked by buoys and beacons, have been dredged through these banks to give access to the various ports.

Isla Farallon, the most seaward of a group of islands, lies $3\frac{1}{2}$ miles west of Colonia, about 88 miles above Montevideo; the estuary here is about 20 miles wide. About 24 miles north-west of this island is Isla Martin Garcia; this lies in the mouth of the Rio Uruguay and abreast the delta of the Rio Parana. The estuary is here about $12\frac{3}{4}$ miles wide. About 10 miles further north, the mouth of the Rio Uruguay narrows to a width of about 4 miles.

The principal ports in the estuary are:

On the coast of Uruguay: Montevideo, about 60 miles west of Punta del Este, channel dredged to 33 feet; Colonia Roads, about 88 miles above Montevideo, which vessels with draughts of less than 15 feet can reach.

On the coast of Argentina: La Plata, about 21 miles south of Colonia, channel dredged to $25\frac{1}{2}$ feet; Buenos Aires, 27 miles north-westward of La Plata, dredged to $27\frac{1}{2}$ feet.

Depths are maintained in the entrance to the Rio Uruguay to allow vessels drawing up to 23 feet to enter and navigate for about 100 miles.

Pilotage is compulsory in the estuary, except for coasting vessels, beyond a line joining Montevideo to Punta Piedras. A vessel bound for an Uruguayan port on Rio Uruguay should either pick up an Uruguayan pilot at Montevideo or take an Argentine pilot, who will conduct her as far as the roadstead of the Uruguayan port.

About half the coastline of the estuary is Uruguayan.

15. Estuary of the Coco (Wanks) River (Annex, map No 24)

References : Charts, Nos. 2425, 1218
West Indies Pilot, Volume I, Tenth Edition, 1941

Information regarding the estuary is scanty and old; it is known that the coastline and depths are liable to frequent changes due to the alluvial deposits from this large river.

The river near its mouth forms the boundary between Honduras on the north and Nicaragua on the south. The land everywhere near the entrance is low and swampy and covered with trees.

Almost filling the entrance in the delta is Isla Martinez, an island about $1\frac{3}{4}$ miles long and nearly a mile wide. The main entrance to the river, less than a quarter of a mile wide, lies southward of this island, between it and Isla San Pio, a long narrow islet. Southward of the latter is a shallow lagoon about $1\frac{1}{2}$ miles long and half a mile wide, almost enclosed by other islets. There is a secondary narrow and shallow entrance channel west of Isla Martinez.

Within a mile eastward and south-south-eastward of Isla Martinez lie other islets. Depths of less than 3 fathoms are charted within $1\frac{3}{4}$ miles north, east and south-east of Isla Martinez and these shallow depths are reported to be extending. A shifting bar fronts the river entrances, having depths from 3 to 6 feet, and the sea constantly breaks on it. At high water, vessels drawing 4 feet can at times cross the bar to reach Puerto Cabo Gracias a Dios on the south side of Isla Martinez.

16. Rio Grande (Annex, map No 25)

References : Charts, Nos. 3980 ; U.S.C. and G. 1117
West Indies Pilot, Volume I, Tenth Edition, 1941

The Rio Grande separates Mexico on the south from the United States of America on the north. The river enters the sea in a north-easterly direction through a comparatively straight stretch of coastline running in a general north-south direction for many miles. The river mouth is narrow, and is fronted by a bar over which it is reported that a depth of about 4 feet can be carried. No recent survey has been made and the channel is changeable.

By international agreement the river is not used for navigation, and special permission is necessary for any boat to enter it. The port of Brownsville lies on the

northern bank about 55 miles from the mouth by river, but about 20 miles in a direct line. This port is reached by a canal leading from Brazos Santiago, about 6 miles north of the river entrance. Brazos Santiago is a narrow pass leading into Laguna Madre, an extensive, shallow lagoon, separated from the sea by Brazos and Padre Islands, two long and very narrow strips of land. The former, in 1940, was no longer an island, but joined the mainland immediately north of the mouth of the Rio Grande.

III. ASIA

1. Gulf of Aqaba (Annex, map No 26)

References : Charts, Nos. 756, 3595
Red Sea and Gulf of Aden Pilot, Tenth Edition, 1955

The Gulf of Aqaba is a long narrow gulf on the eastern side of the Sinai Peninsula. The western shore is Egyptian, the eastern shore is Saudi-Arabian and the head of the gulf is Israeli and Jordanian territory. The islands of Tiran and Sinafar front the entrance. The length of the gulf is about 96 miles. The breadth at the entrance between Nabq and Ras Fartak is $5\frac{3}{4}$ miles. About 17 miles above Ras Fartak the breadth is $14\frac{1}{2}$ miles, which is the widest part of the gulf; thence abreast El Kura it is $12\frac{1}{2}$ miles wide, abreast El Mamlah, the width is 9 miles, thence this general width is maintained, varying from between $8\frac{1}{2}$ and 11 miles, to within 15 miles of the head. The head then narrows to a width of 4 miles abreast Ras el Masri, whence a general width of about 3 miles is maintained for 4 miles to the head.

The whole of the gulf is deep; depths of over 800 fathoms occur near its middle.

The only islets inside the gulf are Humaidha and Fara Un, both close inshore, the former off the eastern side $20\frac{1}{2}$ miles from the head, and the latter off the western side $7\frac{1}{2}$ miles from the head.

Tiran Island, in the approach, is separated from the Egyptian coast by the Strait of Tiran, about 3 miles wide; it lies about $4\frac{1}{2}$ miles south of Ras Fartak; Sinafar Island lies about $1\frac{1}{2}$ miles east of Tiran, with a reef in between. The north-west, north and east coasts of these islands are fronted by drying coral reefs. About midway between the west side of Tiran Island and the Sinai coast, westward, a line of drying coral reefs lies diagonally across the strait, forming on the west, the Enterprise Passage and, on the east, the Grafton Passage. The former has a minimum breadth of 1,300 yards, and the latter a minimum breadth of 950 yards between the central reefs and those extending from the coasts. Both these passages are deep. East and north of Sinafar and Tiran islands there would appear to be a tortuous channel between the coral reefs into the gulf, with a least depth of 9 fathoms and a width of less than half a mile; this area has not been surveyed in detail, and the available information is very old.

The Jordanian port of Aqaba lies on the eastern side at the head of the gulf, and the Israeli port of Eilath is on the western side of the head.

Of the coastline, over 100 miles are in the territory of both Egypt and Saudi Arabia, while about 3½ miles are territory of Jordan and about 6 miles are territory of Israel.

2. Shatt al-Arab (Annex, map No 27)

References : Charts, Nos. 2884, 3842
Persian Gulf Pilot, Tenth Edition, 1955

The Shatt al-Arab is a large river combining the waters of the Rivers Tigris and Euphrates, which enter the head of the Persian Gulf. Near its mouth, its eastern bank forms the boundary between Iraq to the west and Iran to the east.

The river mouth is funnel-shaped; at Fao, the river is about half a mile wide, it thence widens gradually over a distance of 5½ miles to its mouth, where it is about 4¾ miles wide, between Ras al Bishr and Ras al Abadan north-eastward. Both banks are very low and swampy and are fringed with drying mud banks.

Extensive drying mud banks extend south-eastward from Ras al Bishr and Ras al Abadan; the former, Maraqat Abdullah, up to 8¾ miles offshore, and the latter, Maraqat Abadan, up to 6½ miles; it is probable that both extend to seaward. Depths under 3 fathoms extend for about 4½ miles further seaward of these banks and form a bar. For a considerable distance seaward of the bar, depths are irregular. An artificial channel, marked by buoys, beacons and lights, has been dredged across the bar, giving access to vessels of about 32-foot draught at high water spring tides. The rise of the tide is about 9½ feet.

The principal ports in the river which can be reached by vessels of the above-mentioned draught are Fao and Basrah on the Iraqi side and Abadan and Khorramshahr on the Iranian side. Abreast the two latter ports, the international boundary leaves the bank and runs in the *thalweg* of the river.

Pilotage is compulsory within the river and its direct approach. The limits of the port of Basrah extend from the sea for 88 miles up the river. There are various regulations in force regarding speed, overtaking, entering the dredged channels on a falling tide, etc.

The amount of coastline at the river mouth appertaining to Iraq and Iran is about equally divided, but it should be remarked that the international boundary is the Iranian bank of the river.

3. Khor Abdullah (Annex, map No 28)

References : Chart No. 2884
Persian Gulf Pilot, Tenth Edition, 1955

Khor Abdullah separates the eastern side of the large island of Jazirat Bubiyan from the mainland of Iraq; Khor Sabya, a narrow creek only available for boats at half-tide, runs between the island and the mainland of Kuwait.

The entrance to Khor Abdullah may be considered as a line joining the southern corner of Maraqat Abdullah, the extensive mudbank fronting the coast of

Iraq westward of Ras al Bishr, and the edge of the drying mudbank off Jazirat Bubiyan, about 6½ miles south of Ras al Qaid. The breadth of the entrance is thus about 14 miles. The inner end of the Khor may be considered as where the waterway divides to pass on each side of Jazirat Warba; the penetration is thus 23 miles. Both banks are low, alluvial land covered in places with reeds and grass; drying mudbanks extend into the Khor for about 1¾ miles from the line of the coast, except off the south-east end where the bank itself continues in a south-easterly direction for about 8 miles between the Khor and the approach to the Shatt al-Arab.

Depths across the entrance are varied; there are a number of shoals with depths of less than 3 fathoms lying in line with the main direction of the Khor. Fasht al Aik, a small bank lying about 6¾ miles east-south-eastward of Ras al Qaid, dries 3 feet; a similar bank lies 3¼ miles eastward of the same point, and one drying 4 feet lies between the latter and that point. The least depth charted in the main channel and its approach is 22 feet. Buoys mark the line of the channel. In 1955, this marked channel entered the Khor near its middle, but about 3½ miles above Ras al Qaid it lay nearer to Jazirat Bubiyan than the Iraqi shore.

Anchorage may be obtained by vessels with local knowledge anywhere in the Khor, according to draught, but anchorage should not be taken up at the east-south-eastern end on account of submarine cables. Vessels may also find anchorage off Umm Qasr, where there is a jetty, about 12 miles above the eastern end of Jazirat Warba.

The boundary between Kuwait and Iraq runs through the Khor Abdullah, so about half the low-water coastline is in the territory of each state.

The Iraqi waters of the inlet are included in the port of Basrah.

4. The Sunderbans (Hariabhanga and Raimangal Rivers) (Annex, map No 29)

References : Chart No. 859
Bay of Bengal Pilot, Eighth Edition, 1953

The boundary between India and East Pakistan reaches the sea in the vicinity of the mouths of the Hariabhanga and Raimangal Rivers, two of the rivers forming part of the delta of the River Ganges.

These two rivers meet in a common estuary, with an entrance about 4½ miles wide, and are separated near their mouths by an island 12½ miles long in a north-south direction with a general width of about 2½ miles. The southern end of this island lies back about 5 miles from the general line of the coast formed by the other islands of the delta. Thus, the estuary of the two rivers has a penetration of about 5 miles, a width at the entrance of about 4½ miles and a maximum width of 7¾ miles. The breadth of the Hariabhanga River when it enters the estuary at the north-west corner is about 2 miles wide and the breadth of the Raimangal River in the north-east corner is 2½ miles.

The deep channels from the river mouths, with depths of from 4 to 10 fathoms, lie towards the sides of the estuary, leaving a shallow bank between and south

of the island separating the rivers. A small area, dry at low water, is charted on this bank and about a mile south of the island; depths of between a half and 3 fathoms extend from the island as far southward as the entrance to the estuary. Seaward of the entrance, the channels unite to form a single approach over a distance of about 15 miles between the coastal banks, with depths of less than 3 fathoms. The general breadth of the approach channel is $1\frac{1}{2}$ miles; depths therein are from $3\frac{1}{2}$ to 8 fathoms. On the western coastal bank are three patches, marked by breakers and which probably dry at low water; these lie $1\frac{1}{2}$, 5 and 10 miles south of the entrance to the estuary.

Tidal streams are almost certainly strong and local knowledge is essential for navigating in the vicinity, as the banks are subject to change; the land is low and there are no navigational marks.

About half the coastline of the estuary is Indian and the remainder Pakistan.

5. Sir Creek (Annex, map No 30)

References : Chart No. 118

West Coast of India Pilot, Ninth Edition, 1950

The north-west bank of the Sir River forms the boundary between Pakistan and India. This river forms one of the mouths of the delta of the River Indus.

The coast is low and flat throughout and partially flooded at high water to a considerable distance inland. It was reported in 1952 that the whole of the Indus delta coastline, coastal flats and depth contours had extended seaward as much as 5 miles in places; that the sea-face was generally formed by a narrow belt of low sand hills, fronted by drying sandbanks and backed by mangrove swamps interspersed by mud-banked tidal creeks. In consequence, therefore, the following description from the existing chart, based on an old survey, must be treated with reserve. It is not normal for any vessels except of light draught and up-to-date local knowledge to approach the coast within depths of 10 fathoms.

The following description is from the chart :

The entrance was funnel-shaped and ran in a north-easterly direction from the general north-westerly trend of the coast of the Indus delta. Its southern entrance point, which was low, flat land about 2 feet high, was fronted up to a distance of about 2 miles by a sandbank which dried in places. The north-western entrance point was formed by an islet from 2 to 4 feet high, about 8 miles north-west of the southern entrance point. The penetration of the inlet was about 6 miles to the restriction of the creek to a breadth of about $1\frac{3}{4}$ miles. The northern shore consisted of sand and mud which dried from 2 to 5 feet, the south-eastern side was of sand and mud with scattered mangroves intersected by creeks. Extending from the northern side was an extensive flat with depths of only a few feet and on which were these drying banks. The entrance channel, with depths of up to 7 fathoms, lay close to the southern shore and was about a mile wide, but approach thereto was restricted by an extensive bar lying seaward of the estuary, over which there was a limiting depth of 2 fathoms. There are no ports within the estuary. It was possible for light draught craft which could cross the bar to navigate the Sir River for a considerable distance.

During the south-west monsoon, the whole of the coast is fronted by breakers when the sea breaks in depths greater than 3 fathoms, which are found many miles off shore.

Rather more than half the coastline of the estuary lies on the Pakistan side.

6. Naaf River (Annex, map No 31)

References : Chart No. 3493

Bay of Bengal Pilot, Eighth Edition, 1953

The Naaf River near its mouth forms the boundary between Pakistan and Burma. The river discharges into the sea between Shahpuri Point and Cypress Point, about a mile east-south-eastward. An extensive drying sand and mud flat extends about $1\frac{1}{2}$ miles southwards and nearly 2 miles south-eastwards of the latter point: on this flat and about half a mile south of the point is a small, low islet. Off the northern side of the entrance there are no drying features. Inside the entrance, the river has a comparatively uniform width of about a mile for a distance of 10 miles, and runs approximately parallel to the coast; depths in the middle vary between 12 and $5\frac{1}{4}$ fathoms; thence the river widens and becomes shallower.

A closing line tangential to the low water lines of the coast on either side of the river entrance has a length of about $3\frac{1}{2}$ miles, and the penetration from this to the line joining the natural entrance points of the river is three-quarters of a mile.

The entrance is fronted by shallow flats which form a bar; that south-west of Shahpuri Point is named Shahpuri Flat and that south of Cypress Point, Cypress Sands. These have depths of less than 3 fathoms over them and extend for $4\frac{1}{2}$ miles southward and westward of the former point, their least depths in places are about a foot. St. Martin's Island, consisting of an island about 3 miles long and two islets southward of it, all joined by a reef, is connected to the south-western end of Cypress Sands and lies about $5\frac{1}{2}$ miles south-south-west of Shahpuri Point. St. Martin's Reef, a ridge of sunken rocks, lies about $5\frac{3}{4}$ miles west of the northern end of the island. Sitaparokia Patches, with about $1\frac{1}{2}$ fathoms over them, lie from $4\frac{1}{2}$ to 8 miles south-east of the island.

In 1944, there were two channels across the bar, one north-west of St. Martin's Island, had a least depth of 8 feet, the other, named Patrick's Gut, had a depth of 11 feet and lay north-east of the island; the latter is marked by a buoy. The tidal streams set across the approaches to the bar at about one knot.

The principal anchorage is off Maungdaw, a town on a creek in the eastern bank of the river about 7 miles above the entrance. Depth of water there is about $4\frac{1}{2}$ fathoms.

7. Estuary of the Pakchan River (Annex, map No 32)

References : Charts, Nos. 3051, 3052

Bay of Bengal Pilot, Eighth Edition, 1953

The Pakchan River, near its mouth, forms the boundary between Burma and Thailand. The river entrance lies between Victoria Point, the southern extreme of

Burma, and the low-water line of the mainland about $3\frac{1}{4}$ miles southward. Pulau Ru lies between one and $3\frac{1}{2}$ miles south-south-westward of Victoria Point and fronts the river entrance, Pulau Ganga lies about 2 miles west of the island. South-south-westward of this island, a chain of islands and islets fronts the Thailand coast up to a distance of 10 miles off shore; the longest of these are: Pulau Pingngwe, Goh Chang and Goh Piam. West and north-west of Victoria Point lies another group of islands extending up to $5\frac{1}{2}$ miles off shore; the principal of these are Pulau Besin, Pulau Perlin, Pulau Jungis and Pulau Tonton, the last connected to the coast by a drying bank. Fifteen miles west of Victoria Point is St. Mathew's Island, a large island forming one of an extensive chain fronting the coasts of both Burma and Thailand.

The river, for about 9 miles within, has a general breadth of about $2\frac{1}{4}$ miles, with depths of from $4\frac{1}{2}$ to 11 fathoms. The approaches to the river mouth are encumbered by numerous islands, reefs and shoals; depths of less than 3 fathoms extend up to 9 miles north-west, $5\frac{1}{2}$ miles west and $8\frac{1}{2}$ miles south-west of Pulau Ru, but there are three main channels of approach. The northern passes between Pulau Jungis and Pulau Tonton, thence north of Pulau Ru; this channel has a least depth of 11 feet; the western lies between Pulau Perlin and a reef less than a mile southward of that island, thence north of Pulau Ru, and this channel has a least depth of 20 feet in it; the southern passes between Goh Chang and the shallower water south of Pulau Pingngwe, then east of that island, of Pulau Saung Kharan and the islets southward and eastward of it, and thence south-eastward of Pulau Ru, the least depth in this channel is 30 feet. As none of these channels are buoyed, great caution is necessary in their navigation.

Vessels usually anchor about half a mile south of Victoria Point in depths of from 5 to 10 fathoms. Small craft can also anchor in Victoria Point Harbour, a small area with depths of about 15 feet close north-east of the point or in similar depths off the entrance to Ra-Nohng Creek. The Burmese settlement of Kawsong is on Victoria Point and the Thai town of Ra-Nohng is about 2 miles up the creek of that name.

The international boundary runs eastward and south-eastward of Victoria Point, thence east of Pulau Ru, thence between that island and Pulau Saung Kharong. Goh Chang and Goh Piam are Thai territory. St. Mathew's Island, with the islands lying within 17 miles south-south-westward of it, are Burmese territory.

8. Sibuko Bay (Annex, map No 33).

References: Charts, Nos. 2576, 2099, 1861

Eastern Archipelago Pilot, Volume I, Sixth Edition, 1950

Sibuko Bay is a large indentation in the coast of Borneo between Bum-Bum Island and Mandul Island, 71 miles south-westwards. The northern part of the bay is territory of North Borneo and the southern part is Indonesian. Bum-Bum Island, also forming the southern entrance point to Darvel Bay, is separated from the mainland by a channel about half a mile wide, and is

fronted on its south side by extensive reefs lying up to $7\frac{1}{2}$ miles from it. Mandul Island is a large island in the delta of the Sungei Sesayap. The coast of the western part of the bay is cut into by the mouths of numerous rivers, the largest of which are the Simengaris and Sibuko on the south-western side and the Kalabakang. The penetration of the bay is about 43 miles. The inner portion is almost completely filled by the large islands of East Nunukan and Sibetik. The former is separated from the islands south-east of the delta of Sungei Sibuko by a channel about $2\frac{1}{2}$ miles wide, from Sibetik Island by a channel 4 miles wide which is nearly filled by an island. Sibetik Island is about 19 miles long, and is separated from the mainland northward by distances varying between 4 and $5\frac{1}{2}$ miles. The water extending off the north-eastern and northern coasts of the island and north-westwards as far as the mouths of the Kalabakang River is known as Cowie Bay. The north-western and western coasts of Sibetik Island are separated from the mainland by Coalmine Reach, a narrow channel with a least width of about half a mile.

The northern coast of Sibuko Bay is fronted by coral reefs; the principal of these are Ligitan Reefs, lying from about 5 miles south-westward to 12 miles west-south-westward of the southern end of the reef extending from Bum-Bum Island, and about $4\frac{1}{2}$ miles from the mainland coast; several other reefs lie within 7 miles west-south-westward of these. There are numerous dangers lying up to $11\frac{1}{2}$ miles off shore. A rock, which dries one foot, lies about $9\frac{1}{2}$ miles south-east of the eastern end of Sibetik Island, and Makasser Banks, which are awash at low water, lie 5 miles east-south-eastward of the south end of the island. Drying spits extend about 3 miles south-east of East Nunukan and about $4\frac{1}{2}$ miles from Ahus, an island about 4 miles north of Mandul.

