reef eastward of Tandjung Patiro, on the starboard hand. Vessels of deep draft must make good course 003° for about 2 miles farther northward to avoid a 3¾-fathom shoal lying about 2 miles north by eastward of Tandjung Patiro. When past the beacon on the drying reef westward of Amelia, steer to the northward.

From northward the passage is between Torea, the east extremity being marked by a beacon, and Totopela, marked by a beacon.

PALIMA (4°20′ S., 120°23′ E.).—This is an important trading village situated on the Tjenrana River a short distance from the coast. There is a custom's officer and a port captain. Provisions are obtainable.

Vessels touch here regularly and there is communication via telephone with Makasar.

In the Northwest Monsoon there is good ANCHORAGE in 5 to 6 fathoms off the central mouth of the river. There are two MOORING BUOYS off the channel to the central mouth of the river. The mouths of the river can only be seen when close under the coast, but Tafelberg, about 9 miles to the westward, is a useful guide.

In the approach to the anchorage vessels should pass southward of Tabako, a reef lying about 3½ miles east-southeastward of the mouth of the Tjenrana River; the reef is marked by a BEACON with a white ball topmark. The beacon should be passed at not less than 600 yards, taking care to avoid a 3¼-fathom patch lying 1½ miles southeastward of it.

8C–11 BETWEEN THE TJENRANA RIVER AND TANDJUNG LOKOLOKO, 36 miles northward, a mud bank, occasionally mixed with coral, dries out from