Depths at the northern end of the outer part of the bay are over 100 fathoms; the whole of the southern half is shallower and depths vary between about 30 and 4 fathoms. The channels south and north of East Nunukan Island are from 4 to 7 fathoms; in the approach to and in Cowie Bay the depths are from 4 to 10 fathoms, but there are depths, however, up to 17 fathoms in that part off Tawau; in the north-west end of Cowie Bay, which part has not been surveyed in detail, depths would appear to be shallower. In Coalmine Reach depths are between 6 and 12 fathoms; the channels leading south-eastward from it to that between Sibetik and East Nunukan Islands are shallower and have depths of about 2 fathoms.

Tawau, on the North Borneo coast opposite the middle of Sibetik Island, is the only port of consequence in the area. It has a pier with 17 feet of water alongside. Vessels also load logs at an anchorage at the north-east end of Coalmine Reach. Semporna, in the channel between Bum-Bum Island and the mainland, is a small fishing port.

Tidal streams in Cowie Bay and its approach run up to $2\frac{3}{4}$ knots. There are several beacons marking some of the reefs and there are navigational lights at Tawau and on the coast about 6 miles eastwards to assist approach at night.

Cowie Bay and its approach have a breadth at the entrance, from the east end of Sibetik Island to the main-

land north-north-eastward, of about 11½ miles and a penetration of 29 miles.

The international boundary runs through the Sino Solan River, thence midway between its eastern entrance point and the north end of East Nunukan Island to the parallel of 4° 10' North, thence it crosses Sibetik Island on this parallel.

Thus, in Cowie Bay and its approaches about one-eighth of the coastline is Indonesian and the remainder territory of North Borneo. In Sibuko Bay as a whole, when including the coastline of Sibetik and Nunukan Islands, as a rough approximation about half the coastline belongs to each State.

IV. CHINA

1. The Hong Kong area

References : Charts, Nos. 3026, 2562, 3605

China Sea Pilot, Volume I, Second Edition, 1951

The Hong Kong area involves the territories of three states, that of China, the Portuguese territory of Macao and the British territory of Hong Kong and its leased territory; these will be dealt with in three parts: (a) the China and Hong Kong territory on the west; (b) the China and Hong Kong territory on the east; and (c) Macao.

(a) Deep Bay (Annex, map No 34)

On the west, the Treaty boundary between China and Hong Kong crosses the neck of the promontory at the southern end of which is the island of Hong Kong, and reaches the coast close westward of the mouth of the river which enters the sea at the head of Deep Bay or Hau Hoi Wan. The boundary thence follows the high water line of the northern and western shores of the bay to South-West Point, its northern natural entrance point.

Deep Bay is entered between South-West Point and Black Point, 4 miles southwards, and has a penetration of about 8½ miles. The narrowest part of the bay lies about 4 miles within the entrance and is 2 miles wide. Mud flats, which dry, extend up to about three-quarters of a mile from the coast on all sides of the inner part of the bay. About 3¾ miles within South-West Point, and about a mile from the north-west shore, is a small drying rock; a similar rock lies nearly half a mile off the south-east shore and about 6¾ miles within Black Point.

North-west of the bay lies the entrance to the Chu Chiang or Canton River. Near the middle of this entrance, and fronting Deep Bay, is the Chinese island of Nei-Ling-Ting; this island is 5 miles south-west of the northern entrance point of Deep Bay and 4¾ miles west of its southern entrance point. About 2 miles south-west of Black Point is Tung K'wu, an islet, the northern of a group extending about 2½ miles southward, all of which are Hong Kong territory.

Depths in the bay are between one and 3 fathoms at the south-western end and less than one fathom at the head of the bay. A deep channel leading past the north end of Lantao, from the waters of Hong Kong

harbour, leads across the entrance to the bay and eastwards of an extensive bank with less than 3 fathoms over it, on which lies Nei-Ling-Ting, into the Chu Chiang.

There are no ports within the bay.

Approximately half the high water coastline of the bay is in Chinese territory and the remainder is territory of Hong Kong.

(b) Mirs Bay (Annex, map No 35)

On the east, the Treaty boundary between Chinese and Hong Kong territory meets the coast close eastward of Sha Tau Kok, a village near the head of Starling Inlet, an indentation at the north-west end of Mirs Bay. The boundary thence runs north-eastwards along the high water line of Mirs Bay to Chun Pei Ngaam, the eastern natural entrance point of Mirs Bay.

Mirs Bay is entered between Chun Pei Ngaam and Tam Long Sui, a headland about 5¾ miles west-south-westward. The penetration of the bay to its north-western end is about 14 miles. Its eastern and northern shores are comparatively regular, but the western side has many deep indentations. The principal of these are Tolo Channel and Starling Inlet.

Tolo Channel, about the middle of the west coast of the bay, is about 6 miles long and about three-quarters of a mile wide; its south-western end widens into an area about 5½ miles long, with a maximum width of about 3 miles, somewhat encumbered with islands, forming Tolo Harbour, Plover Cove and Tide Cove.

Starling Inlet at the north-west end of the bay runs in a south-westerly direction for about 3½ miles, with a general breadth of about three-quarters of a mile.

There are a number of islands and islets in Mirs Bay; the most important of these are as follows:

Gau Tau, an islet, near the middle of the bay and 2¾ miles within the entrance; a drying rock lies about half a mile south-west of it.

South Gau, about 2¼ miles within the entrance and more than a mile off the western shore.

Peng Chan, about 6¼ miles within the entrance and about 1¼ miles from the north-east shore.

Peak Rock, near the middle of the northern side of the bay and a third of a mile off shore.

In the southern approach to Tolo Channel are Tap Mun Chau and Chik Chau, with several islets near them.

Between Tolo Channel and Starling Inlet are Ngo Mei Chau, Pak Sha Chou and Crooked Island with other islets and rocks between them and the mainland.

Depths in Mirs Bay are in general between 7 and 12 fathoms, but are less in Tolo Harbour, Starling Inlet and the various coves around the bay. In general, the coasts are steep-to, but the ends of Tolo Harbour, Tide Cove and Starling Inlet all dry out.

Navigation within the bay is not difficult, but care must be taken to avoid numerous fishing stakes, some of which are situated in depths up to 9 fathoms. There are no ports in the bay, but there are several snug anchorages for vessels with local knowledge. Good anchorage may be obtained in the bay during typhoons.

Excluding the coastlines of the many islands and that of the inlet of Tolo Channel, about half the high water coastline of the bay is Chinese and the other half the territory of Hong Kong.

(c) *The Macao area* (Annex, map No 36)

The Portuguese settlement of Macao consists of the small peninsula at the south-eastern end of Aomen Tao, a large Chinese island towards the south end of the delta of the Chu Kiang, Ilha de Taipa and Ilha de Coloane. The northern boundary is on the narrow isthmus joining the peninsula to Aomen Tao. The peninsula is about 2½ miles long and about 1½ miles wide. I. de Taipa lies about 1½ miles southwards of the southern extremity of the peninsula and I. de Coloane about a mile southward of the I. de Taipa.

A breakwater extends nearly 2 miles south-eastward from the south-eastern end of the peninsula, and off its end there is a short detached breakwater parallel to it. A drying bank surrounds I. de Taipa, and a similar bank connects I. de Coloane to the Chinese islands north-westward and westward of it. Between the peninsula and I. de Taipa, a narrow drying spit extends eastward from the southern side of the island close westward of the peninsula. Close off the eastern end of I. de Taipa is a small rock 36 feet high and, nearly a mile northward of it, is a drying rock.

The whole of the area lies within the one-fathom depth contour, and the port is liable to silting. At high water, vessels of less than 14-foot draught can enter; the rise of the tide is about 9 feet at springs.

About 3½ miles north-east of the peninsula, and up to 2 miles off shore, lie the Chinese islets of Ta-Chou-Chou. About 2¼ miles south of the southern side of I. de Coloane is the south-east extremity of the Chinese island of Ta-Heng-Chin. About 8 miles eastward of the extremity of the breakwater lies the Chinese islet of Ching Chou; this is the northern of a chain of islets which extends about 10 miles south-south-westward.

Pilotage is compulsory in the port of Macao.

2. *Yalu River* (Annex, map No 37)

References: Charts, Nos. 1256, 1257, 3652

China Sea Pilot, Volume III, Second Edition, 1954

The Yalu River forms the boundary between China and North Korea and flows into the northern side of the Hwang Hai or Yellow Sea. Its estuary may be considered as lying north of a line joining Tefa To, an island 8 miles south of the southern extremity of Chorusan Peninsula on the east side of the estuary, to Kulungshan on the western shore about 34 miles north-westward. The estuary is funnel-shaped and has a penetration northwards of about 17 miles to where the river narrows to a width of 3 miles.

A number of islands and islets lie within the estuary, the principal of these are:

Ka To and several islets lying between the Chorusan Peninsula and Tefa To.

Banjo Islands, 6 in number, about 10 miles west of the western coast of the Chorusan Peninsula.

Oyan To, about midway between Ka To and the Banjo Islands.

Un To, about 2½ miles north of the western islands in the Banjo group.

Katchiri To, about 3½ miles north-east of Un To.

Tashi To, about 4 miles north of Un To.

Shinto Islands, comprising a large island and several islets, about 11 miles north-west of the Banjo Islands and about 6 miles from the western shore of the estuary. Northward of these islands towards the part where the estuary rapidly narrows are several low, flat, swampy islands.

The Banjo Islands lie on a large drying bank which extends 4 miles southward of them. Westward and northward of this bank, almost the whole of the estuary is filled with numerous banks of sand and mud, most of which dry; these banks are intersected by many channels which are constantly shifting. Drying mud flats also extend up to 3 miles from the western side of Chorusan Peninsula; between these and the banks off the Banjo Islands are two deep-water channels which are obstructed by flats at the northern ends.

There are only two practical channels into the river, one west of the Banjo Islands and the other west of the Shin To Islands; the former is that more generally used, as the northern end of the latter is liable to shift. The fairways and depths in the river vary from month to month, and the limiting draught of vessels using them are determined from time to time by the pilots. Vessels with a draught of 13 feet can usually reach Ryuganpo on the east bank, about 10 miles above the Shin To Islands, and those with a 10-foot draught might reach Shingishu on the east bank and Antung on the west bank about 13 miles further up river. There is anchorage near Tashi To, to which goods are transported by lighter. Close north-eastward of this, on reclaimed land extending from the mainland, is an artificial port with depths up to 30 feet alongside, whence iron and aluminium are shipped. This was still being completed in 1949 when the depth in the approach channel was 20 feet. In the estuary, the rise of the tide at springs is about 21 feet and at Antung it is about 10 feet. The channels are marked by buoys and beacons which are frequently moved as the channels alter. Tidal streams in the estuary are strong and may run at a rate of 3¾ knots, while in the river at time of floods, a rate of 5 knots with the ebb may occur. From the end of October to the beginning of May, the river may be closed by ice. It is dangerous to take the ground in the estuary or river as the sand banks are very steep and with a falling tide a vessel is liable to capsize; this is a particular danger owing to scour should a vessel be grounded athwart the channel. All vessels should employ a pilot.

The international boundary lies towards the western side of the estuary. Approximately one-third of the coastline of the mainland of the estuary lies in Chinese territory.

3. Mouth of the Tyumen River (Annex, map No 38)

References : Chart No. 2432

South and East Coasts of Korea, East Coast of Siberia and Sea of Okhotsk Pilot, Fourth Edition, 1952

The Tyumen River near its mouth forms the boundary between North Korea on the south and the Union of Soviet Socialist Republics on the north. The western bank is high, but the eastern bank is a marshy plain. At the time of the survey for the chart, the river had an entrance about 1 ¼ miles wide which was nearly closed by a narrow islet about three quarters of a mile long, the seaward coast of which followed the general direction of the shore. There were only narrow channels on each side of the islet leading into the river and that on its north-eastern side was the wider. Within this islet, and towards the Korean side, were several other islets extending about 1 ¾ miles up the river.

Depths close off the islet in the entrance are charted as 3 and 1 ¾ fathoms, but in 1923, the date of the last available information, the average depth in the entrance was about 6 feet. Small craft with local knowledge could then enter the river in calm weather. The river is much swollen in spring when the snow melts and after heavy rains ; it is frozen over for several of the winter months. A high-power coastal navigational light is situated on the eastern side of the mouth of the river ; there is another about 3 miles south-west of it.

It is believed that the international boundary passes through the channel on the north-eastern side of the islet in the entrance.

V. EUROPE

1. Gulf of Trieste (Annex, map No 39)

References : Charts, Nos. 201, 1434

Mediterranean Pilot, Volume III, Seventh Edition, 1946

The Gulf of Trieste lies at the north-east corner of the Adriatic Sea. The international boundary between Italy and Yugoslavia meets the sea in a small bay formed between Grossa Point and Sottile Point on its south-eastern side.³

The Gulf may be considered to extend from Salvore Point, the north-westernmost point of the Istria Peninsula and Porto Grado about 12 miles north-north-westward. The gulf is roughly in the shape of a rectangle, and has a penetration of about 13 ½ miles. The narrowest part is about 9 ½ miles wide. Its south-eastern shore is steep-to and is indented by several small bays, the principal being Perano Bay, Capo D'Istria Bay, San Bartolomeo Bay and Muggia Bay. The north-eastern shore is also steep-to and is comparatively straight ; the north-western shore is low, swampy, intersected by a

³ See now the Memorandum of Understanding between Italy, the United Kingdom, the United States of America and Yugoslavia regarding the Free Territory of Trieste, London, 5 October 1954. Annex I to this Memorandum gives the new agreed boundary. U.K. Cmd. 9288, Miscellaneous No. 30 (1954) Trieste.

number of creeks and is fronted by a drying mud bank. Panzano Bay, about 3 miles across, cuts into the north corner of the gulf.

Depths in the gulf are in general between 12 and 8 fathoms. In the small bays on the south-eastern shore, they are slightly less, and depths less than 6 fathoms extend up to 3 miles from the north-western side. About 3 miles east of the entrance to Porto Grado the drying mud bank extends up to a mile offshore, and off the mouths of the Izonzo River, about 6 miles north-eastward, the drying banks extend up to a similar distance.

The modern port of Trieste lies on the coast close northward of Muggia Bay which also forms part of it. This bay is partially enclosed by a detached breakwater. The largest ships can be accommodated. Trieste is a free port. Monfalcone lies inside the head of Panzano Bay and is the centre of a ship-building industry.

The international boundary meets the coast near the head of San Bartolomeo Bay, which lies 10 miles north-eastward of Salvore Point. It is a small indentation between Grossa Point and Sottile Point about a mile north-eastward, the penetration is a little more than half a mile, but does not conform to the definition of a bay in article 7 of the International Law Commission's 1956 report. The Italian quarantine station for Trieste is situated at the northern end of the bay.

Other than the banks and shallows on the north-western side and a few submerged wrecks, there are no navigational dangers in the Gulf and navigation is simple. For night navigation there are ample high-powered lights. There is a rise of only one to 2 feet in tide, but the general water level, with prolonged winds, may alter by several feet. The Gulf is subject to Boras, which are gale force winds and violent squalls from between north and east which frequently set in with little or no warning and may blow for several days.

Very approximately, a quarter of the coastline of the Gulf is in Yugoslav territory.

2. Ems and Dollart (Annex, map No 40)

References : Charts, Nos. 2181, 3761, 3509

North Sea Pilot, Part IV, Tenth Edition, 1950

The estuary of the River Ems, between the high water lines, is shaped roughly like a bent funnel, and for the main part lies between the East Friesian coast of Germany and the Groningen coast of the Netherlands. Its seaward limit may be considered as extending from Norddeich on its northern side to the Netherlands coast about 18 miles south-westward. The penetration inland is about 20 miles. The coasts on both sides are low and flat and for considerable distances are formed by dykes. That from Norddeich trends south-south-westwards and southwards for about 18 miles to Knock, and then turns abruptly eastward for about 7 miles to the mouth of the River Ems, which is about three-quarters of a mile wide. At the river mouth, the coast turns to a southerly direction for about 5 ½ miles, thence westward for about 5 miles, and thence in a curve northward and north-westward for a similar distance to form The

Dollart. From the western entrance point of The Dollart, the coast turns to a west-north-westerly direction for about 6 miles to Delfzijl, and thence in a northerly direction for the same distance, whence it turns west-north-westward for about 6 miles to the south-western end of the estuary. The coast then continues westward and west-south-westwards. Thus The Dollart is a bay at the inner end of the estuary, roughly square in shape with an entrance about 5 miles wide, a penetration of a similar distance and a maximum width of just over 6 miles.

A number of islands front the estuary. The most important is Borkum, lying about 12 miles west of Norddeich and about 6 miles from the Netherlands coast. This island lies on a drying bank which extends about 6 miles south-eastwards from it and into the estuary. About 2½ miles north-east of Borkum lies the island named Memmert Sand, with the western end of Juist about half a mile northward of it. Both these islands lie on an extensive drying bank which stretches up to 10 miles from the coast south-south-westwards from Norddeich. Rottumer Oog, with Rottumer Plaat 1¼ miles westward, lies about 3 miles south-west of Borkum on the extensive drying bank which stretches nearly 7½ miles northward of the Netherlands coast at the western end of the estuary as described above.

Detached drying sand banks lie up to 2½ miles north-west of Borkum. Inside the estuary at its northern end, the low water line is situated about a mile from the coasts on either side, but further in, from Knock eastwards and off Delfzijl, it is close to the coast. Parallel to the coast, off the latter port, however, there are three extensive detached drying banks which nearly fill the estuary. The narrow channel leading to Emden and the River Ems is confined on its southern side by a large drying bank extending from the east shore of The Dollart, which bay or indentation is almost completely filled by a drying bank.

Except for the main navigational channels, depths in the estuary are shallow. Shoal water also extends 10 miles west and 6 miles north-west of Borkum. There are channels on both sides of Borkum, that on the north is named Oster Ems and that on the south Wester Ems; the former is not of importance to sea-going traffic, the latter is divided into two by a shallow bank. Depths in all the channels in the estuary are liable to frequent change. Between Knock and Emden the channel is dredged over a narrow width and a depth of 23 feet is maintained. Vessels drawing up to 29 feet can, at high water, reach Emden on the north side of the estuary and Delfzijl on the western side; both these ports have berthing accommodation and all modern facilities. They both give access to extensive inland canal systems. Delfzijl can be reached by the deeper draught vessels by passing east, south and then west of the extensive detached drying banks lying off this port, or by light draught vessels by a direct channel between them and the Netherlands coast. The main channels are all well buoyed and marked by beacons and lights. The rise of the tide is about 10 feet at spring tides. In winter the channels are seldom completely frozen over. Pilotage is strongly recommended for ships without local knowledge. Other small ports in the estuary are Norddeich, which has a depth of about 7 feet in the approach;

Termunterzijl, about 4 miles east-south-east of Delfzijl, which has about 4 feet in the approach channel, and Nieuwe Statenzijl in The Dollart; both the latter ports give access to the Netherlands inland waterway system. The River Ems is navigable for sea-going vessels for about 22 miles.

The international boundary between Germany and the Netherlands meets the coast near the south-east corner of The Dollart, thence runs northward to a line joining the entrance points of that inlet, whence it turns westward along this line and continues westwards and northwards near the Netherlands coast to a position about 5 miles north of Delfzijl; it there leaves the immediate vicinity of the coast and continues seaward in a curve to a position between the islands of Borkum and Rottumer Oog.

3. Lough Carlingford (Annex, map No 41)

References : Charts, Nos. 44, 2800, 2810

Irish Coast Pilot, Tenth Edition, 1954

Lough Carlingford lies between Eire and Northern Ireland; the international boundary meets the west bank of the Newry River about 1¼ miles above Warrenpoint at the head of the lough. The entrance to the lough is between Cranfield Point in Northern Ireland and Ballagan Point in Eire, 2 miles south-westward. The lough is restricted 2 miles within the entrance to a width of one mile and thence abruptly widens to 3 miles. A general width between one and 2 miles is thence maintained to the head into which the Newry River flows abreast Warrenpoint. The penetration of the lough is about 8 miles.

The low-water line extends for about 300 yards off Cranfield Point and a drying rock lies about 400 yards further seaward. Off Ballagan Point, the low-water line extends as a spit about half a mile south-eastwards; there are a few detached drying rocks within 300 yards of the end of this spit. Close within the entrance, the lough is almost completely obstructed by shoals and drying rocks lying near the middle, whose positions can best be seen on the chart; on the largest of these is a small island named Block House Island. About 1¾ miles within, towards the north-eastern side, is Green Island, with drying rocks between it and the coast eastwards. Northward of this island, where the lough widens abruptly, the low water lines extend from the eastern shore for about 1¼ miles and from the western for about three-quarters of a mile over a distance of about 1½ miles; there are several drying patches near the middle of the lough here. Elsewhere within the lough, the low water line is, in general, less than a quarter of a mile off shore.

The following small ports lie within the lough :

(i) *On the Eire side* : Greenore, with about 14 feet of water at its pier, lying about 2 miles within the entrance; Carlingford, about 1¾ miles further in where there is a small tidal harbour which dries out.

(ii) *In Northern Ireland* : Warrenpoint, at the head of the lough on the eastern side of the Newry River, where there are small quays which dry out and a patent slip; Victoria Lock, 2½ miles within the Newry River and at the entrance to a ship canal, where there are

quays with 16 feet of water alongside; and Port Newry, 5½ miles north-west of Warrenpoint and reached by the ship canal, where there is a wet dock with a depth of 13 feet.

There are two approach channels to the lough between shoals lying in the entrance; the eastern is that most generally used and it runs about a quarter of a mile west of the low water line off Cranfield Point; a depth of 17 feet is maintained therein by dredging. The channel thence passes eastward of Block House Island and the drying rocks in the entrance. Sheltered anchorage may be obtained in depths of from 7 to 10 fathoms between these rocks and those off Green Island. Above Greenore, there is a bar across the lough with a least depth of 11 feet on the leading line. Above this, the depths near the middle of the lough increase to between 30 and 42 feet in the fairway. For 2½ miles from the head of the lough, the water shoals gradually to a depth of about 4 feet off the entrance to the Newry River. The intricate channels into the lough are well marked by buoys and navigational lights. The rise of the tide is 15 feet at springs. Tidal streams are strong; in the entrance they may run up to a rate of 3½ knots, and off Greenore up to 5 knots. It is recommended that vessels take a pilot.

Approximately half the coastline of the lough is territory of Eire.

4. Lough Foyle (Annex, map No 42)

References: Charts, Nos. 46, 2499, 2486
Irish Coast Pilot, Tenth Edition, 1954

On the north coast of Ireland, the boundary between Eire and Northern Ireland meets the coast in the south-west corner of Lough Foyle. This lough is the extensive estuary of the River Foyle which flows into its head. It is entered between Magilligan Point in Northern Ireland and the Eire coast little more than half a mile north-westward; the penetration is about 12½ miles. From Magilligan Point, the lough gradually broadens to reach a maximum breadth of 6¾ miles about 7 miles within the entrance; it then gradually narrows again to the head where the River Foyle, at its entrance, is about half a mile wide. The greater part of the lough is occupied by shoals. The low-water line on the eastern side of the lough extends up to 1½ miles off shore in places, while off the north-western shore it is comparatively close in. There are a number of drying patches within the lough, the principal of these are on the following banks, the positions of which can best be seen on the chart; the sizes, shapes and exact positions of the drying patches are liable to frequent changes: McKinneys Bank, North Middle Bank, Great Bank, South Middle Bank and Roof Banks.

The channel through the entrance is deep and continues for a distance of about 4 miles, having an average width of about half a mile, with depths greater than 6 fathoms; this area affords secure anchorage for large vessels and there are a number of mooring buoys. The navigational channel thence continues between the coastal bank on the north-west side of the lough and the North Middle and Great Banks to the entrance to the River Foyle. The axis of this channel lies at a maximum

distance of just over half a mile from the low water line off the Eire shore. A constant depth of 20 feet at low water is maintained in the channel by dredging operations carried out by the Londonderry Port and Harbour Commissioners. The rise of the tide at springs is about 8 feet. Tidal streams run at maximum rates of between 2 and 3½ knots, the latter rate in the entrance. This channel is amply marked by beacons carrying navigational lights.

The area south-east of this main channel consists primarily of sand and mud banks with little or no water on them at low tide, interspersed with channels running in the general direction of the lough; none of these, however, give access to the River Foyle.

Londonderry is the only port within the lough; it lies in Northern Ireland about 5 miles up the River Foyle. There are berths there with modern facilities which can accommodate vessels up to 23½-foot draught. Moville is a town on the Eire coast about 2¼ miles within the entrance, it has a small boat harbour and landing can be effected.

Pilotage is compulsory within the lough. The pilot station is close southward of Inishowen Head (see below).

The land boundary between Eire and Northern Ireland meets the coast in the vicinity of Muff, on the western side of the lough near its head.

Rather more than half the coastline of the lough is territory of Northern Ireland.

Outside the entrance to the lough, the Eire coast continues in a north-easterly direction for about 2½ miles to Inishowen Head and thence turns north-westwards; the coast of Northern Ireland at Magilligan Point turns south-eastwards and eastwards in a curve for about 8½ miles; it then trends northward and north-eastwards to Ramore Head, whence it takes a general east-north-easterly direction. The approach to Lough Foyle may be considered as lying between Inishowen Head and Ramore Head, 9 miles eastward. Northwards of Magilligan Point, a shallow bank named The Tuns extends for 3 miles with its western edge parallel to and about three-quarters of a mile from the Eire coast. This bank is separated from the coast of Northern Ireland by a narrow channel with a least depth of 12 feet. The channel between the bank and the Eire bank is deep and is that normally used. Eastward of The Tuns is a trawling ground.

5. Flensburg Fjord or Flensburger Förde (Annex, map No 43)

References: Charts No. 3562, 2117
Baltic Sea Pilot, Volume I, Seventh Edition, 1944

The Flensburg Fjord or Flensburger Förde, as known to the Germans, is a narrow, winding fjord projecting westwards into the land from the extensive water area south of the Little Belt in the western end of the Baltic. Its entrance points may be considered as Pøls Huk, the south-eastern extreme of the Danish island of Als, and

Falshöft, the north-western entrance point of Kiel Bay about 7 miles south-westward. The entrance is rapidly narrowed to a width of about $3\frac{1}{2}$ miles between Kegnes, a peninsula on the south side of Als, and Birknack, a prominent point on the German mainland which forms the north-eastern entrance point of Geltinger Bucht. The fjord is then widened to its maximum breadth of $9\frac{3}{4}$ miles by Geltinger Bucht on the south side and Sønderborg Bucht on the north. The former bay has an entrance 4 miles wide and a penetration of $2\frac{3}{4}$ miles; the latter has a breadth at its entrance of 5 miles and a penetration of about $3\frac{1}{2}$ miles; Als Sund, the narrow strait separating the island of Als from the mainland of Denmark, leads from the head of the bay. West of these bays and $9\frac{1}{2}$ miles within the entrance, the fjord narrows to a breadth of about $1\frac{3}{4}$ miles; thence general widths of one to $1\frac{3}{4}$ miles are retained to its head. About 14 miles within its entrance, the fjord changes its general westerly direction to a northerly one for about $2\frac{1}{4}$ miles; thence, doubling round the northern end of the peninsula of Holnis, it takes a general south-westerly direction for about $7\frac{1}{2}$ miles to its head. North of Holnis, the northern shore is indented by Nybøl Nor, a sheet of water about 2 miles long and nearly a mile wide which is entered by the very narrow Egersund. West of Holnis is the narrowest part of the fjord, where it is about three-quarters of a mile wide. There are two islands within the fjord; these lie close together with their extremes about half a mile from the Danish shore, about midway along the innermost reach of the fjord.

Depths in the fairway through the outer part of the fjord as far as the western extreme of Sønderborg Bucht are no less than 10 fathoms, thence they decrease to general depths of more than 5 fathoms, except in the narrows off Holnis where there are some shoals, the least depth on the leading line there is about 22 feet. Under ordinary conditions, vessels with a draught of $19\frac{1}{2}$ feet can berth at Flensburg. Shoal water, in general, extends seaward off most of the prominent points. An extensive bank, with less than 6 fathoms over it and a least depth of one fathom, lies in the middle of the entrance to the fjord, the main approach channel for larger ships leads south of this. The main fairway through the fjord is well marked by buoys and leading beacons. There are ample lights for night navigation.

There is no appreciable tidal movement, but the water level may alter dependent on the direction, strength and duration of the wind. The ordinary variation is only about a foot, but prolonged gales between west and north-west lower it, at times, from 5 to 7 feet below the mean level. The fjord freezes completely over only in severe winters, when it may be closed from one to two months.

The main ports within the area are Flensburg, on the German side, and Sønderborg and Egersund on the Danish side. Besides these, there are a number of small fishing harbours and piers for the shipping of tiles and other local manufactures. Flensburg has considerable quayage and can berth vessels drawing $19\frac{1}{2}$ feet; there are modern facilities and repairs can be executed. Sønderborg, lying close within Als Sund, has piers and wharves with depths of from 8 to 24 feet alongside and

other facilities. Egersund has a number of small piers with depths alongside of from 12 to 15 feet.

The international boundary meets the coast at the north-western corner of the head of the fjord, and thence continues eastwards to approximately the axis of the fairway through the fjord, which it follows to the entrance. The boundary is marked for the most part by leading beacons and lights.

Both German and Danish pilots may serve in the waters of either country but a vessel may be piloted into a harbour only by a pilot of the country which owns the harbour.

Vessels navigating in the fjord are forbidden to close either the German or Danish coasts within a distance of 200 metres without special permission, except in the case of ordinary navigation through the narrow channel west of Holnis. Navigation is also forbidden in the waters between the northern side of the Kegnes Peninsula and the coast northwards. Landing from Danish territorial waters may only be effected at Sønderborg, Egersund and Graasten, and police permission is required to do so. The above regulations apply west of a line joining the south-east extremity of Kegnes and Birknack.

Intensive fishing is carried out throughout the year in the whole fjord.

Approximately half the coastline is Danish and the other half is German.

6. Estuary of the Bidasoa River (Annex, map No 44)

References: Chart No. 2665 and plan

Bay of Biscay Pilot, Fourth Edition, 1956

The Bidasoa River for the last few miles of its course forms the international boundary between France and Spain. At the international bridge at Hendaye, the river flows into an estuary almost completely filled with banks which dry several feet at low water. This estuary is about $1\frac{3}{4}$ miles long and has a maximum width of about three-quarters of a mile; its seaward end is constricted to a width of about a quarter of a mile by a low sand spit terminating in Pointe Française. There are breakwaters from this point and the opposite shore. The estuary then opens out into a bay named Higuier Road. The entrance to this bay lies between Cabo Higuier, the northern point of an islet on a drying ledge extending from the northern end of Punta Erdico on the Spanish coast, and Pointe Ste. Anne on the French coast nearly two miles east-south-eastward. The penetration of the bay to Pointe Française is about $1\frac{1}{4}$ miles. Les Briquets are detached rocks, which dry 6 feet with their outer edge three-quarters of a mile north of Pointe Ste. Anne; Roches Noire are some small detached above-water rocks lying on a drying ledge which extends about a quarter of a mile northward of that point.

Depths in the entrance to the bay are about 11 fathoms. These depths decrease to the head where the drying banks intersected by the winding channel from the river extend nearly half a mile northward of Pointe Française and for a similar distance from the south-western shore. The narrow channel into the river has about a foot of water in it at low tide.

Anchorage may be obtained in the bay, sheltered from winds from the east through south to west. With winds from seaward this anchorage is unsafe. There is a small harbour of refuge formed by two short moles about a quarter of a mile southward of Punta Erdico; its entrance is 100 feet wide and depths within from 9 to 20 feet. The rise of the tide at springs is about 14 feet.

Fuenterrabia is a small fishing centre on the Spanish side of the estuary nearly opposite Hendaye.

Within the bay is a "neutral area" for the use of both French and Spanish vessels; this is marked by the alignment of beacons on the shore. This area to the low-water line at the head of the bay is less than three-quarters of a mile long and nearly a mile wide and encloses the best anchorage. From the northern end of this area, the international boundary through the territorial sea passes northward about equidistant from Cabo Higuier and Les Briquets.

About half the coastline is French and the other half is Spanish.

7. The mouth of the River Mino (Annex, map No 45)

References : Chart 1752

West Coasts of Spain and Portugal Pilot, Third Edition, 1946

Owing to the small scale of the available charts, this description is perforce brief.

The lower reaches of the River Mino form the boundary between Spain on the north and Portugal on the south. The entrance lies between Punta de los Picos and Ponta Ruiva about three-quarters of a mile southward. About a quarter of a mile westward of the latter point is a low islet with a fort on it, named Ilha Insua. The river mouth is fronted by a rocky bar; there are, however, channels leading on both sides of Ilha Insua; that on the north is widest and is encumbered with rocks but has a depth of about 10 feet in the fairway at high water springs; that on the south side also has many shoals and a depth of 13 feet at high-water springs. The sea breaks across both channels if there is any swell; the depths are variable.

Within the river are many shifting shoals and banks; entry and passage can, however, be made by light draught craft with the aid of an experienced pilot. About 1½ and 2 miles within the entrance are two fishing villages one on each bank of the river; anchorage may be obtained off them in depths of about 10 feet.

Both Spanish and Portuguese pilots can be obtained.

8. Idefjord and its approaches (Annex, map No 46)

References : Charts Nos. 3160, 2330, 121

Norway Pilot, Part I, Seventh Edition, 1948

The boundary between Sweden and Norway meets the sea near the western side of the head of Idefjord, thence passes through this fjord, through Ringdalsfjord, Svinesund, Saekken and thence seaward through the islands and rocks off-lying the coast. This description will follow the above order.

Idefjord is a long, straight fjord, running in a north-north-westerly direction, about 9 miles long with a general width of less than half a mile. Its maximum and minimum breadths are three-quarters of a mile and about 300 yards. Its general depths are from 18 to 5½ fathoms, except for about 1¾ miles from the head which shoals from depths of 2 fathoms. The small islet of Halleholm lies about 6 miles from the head towards the eastern side and is territory of Sweden.

The north-eastern end of the fjord widens somewhat but is partially filled by the islands of Brattøen and Sauøen, both of which lie on the Norwegian side of the boundary. At the north-eastern corner of the fjord lies the small port of Halden, where there are berths alongside in 16 to 25 feet.

At the north-western end of Idefjord, the waterway turns abruptly south-westwards to become Ringdals Fjord and then Svinesund. Ringdals Fjord is about 1¾ miles long with a general width of about a quarter of a mile. The channel is restricted at the north-western end to a breadth of little more than 100 yards by the Norwegian islet of Knivsø.

Svinesund joins Ringdals Fjord to Saekken; it is about 2½ miles long and is extremely narrow. About half way along it is crossed by a bridge with a height of 190 feet. Westward of this is a dredged part of the channel having a breadth of 128 feet with a depth of 23 feet.

Saekken is the continuation of the channel seaward. This cuts across the southern end of the sheet of water lying between the mainland and the islands of Kirkø and Singlø, known as Single Fjord, thence continues in a south-south-westerly direction between the Norwegian islands of North and South Sandø and the Swedish mainland, and thence between the Norwegian island of Herføl and the Swedish islets of Tjurholm and North Hallsø to the northern end of Koster Fjord.

This stretch of the channel is about 8 miles long and has a maximum width of rather less than half a mile; it is deep with depths of from 25 to 60 fathoms. Herføl, South and North Sandø, with a few rocks lying off them, are the south-easternmost of a chain of islands and islets of which Kirkø and Vesterø are the largest, extending 11 miles north-westward from the Swedish mainland and about 7 miles southward of the Norwegian mainland.

Tjurholm and N. Hallsø are the northernmost of a chain of islands extending southwards for many miles, separated from the Swedish mainland and each other by very narrow channels. In general, their western extremities lie from about 1½ to 3 miles from the mainland.

Seaward of Herføl and N. Hallsø, the channel and boundary take a west-south-westerly direction for about 8 miles to the main waters of the Skaggerrak, close northward of Grisbadarna, a group of shoals with a least depth of one fathom.

South-westward of the chain of islands of which Herføl forms the southernmost, and on the Norwegian side of the boundary, are a number of shoals and detached above-water rocks and islets; these lie in two groups. The inner group extends about 2 miles north-

westward and lies from about 2 to 3½ miles westwards of Herfjøl; the largest islet is Tisler, and the most southern above-water rock is Svarteskjoer, which lies about 2 miles from Herfjøl and a mile north of the boundary. The outer group, enclosed within an area about three-quarters of a mile wide, extends about 4 miles north-westwards from Knubben, a small above-water rock close south of Heia, the largest in the group, lying about 5¼ miles west-south-westward of Herfjøl. Heifluene is a group of sunken rocks, some of which are awash at low water, lying up to half a mile south-east of Knubben.

On the Swedish side of the border, a chain of islands, islets and rocks lies approximately parallel to the outer edge of the islands mentioned above, lying south of Tjørholm and close to the mainland coast; Koster Fjord about 1½ miles wide separates these two chains. This outer group extends southward for about 11 miles from Kostersten, a small above-water rock, lying 2 miles south-west of N. Hallsø. The largest islands in the group are N. Koster and S. Koster; the most north-western above-water rock is St. Drammen; this lies about 2¼ miles south-west of Kostersten and just over a mile from the international boundary. About 3 miles west of this rock are the Grisbadarna shoals.

On the Swedish mainland coast about 5 miles east of Kostersten is the small port Strømstad. On the Norwegian mainland about 10 miles north-west of the entrance to Svinesund is the port of Frederikstad.

The international boundary for about 4 miles from Grisbadarna is marked by buoys, and thence by leading beacons.

South-eastward of the boundary, between Grisbadarna and North Koster, is a fishing ground in which it is prohibited to anchor.

9. Head of Bottenviken (Annex, map No 47)

References : Chart 2302

Baltic Pilot, Volume III, Fourth Edition, 1951

The boundary between Sweden and Finland meets the coast at the mouth of the Torne River, which discharges into the head of Bottenviken; it thence continues southward between the numerous islets lying off that part of the coast. The river mouth, about a quarter of a mile wide, enters the sea between the Swedish mainland and the Finnish island of Pirkkiö and about 1½ miles south of the Finnish town of Turniö. Sellei is an island close south of Pirkkiö; its southern end is about 5 miles south of Turniö.

From the river mouth, the mainland coast of Finland runs in a general south-easterly direction for about 17 miles to a promontory named Maksniemi; the mainland coast of Sweden runs in a general west-south-westerly direction from the river mouth for about 25 miles. A large number of islands and above-water rocks front the coast up to a distance of nearly 14½ miles, their positions can best be seen on the chart; only the principal ones will be mentioned here.

The largest islands, 3½ miles long and 3 miles wide is Seskar lying 10 miles south-west of the river mouth.

Puukko is a small islet about 1½ miles southward. About 11 miles southward of Seskar is Malören, the southernmost in this area. Sandskar lies about 5 miles north-east of Malören, with Seskarfurö between it and Seskar. About 10 miles east-north-east of Sandskar, with several islets in between, lies the islet of Sarvi, with another close north-eastward. These latter two are close westward of the Swedish-Finnish boundary which runs about midway between them and a group of four islets about half a mile eastward, the north-eastern of these is Maasarvi. Möyly, a small above-water rock, lies 4 miles south-eastward of this group and is the southernmost Finnish above-water feature in the area now described; it lies about 10 miles west-south-westward of Maksniemi.

Other islets and rocks lying near the boundary are: Knifskär, two islets and a rock, 3 miles north of Sarvi on the Swedish side; a group of five islets and rocks of which Pensaskari is the largest, about 1½ miles east of Knifskär; Kataja, an islet 2 miles north of Knifskär with the two islets of Hamnskär westward and a group of four islets and rocks close south-south-westward, the largest of which is Inakari. The boundary passes west of the islet close southward of Inakari, thence between them and thence east of Kataja. Northward of Kataja, a chain of above-water rocks extends for 2 miles, the northernmost of these is named Launikari. About 1½ miles eastward of Launikari and within a mile southward of Sellei, on the Finnish side of the boundary, lies a chain of rocks extending from the latter island. The boundary runs between Sellei and two islets lying about half a mile west of its western extreme. Kraseli and another Swedish islet close northward lie off the mouth of the Torne River.

Two buoys mark the outer line of the boundary between Maasarvi and Knifskär, thence to the Torne River the boundary is indicated by the alignments of pairs of beacons set up on the islets and rocks.

The whole area is encumbered with innumerable shoals and dangers; the fairways in use between them are marked by beacons, buoys and lights. The area is likely to be closed by ice from the middle of November to the middle of May. With strong and prolonged winds from the northern quarters the water level is liable to drop by several feet; conversely, with winds from the southern quarters, it is likely to rise. There is no tide as such.

The principal ports within the area are:

On the Finnish side, Kemi, about 11½ miles south-east of the entrance to the Torne River, where there are depths at the quays of from 10 to 21 feet and in the roads up to 24 feet; Röyttä, the port for the town of Tornio lying a short way up the river, which is on the west side of Sellei and where there are depths of 20 feet at the quays.

On the Swedish side, Haparanda, on the mainland opposite Tornio, where there is a quay with a depth of 19 feet alongside, and Neder Kalix, about 24 miles west of Tornio, where there is a depth in the roads of 27 feet. There are several landing places between Kemi and Röyttä and also on the Swedish coast west of the river entrance.

Pilotage is compulsory for navigation in both Finnish and Swedish waters. Finnish customs regulations prescribe that vessels bound for Kemi must adhere to the route past Kemi lightvessel, or past Ulkokrunni and, if bound for Tornio, to the route past Malören lighthouse and Puukko in Swedish waters or past Kemi lightvessel to Røyttä.

10. The area of Viro Lachti (Annex, map No 48)

References : Chart No. 2247

Baltic Pilot, Volume III, Fourth Edition, 1951

The boundary between Finland and the USSR cuts the coast in the south-east corner of Viro Lachti, an indentation lying between Gevonemi and a point on the mainland 3 miles north-north-eastward. Extending 5 miles seaward of the latter point are the islands Laid-salm, Padio and Pukion Sari, all territory of the USSR, these are separated by very narrow channels. The penetration of Viro Lachti, from a line joining Gevonemi to the west extreme of Padio, is $5\frac{3}{4}$ miles. Within these limits about one-third of the coastline is USSR territory and two-thirds is Finnish.

Numerous islets lie within 3 miles of the coast westward of Gevonemi and east and south-east of Padio and Pukion Sari, which can best be seen on the chart. Less than half a mile south-east of Gevonemi is the Finnish islet of Vango with the USSR islet of Martin close south-east of it. Three-quarters of a mile west of the latter lies Santio, a Finnish islet, with Parrio another close westward. About $1\frac{1}{4}$ miles south of Parrio lies the islet of Kinnar, the largest of a group of islets and rocks, and the boundary runs through the group. About a mile south of this group is another cluster of above-water and submerged rocks, the largest of which is Gouör; the boundary passes northward, eastward and southward of it. Five and one-quarter miles southward of this cluster is Hallikarti, a smaller group, with Kivikari and Matakarti, two similar groups, lying $1\frac{1}{2}$ and $2\frac{1}{4}$ miles north-westward and westward respectively of the latter, with the boundary passing between. The southern end of the demarcated boundary lies 4 miles south-south-westward of Matakari and about midway between the island of Sommars and Itakari, the easternmost of a large group of Finnish islands and rocks $9\frac{1}{2}$ miles north-westward. The boundary throughout is marked by buoys and beacons.

Depths throughout the whole area are irregular and there are many shoals and submerged rocks; Viro Lachti itself is encumbered by islets, above-water rocks and shoals.

There are no ports of any consequence; a loading place is situated about $1\frac{1}{4}$ miles within Gevonemi which vessels drawing 24 feet can reach; an authorized track for vessels drawing up to 10 feet leads to the head of the bay. Shtandar or Kavö Road, situated between Martin and Padio, is sheltered except for the south-eastern quarter and there are depths of from 8 to 10 fathoms.

Anchorage may be obtained in Finnish waters north of Santio in depths of about 7 fathoms. The dangers in the approaches to both these anchorages are buoyed.

The area is likely to be closed by ice from January to April.

There is no tide, but prolonged winds from east or west are liable to effect a change in water-level.

Pilotage is compulsory in both Finnish and USSR waters.

11. Estuary of River Guadiana (Annex, map No 49)

References : Charts, Nos. 2680, 92

West Coasts of Spain and Portugal Pilot, Third Edition, 1946

The River Guadiana for the last few miles of its course forms the boundary between Portugal and Spain. It discharges through a comparatively straight stretch of coast running in an east-north-easterly direction for about 20 miles. About $1\frac{1}{2}$ and $2\frac{1}{4}$ miles within the entrance, two narrow creeks lead eastward off the main river to discharge into the sea through the River Higerita, about $2\frac{1}{2}$ miles eastward of the main mouth, thus forming the islands of Canela and Salon; both these channels almost dry at low water.

On the western side of the entrance to River Guadiana, a drying sandspit extends nearly $2\frac{1}{4}$ miles south-eastward, and drying banks extend about a quarter of a mile south of Isla Canela. The distance between the end of this spit and the drying banks is about three-quarters of a mile. This entrance is fronted by a bar composed of sand banks which completely change at times of heavy floods in winter and of onshore gales. At times, some of these banks may be above water. The entrance channel is marked by buoys which are moved after alterations in the channel.

The small port of Villa Real de Santo Antonio lies on the Portuguese side about a mile within the entrance. Vessels drawing up to about 18 feet can reach this port and those drawing 17 feet can reach the piers at Pomarao about 22 miles up river. Tunny fishing nets may be found at times up to $5\frac{1}{2}$ miles off shore and a large sardine fishery takes place near the river entrance.

The rise of the tide is about 11 feet at springs.

Pilotage is compulsory.

12. The mouths of the River Evros (Annex, map No 37)

References : Chart No. 1086

Mediterranean Pilot, Volume IV, Eighth Edition, 1955

The principal mouth of the River Evros, known to the Turks as Meric and once known as Maritsa, forms the boundary between Greece and Turkey. The river discharges through a delta on the eastern side of a bight lying between the coast about 3 miles north-west of Gremea Burnu and Ak Makri about 20 miles north-westward. The penetration of this bight is $6\frac{1}{2}$ miles. The island of Samothraki, about 21 miles off shore, fronts the bight.

The coast of the delta extends for about $6\frac{1}{2}$ miles in the northerly direction. The principal of the river

mouths lies at the southern end. The mouths through the delta and its coast are liable to alteration. At the time of the survey for the chart, several low, narrow islets fronted the delta, lying up to half a mile off shore.

On the eastern side of the bight, depths of less than 3 fathoms are found up to 1½ miles off shore, the northern side is comparatively steep-to.

Depths on the bar of the principal mouth are usually

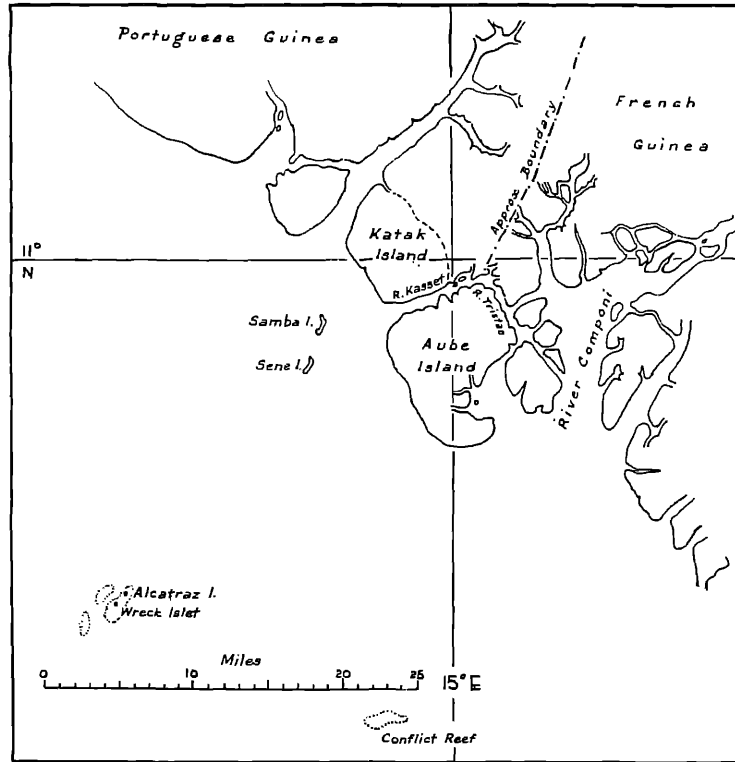
about 3½ feet. There is trade by small craft with the Turkish town of Enez, 2 miles within the principal mouth; Edirne, 70 miles up river, can be reached by barges. The port of Alexandroupolis, which has a small harbour with depths of about 18 feet, lies about 7 miles east of Ak Makri.

About a quarter of the coastline of the bight described above is in Turkish territory.

ANNEX

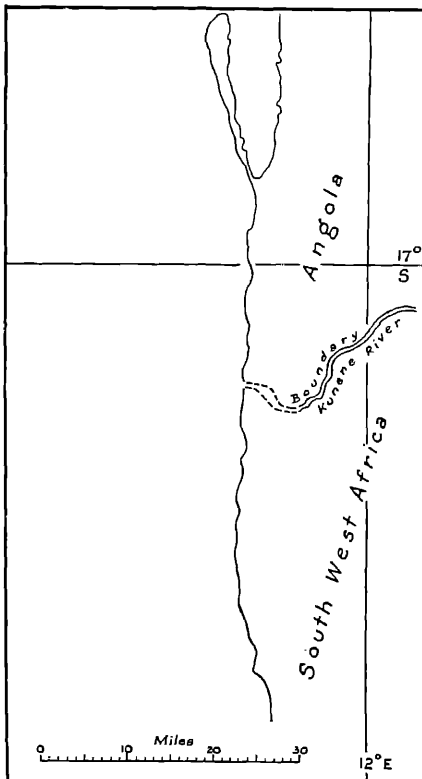
MAP NO. 1

Waterway at 11°N, 15°W (approx.) between French and Portuguese Guinea



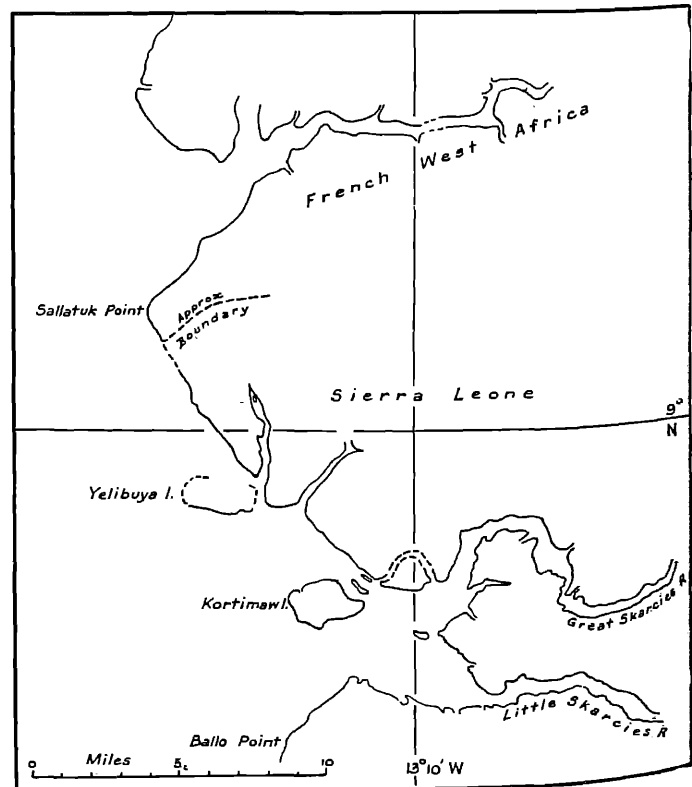
MAP NO. 2

Estuary of Kunene River

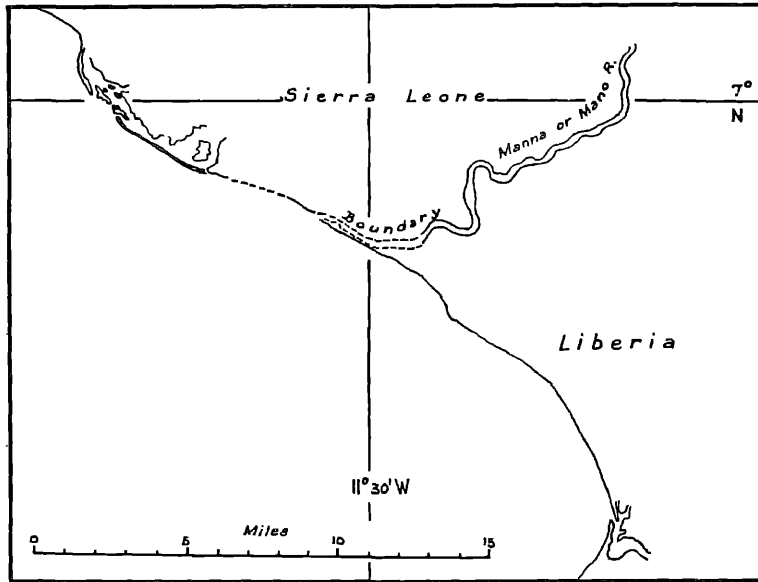


MAP NO. 3

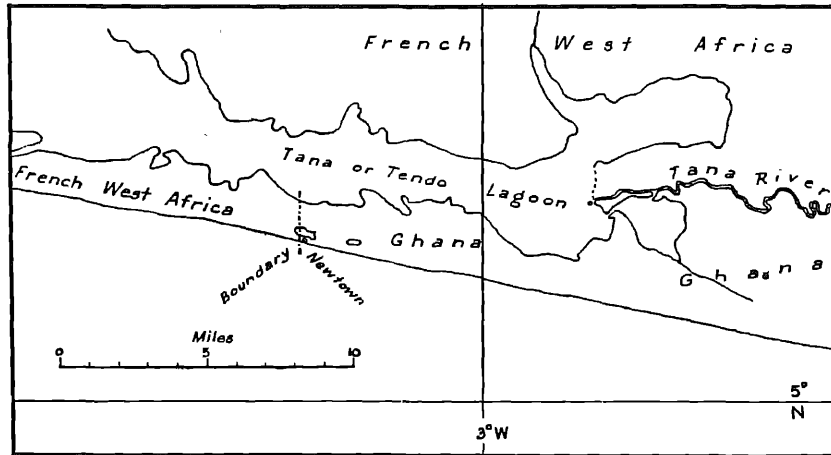
Estuary of Kolente or Great Skarcies River



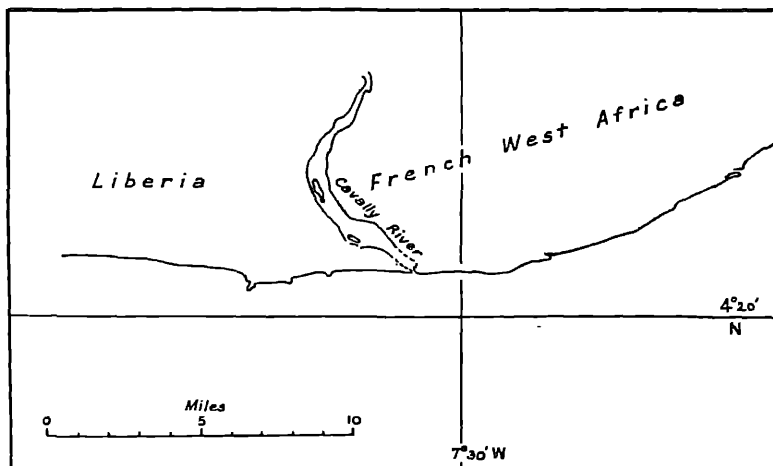
MAP NO. 4
Mouth of Manna or Mano River



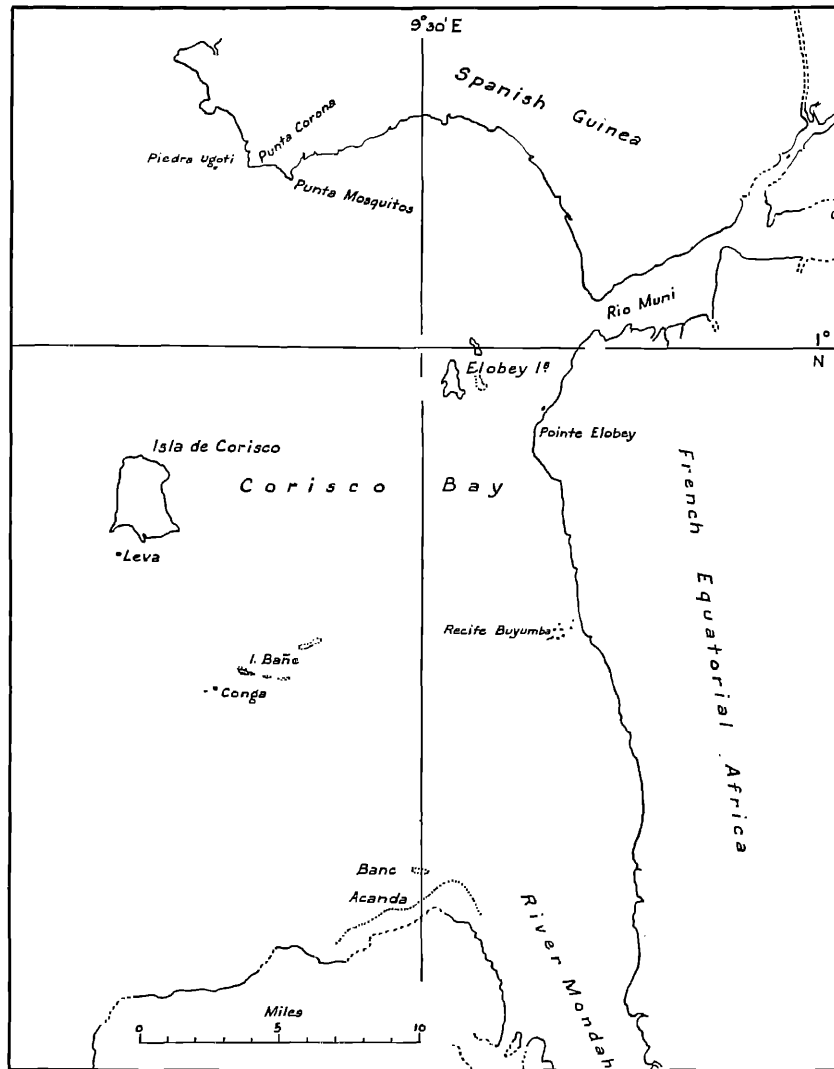
MAP NO. 5
Tana River



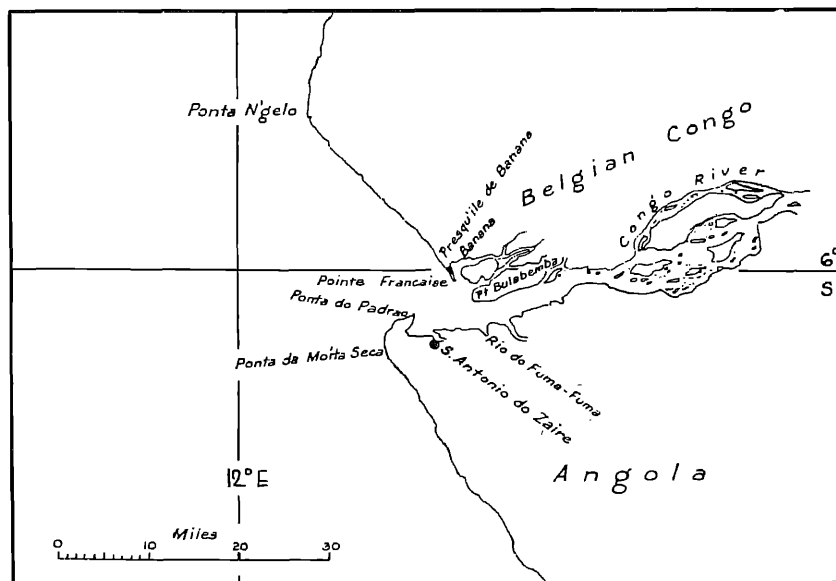
MAP NO. 6
Cavally River



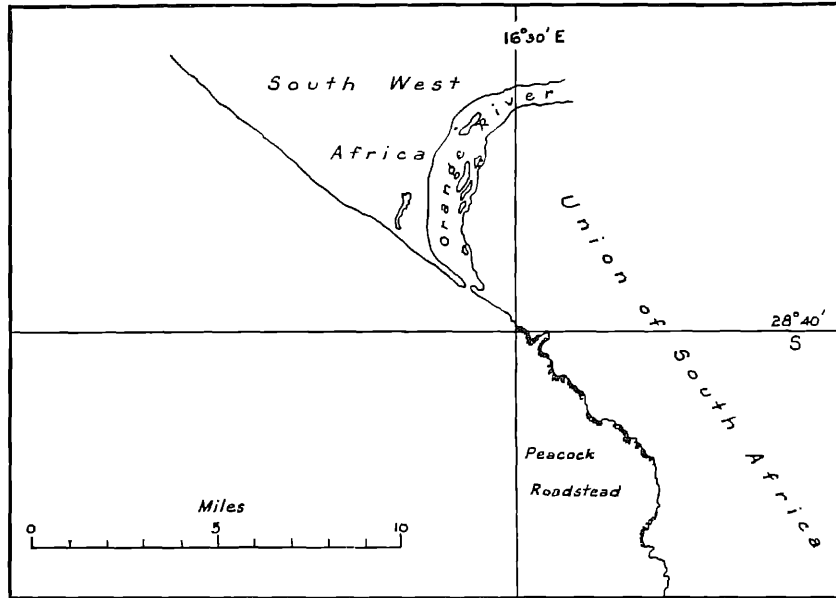
MAP NO. 7
Estuary of Rio Muni



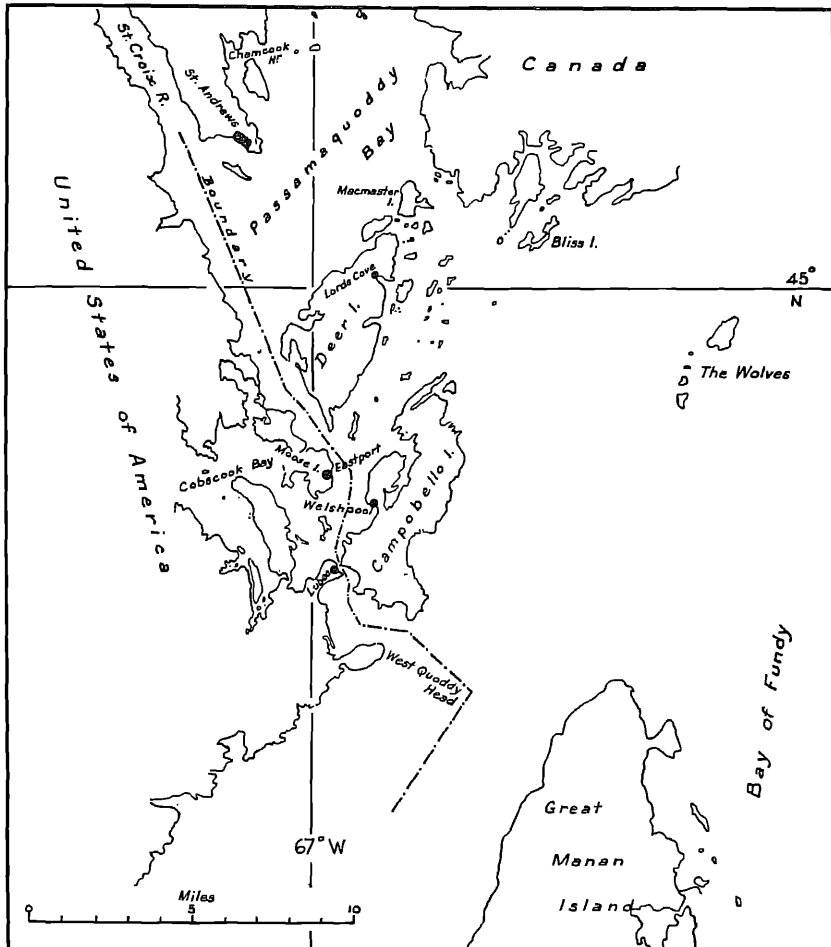
MAP NO. 8
Estuary of Congo River



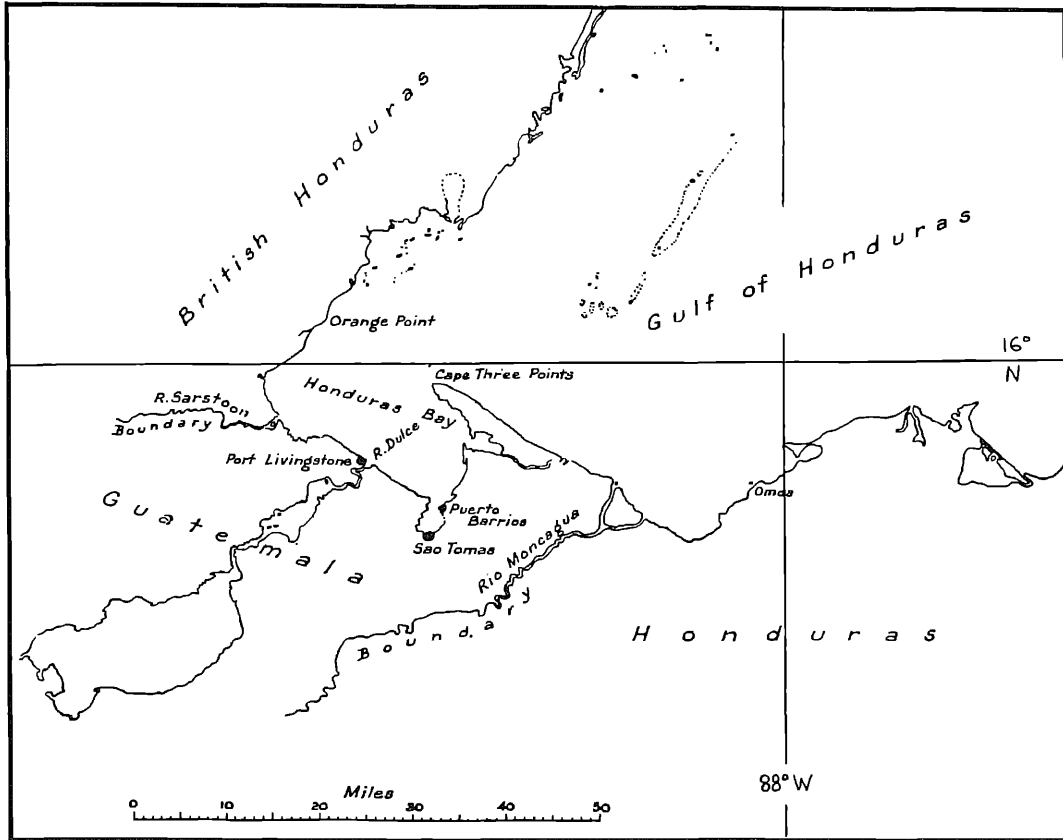
MAP NO. 9
Mouth of the Orange River



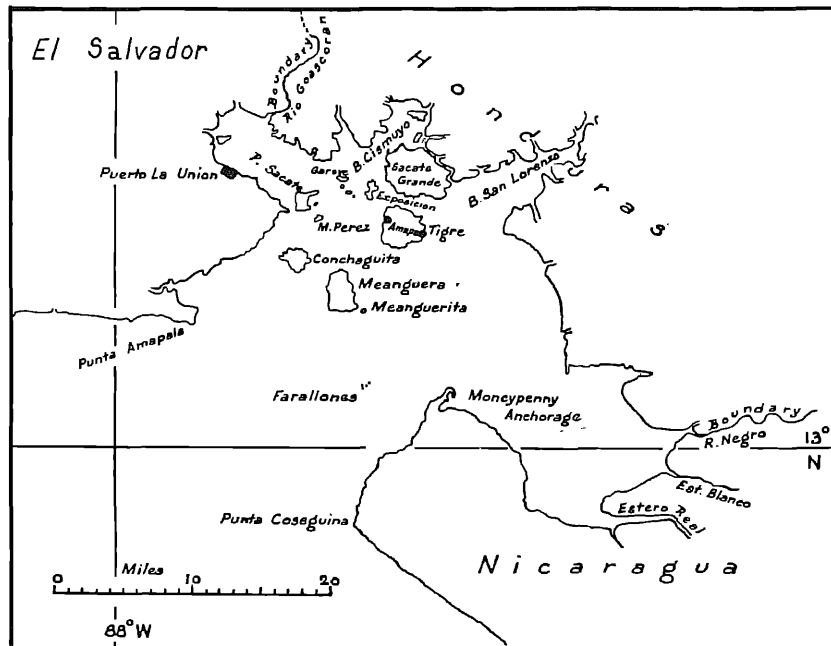
MAP NO. 10
Passamaquoddy Bay



MAP NO. 11
Gulf of Honduras

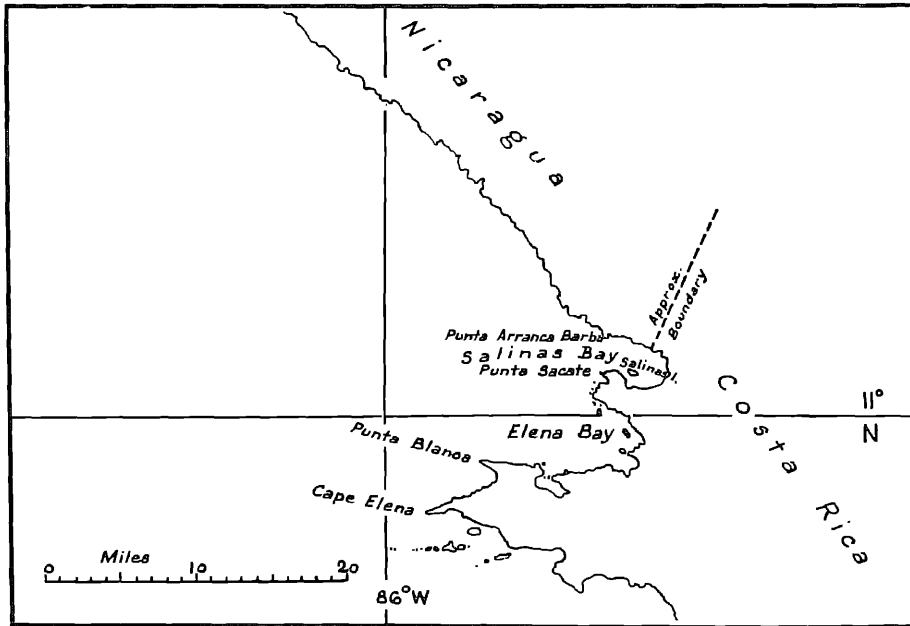


MAP NO. 12
Gulf of Fonseca



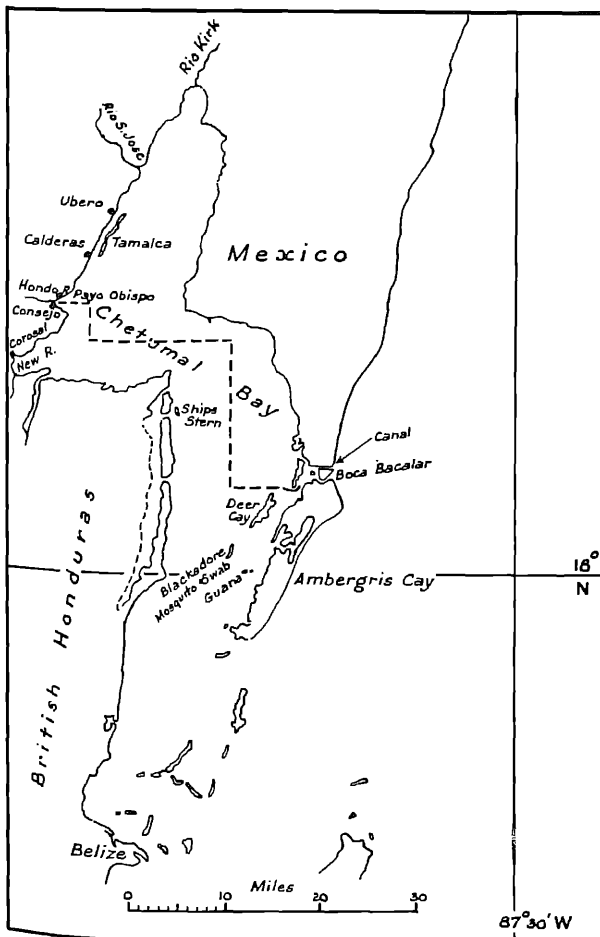
MAP NO. 13

Salinas Bay



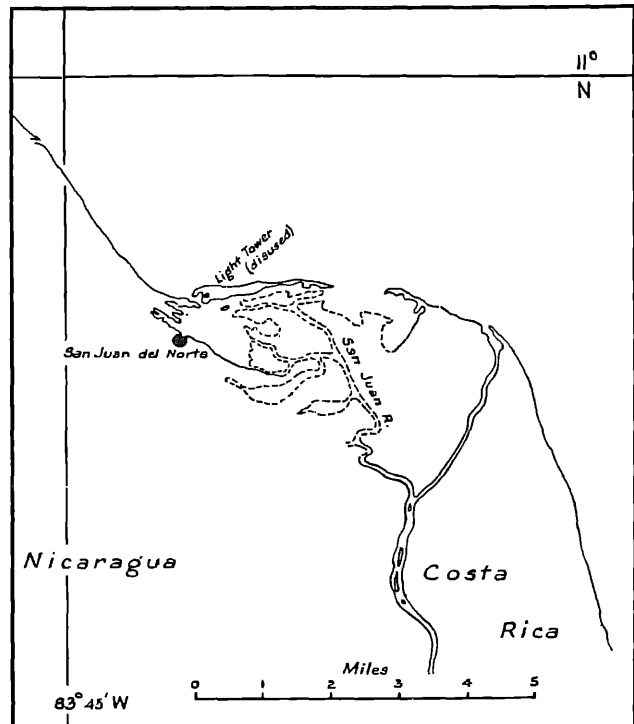
MAP NO. 14

Chetumal Bay



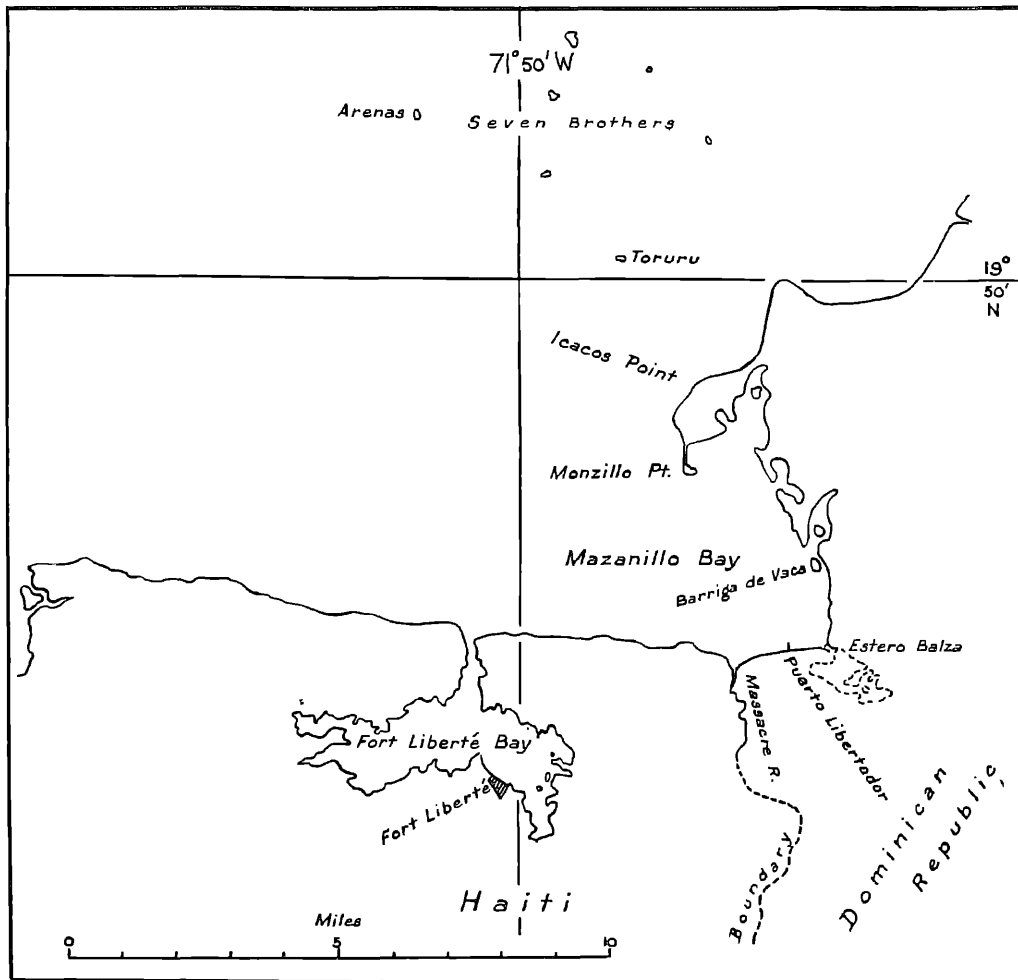
MAP NO. 15

San Juan River



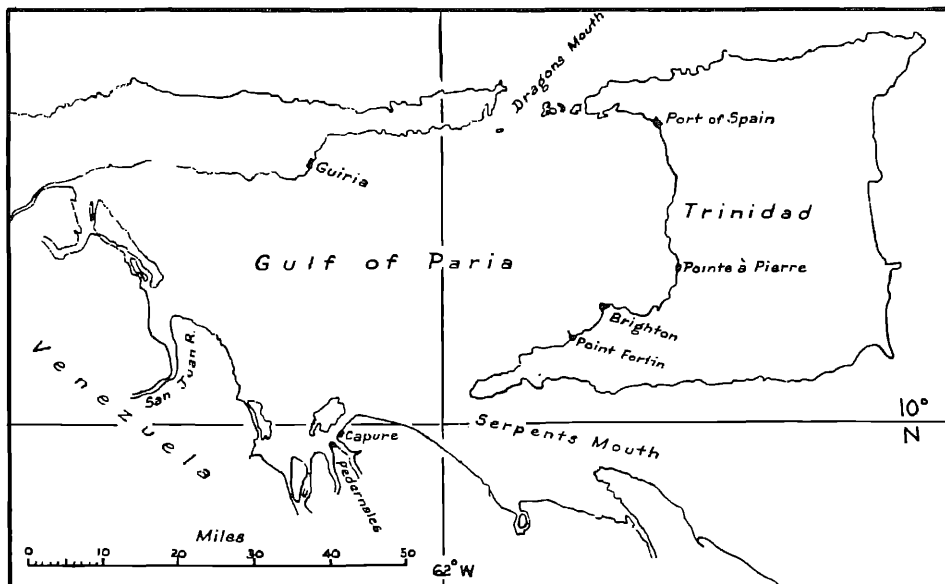
MAP NO. 16

Mazanillo Bay

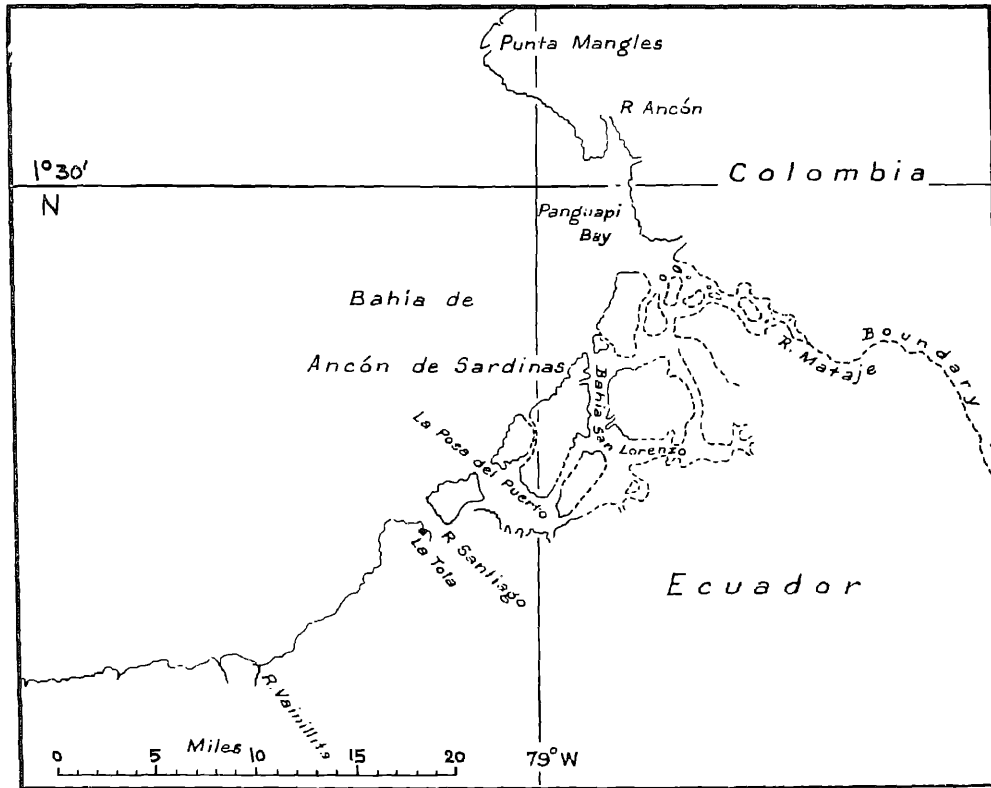


MAP NO. 17

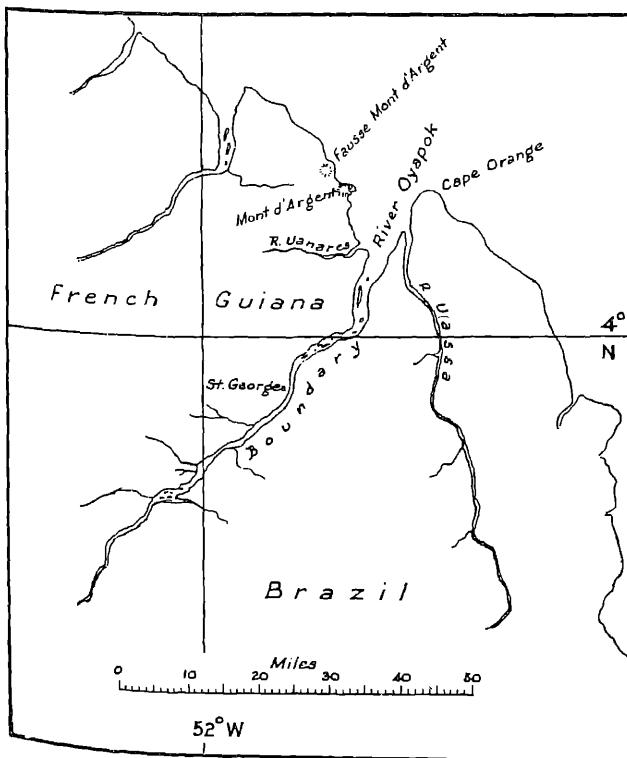
Gulf of Paria



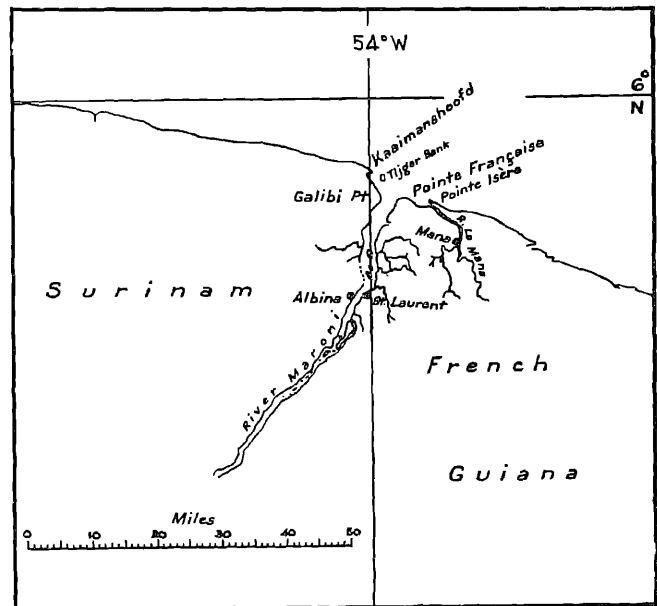
MAP NO. 18
Bay of Ancón de Sardinias



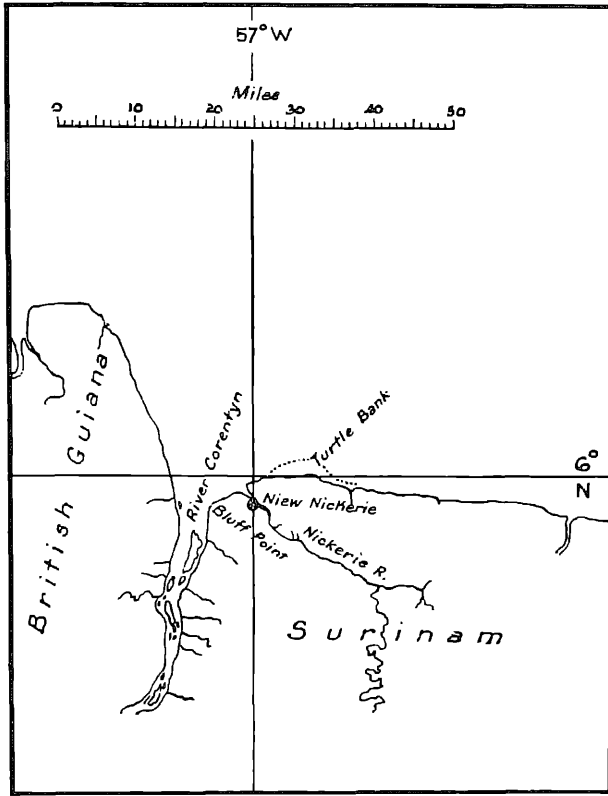
MAP NO. 19
Bay of Oyapok



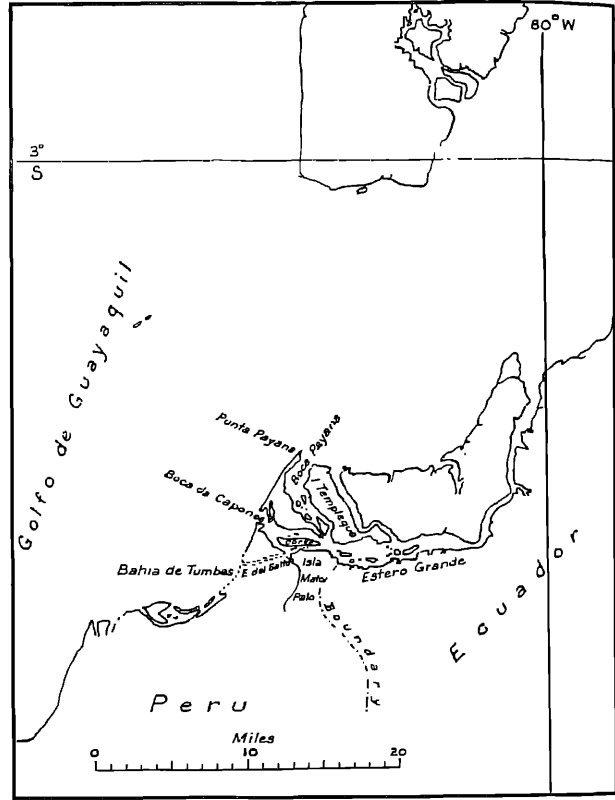
MAP NO. 20
Estuary of Maroni



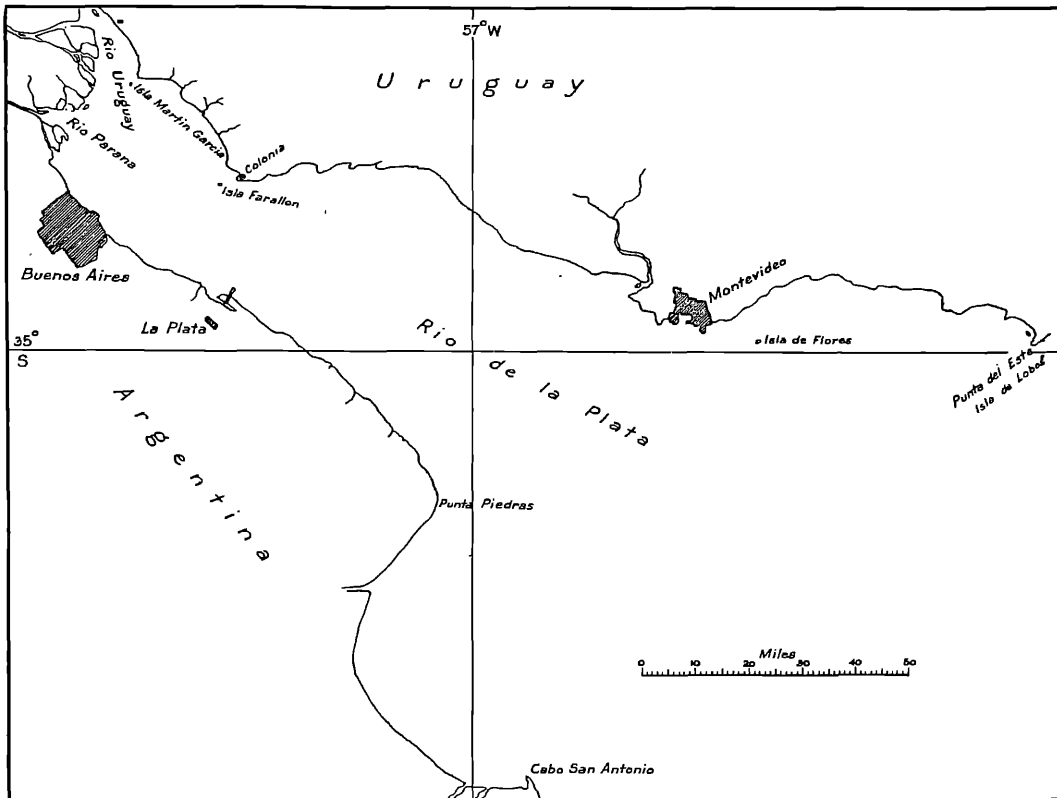
MAP NO. 21
Corentyn River



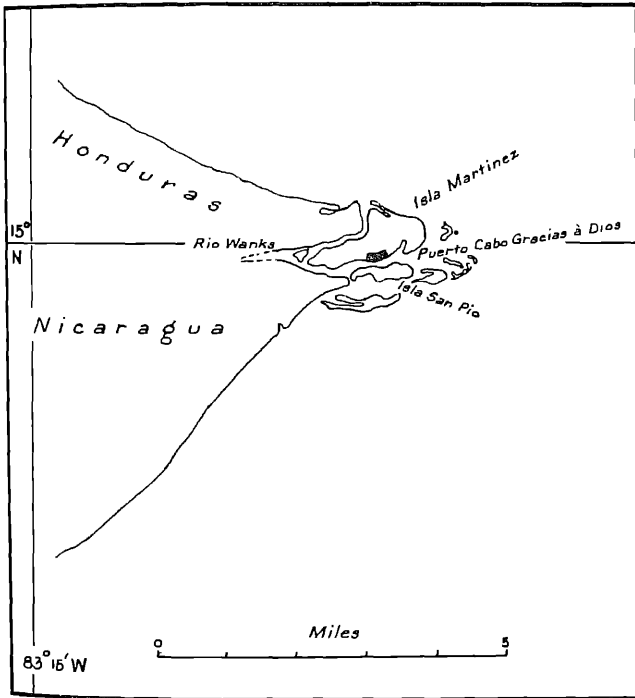
MAP NO. 22
Boca de Capones



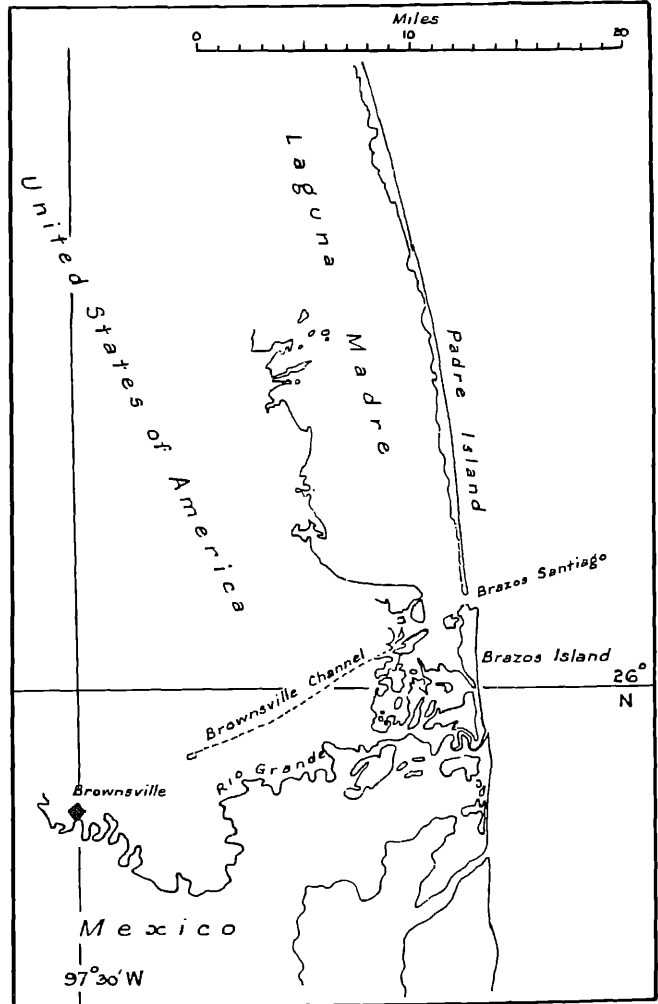
MAP NO. 23
Rio de la Plata



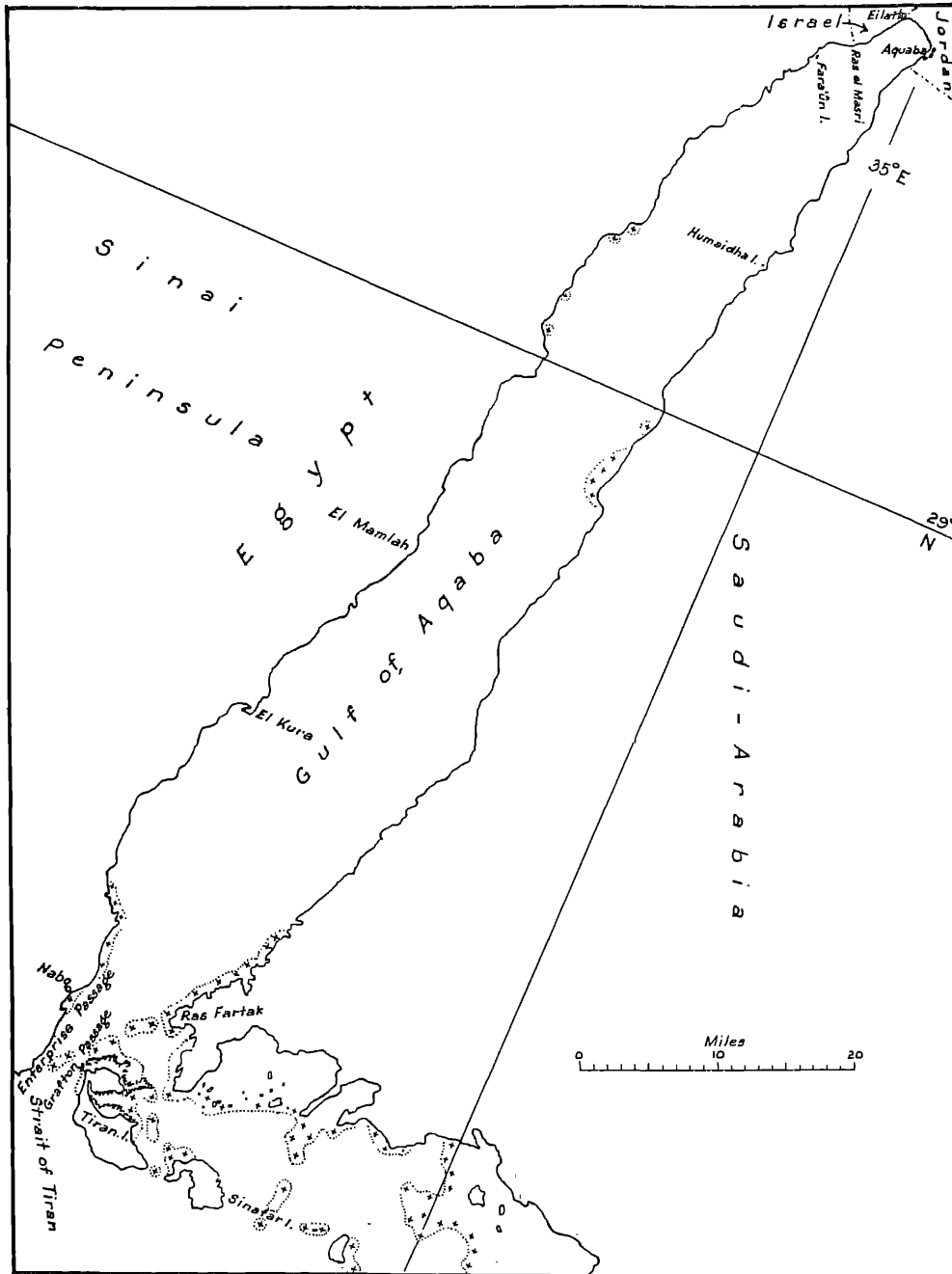
MAP No. 24
Estuary of Coco (Wanks) River



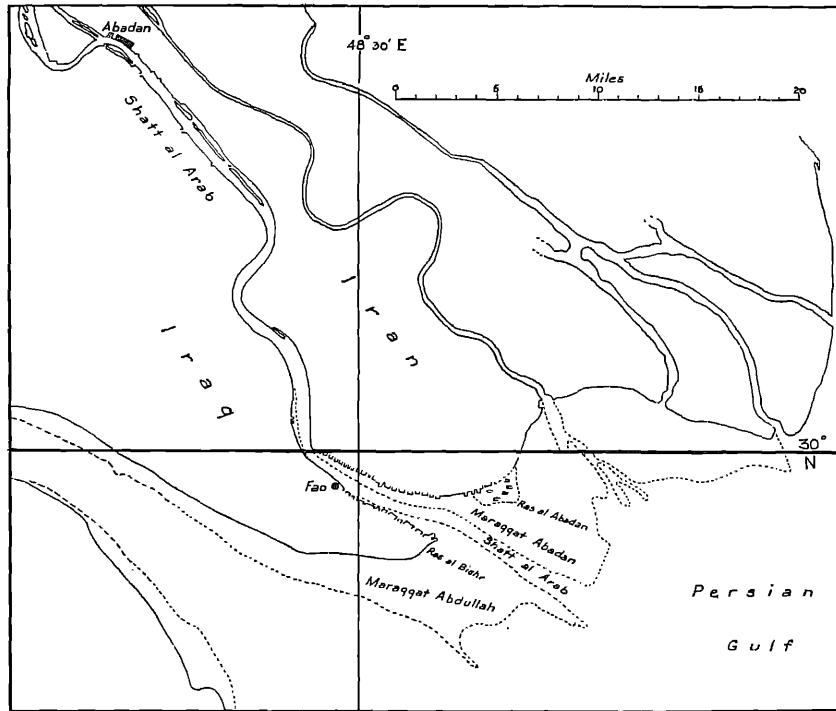
MAP No. 25
Rio Grande



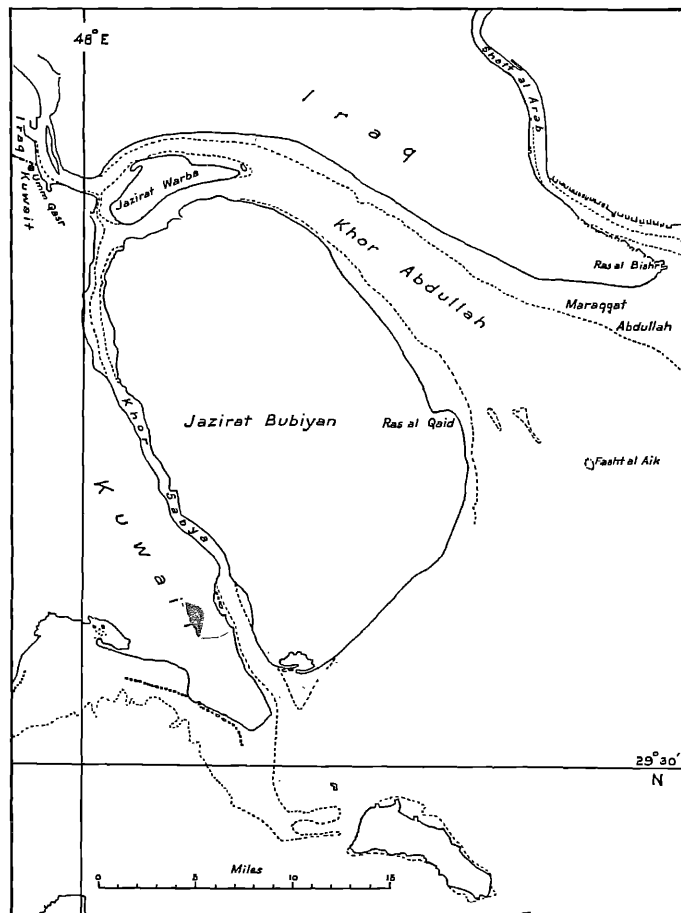
MAP NO. 26
Gulf of Aqaba



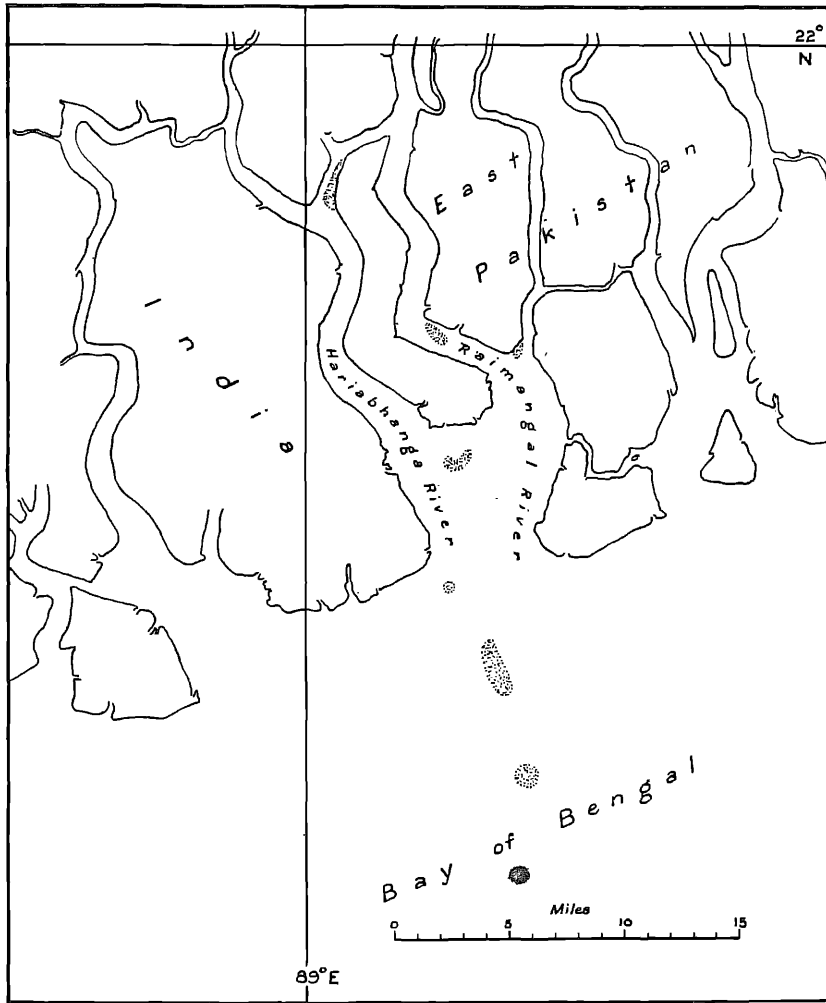
MAP NO. 27
Shatt al-Arab



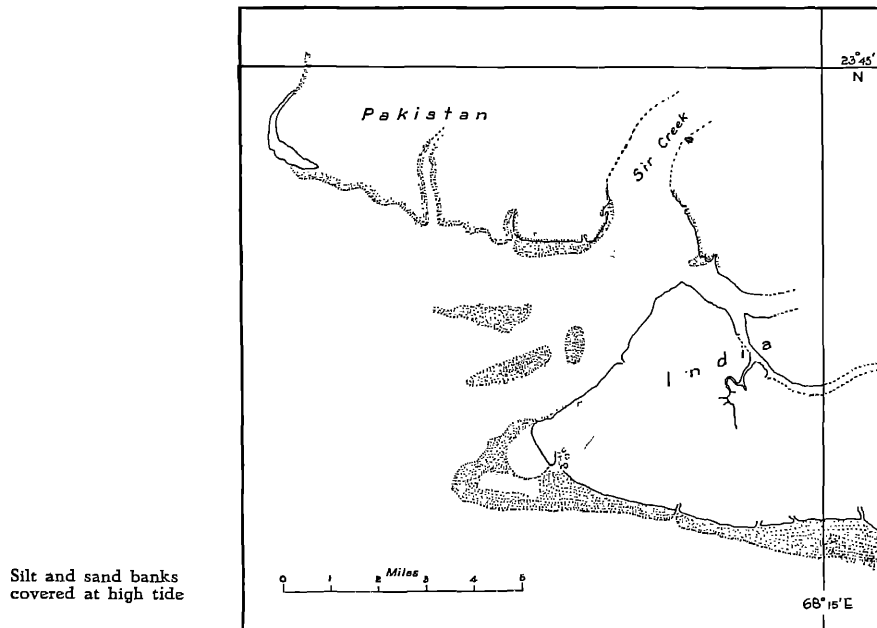
MAP NO. 28
Khor Abdullah



MAP NO. 29
The Sundarbans (Hariabhanga and Raimangal Rivers)

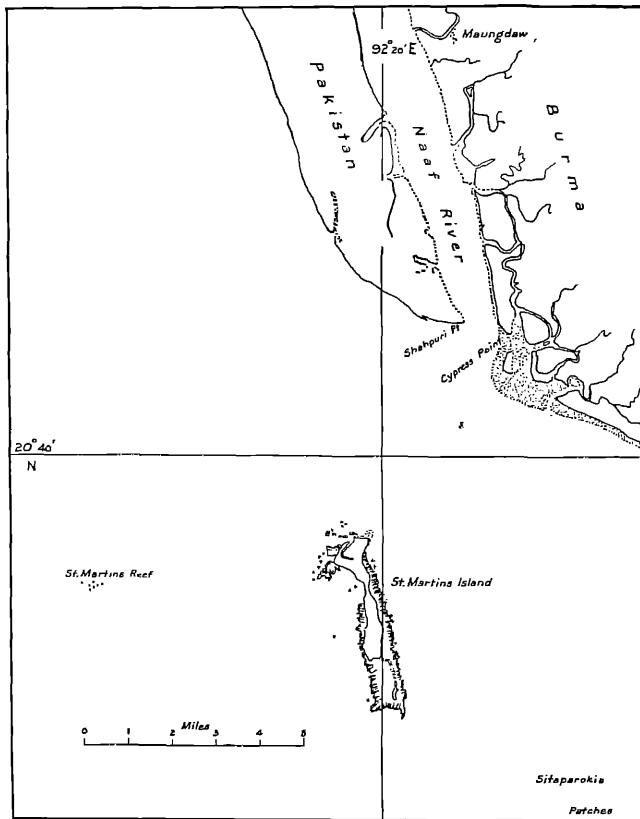


MAP NO. 30
Sir Creek



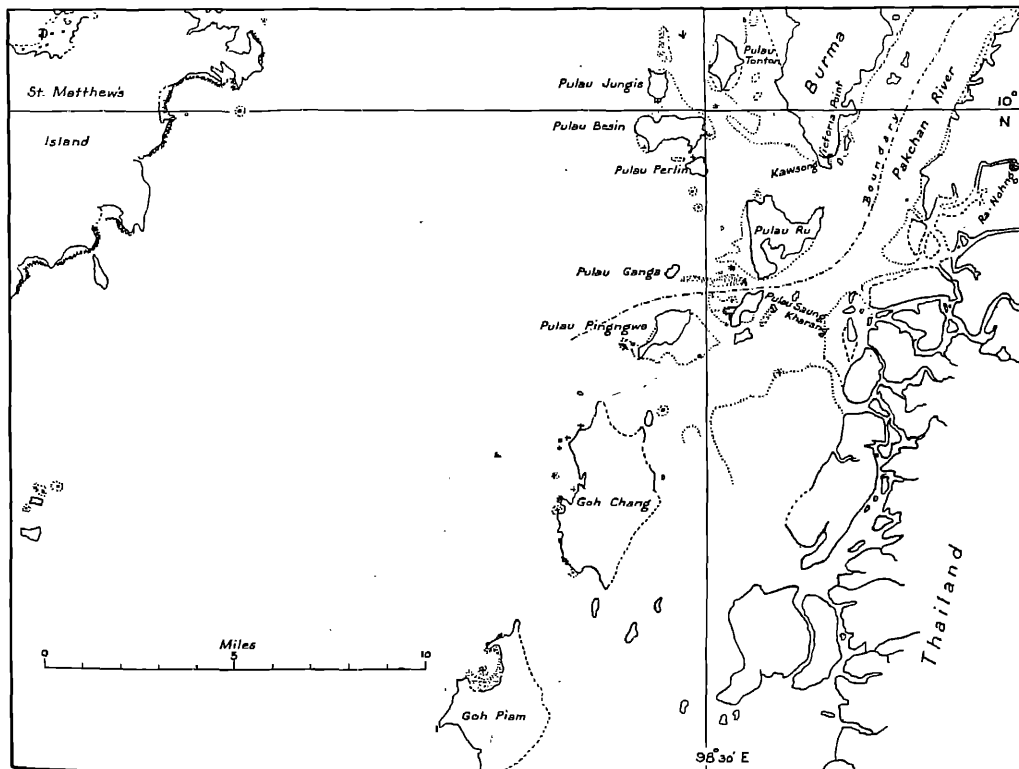
MAP NO. 31

Naaf River



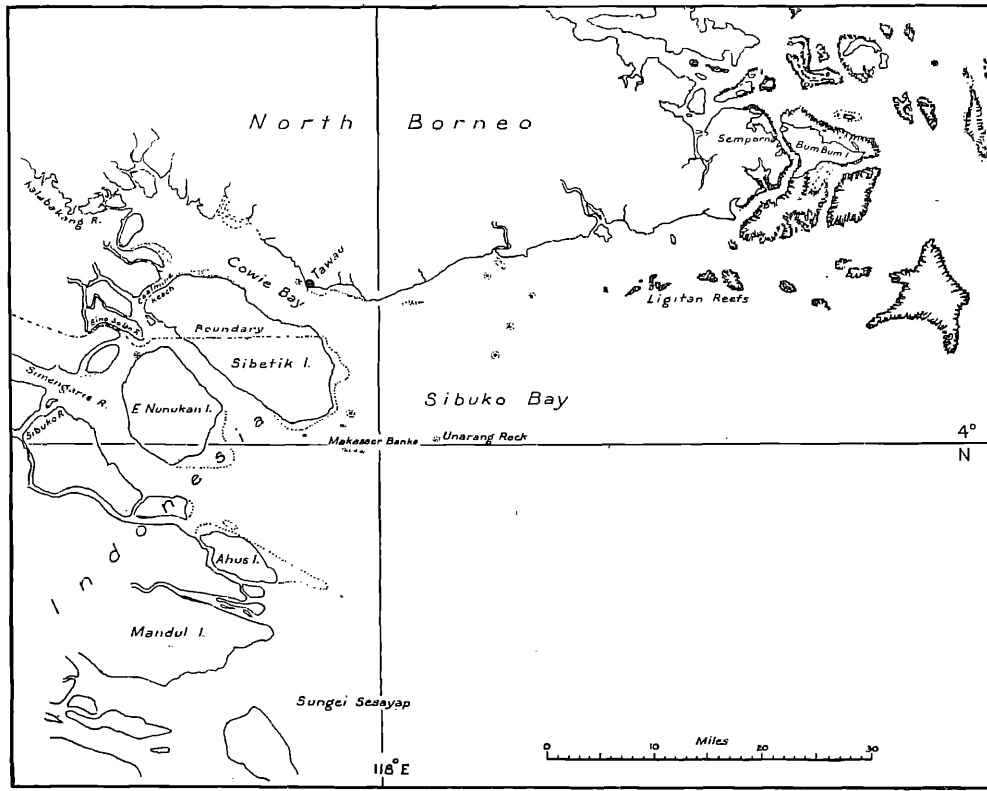
MAP NO. 32

Estuary of Pakchan River



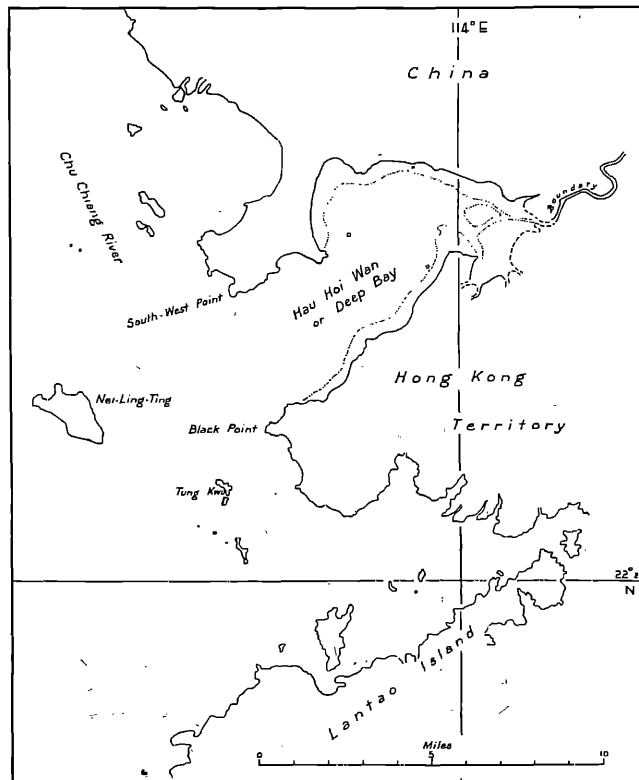
MAP NO. 33

Sibuko Bay

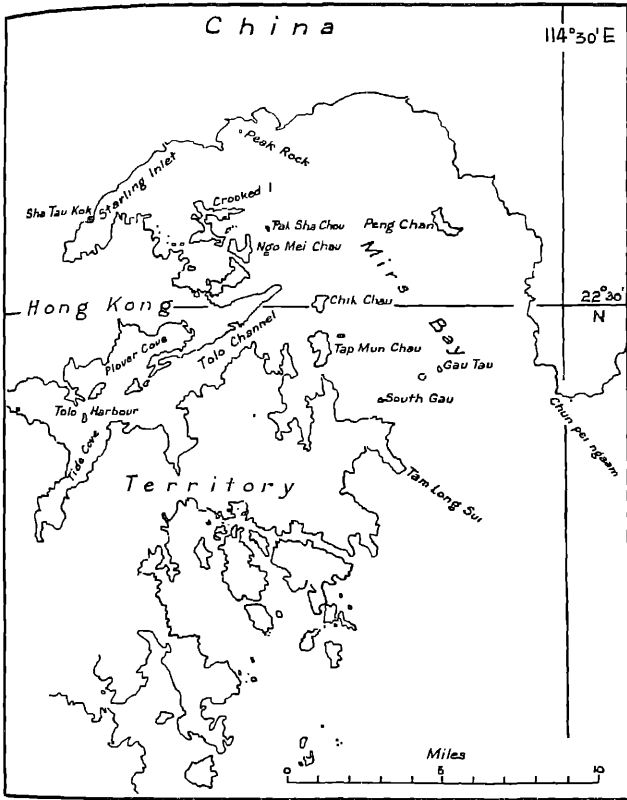


MAP NO. 34

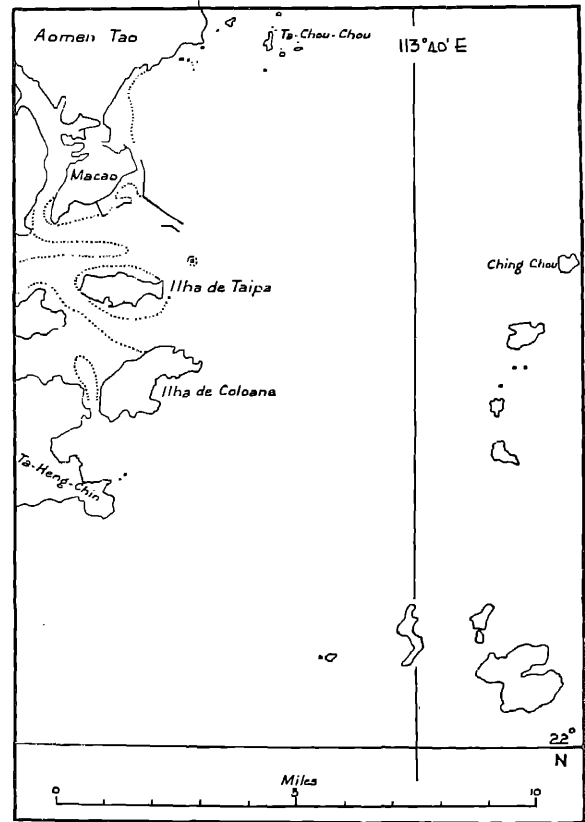
Hong Kong - Deep Bay



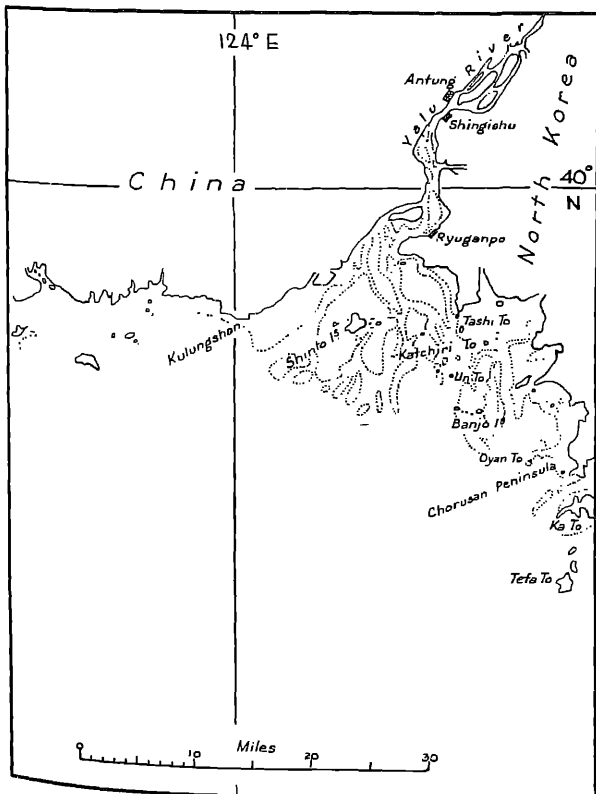
MAP NO. 35
Hong Kong - Mirs Bay



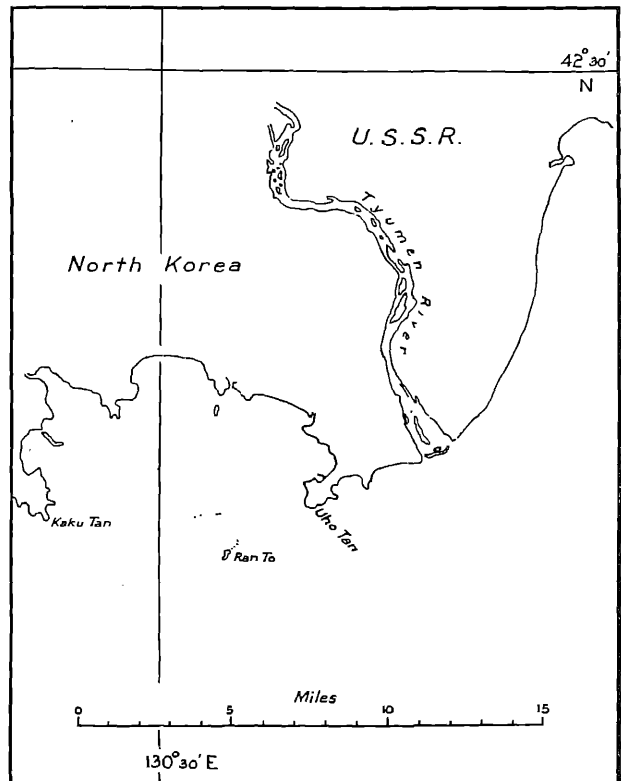
MAP NO. 36
Macao Area



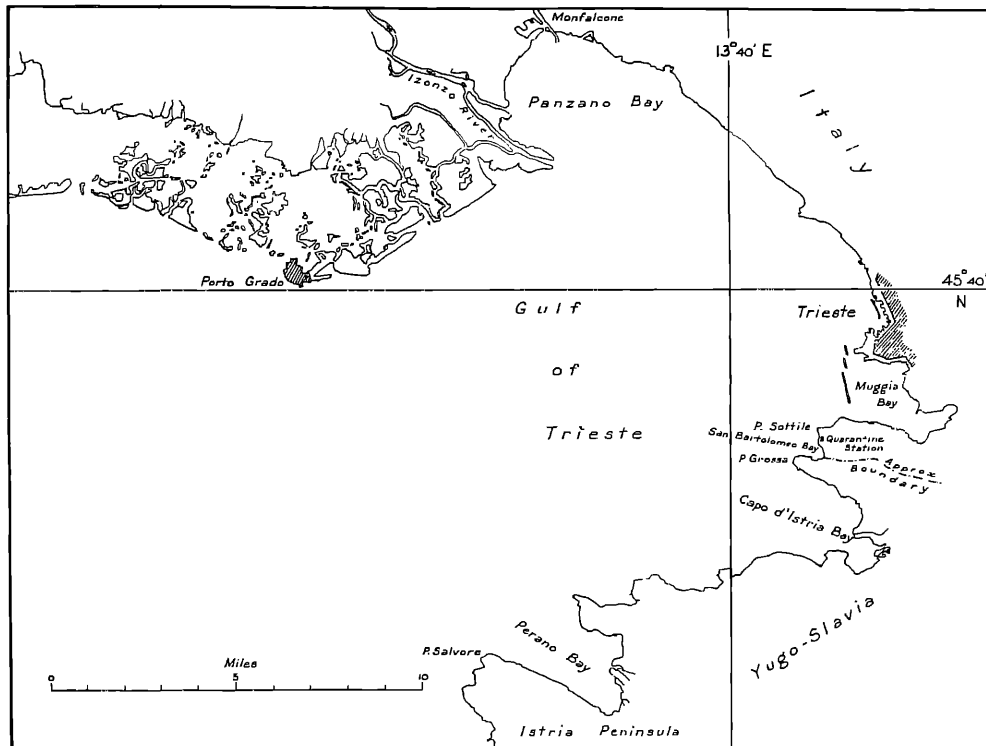
MAP NO. 37
Yalu River



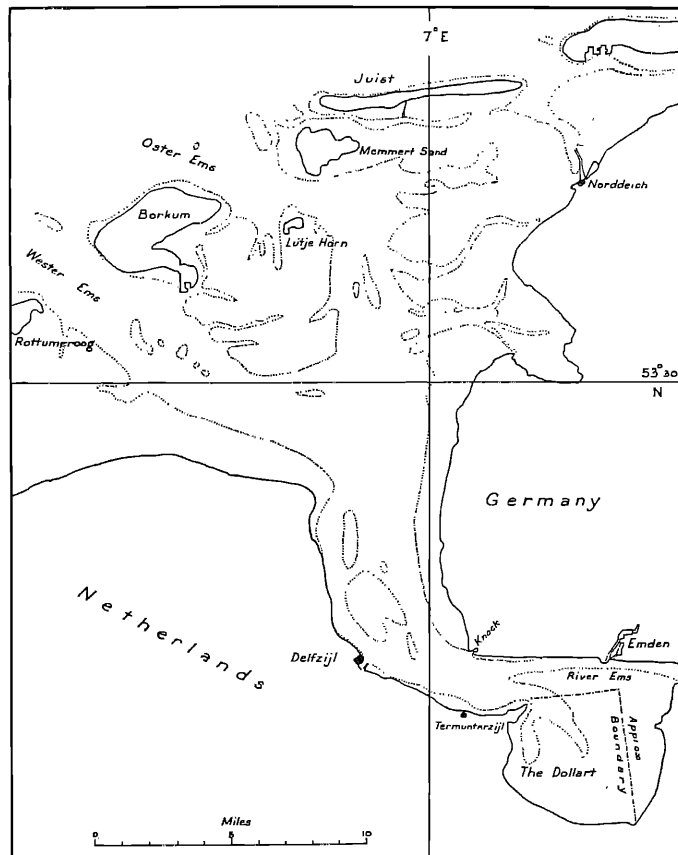
MAP NO. 38
Tyumen River



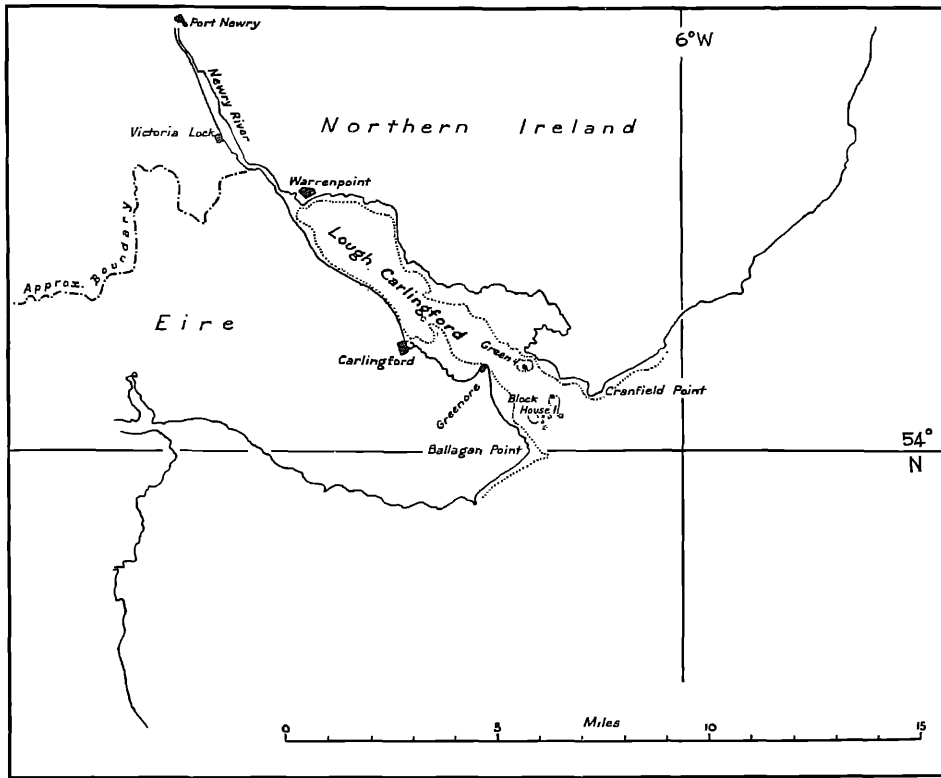
MAP NO. 39
Gulf of Trieste



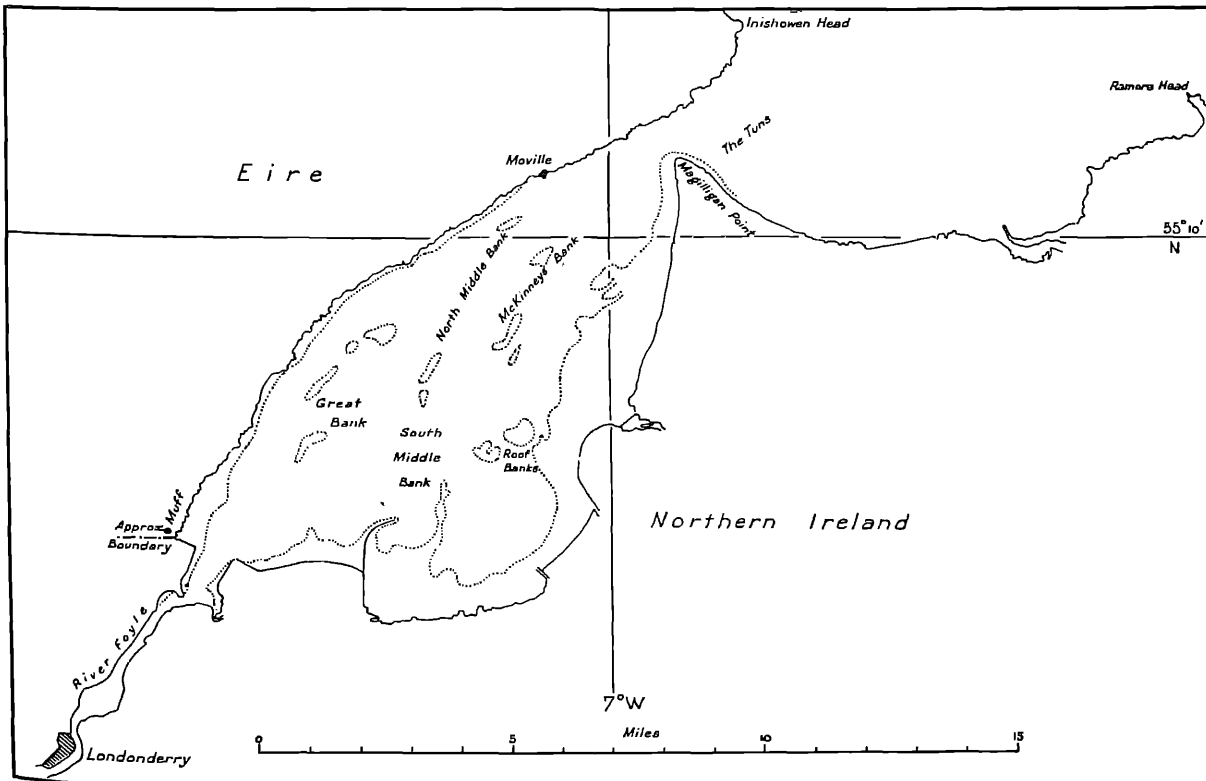
MAP NO. 40
Ems and Dollart



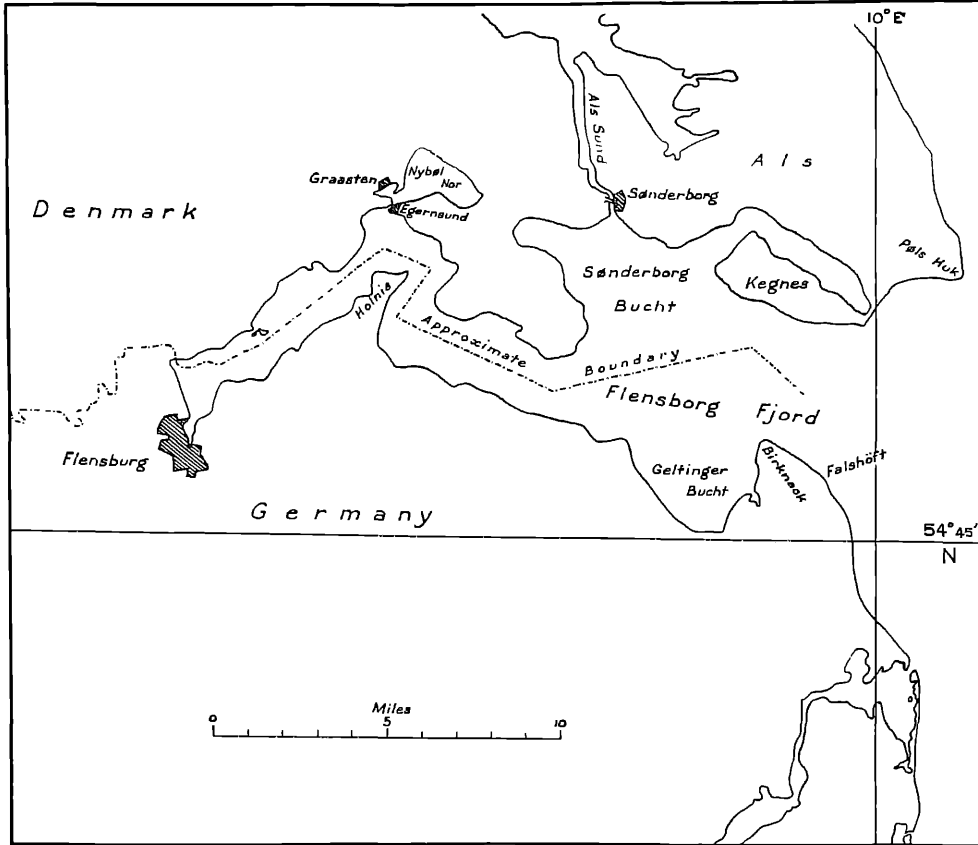
MAP NO. 41
Lough Carlingford



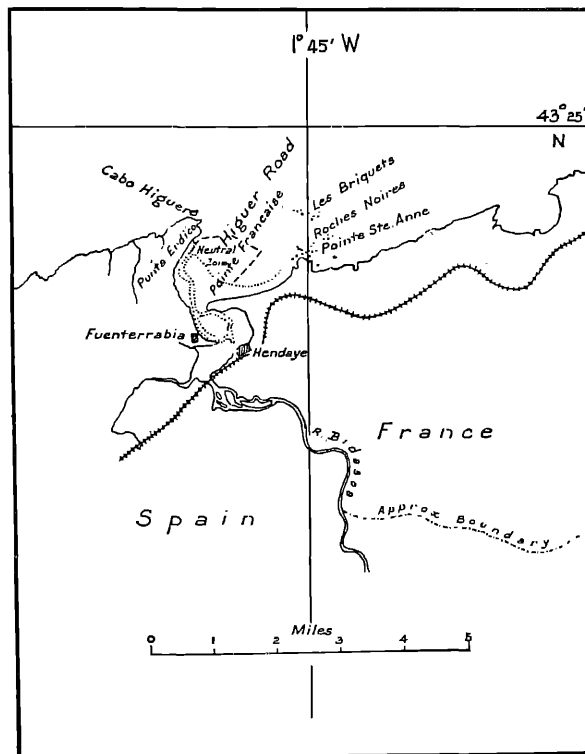
MAP NO. 42
Lough Foyle



MAP NO. 43
Flensburg Fjord

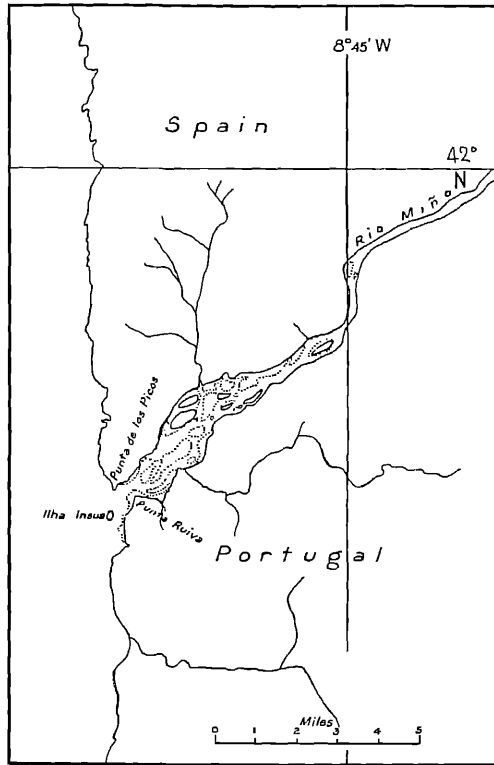


MAP NO. 44
Bidasoa River



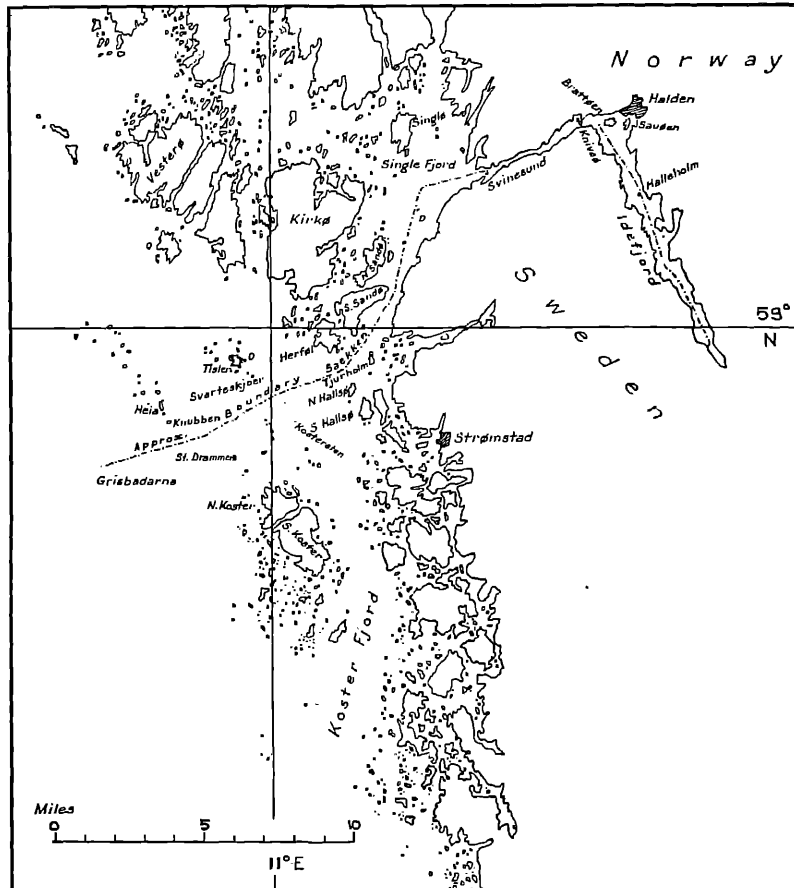
MAP No. 45

River Miño

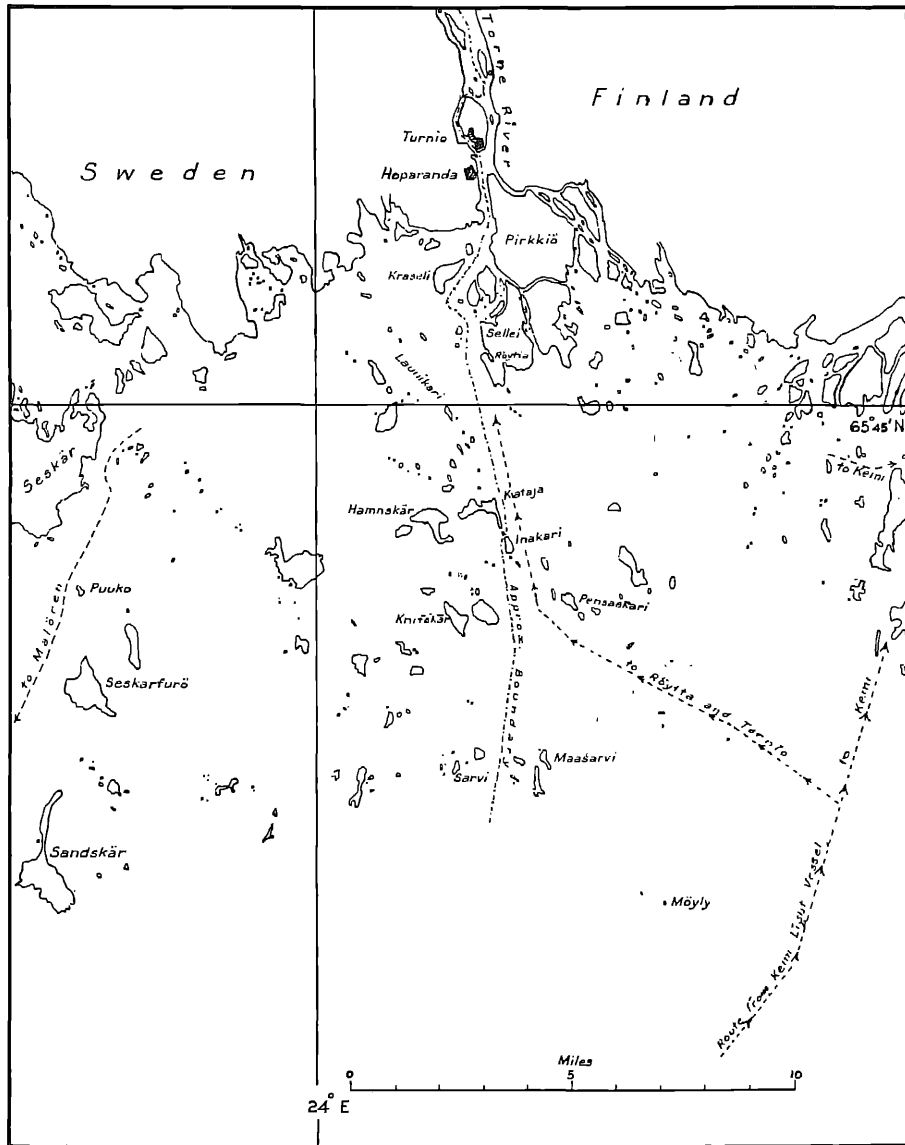


MAP No. 46

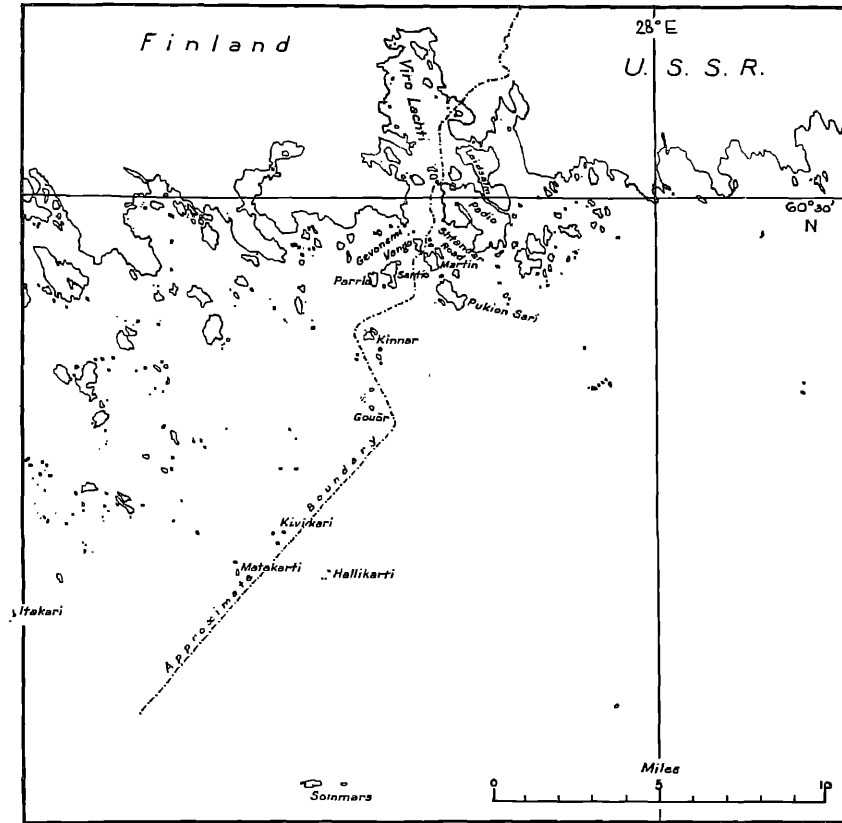
Idefjord



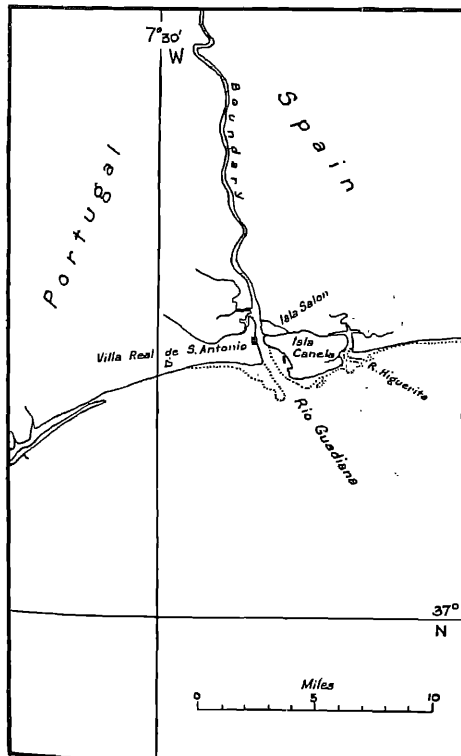
MAP NO. 47
Head of Bottenviken



MAP NO. 48
Viro Lachti Area



MAP NO. 49
River Guadiana



MAP NO. 50
River Evros

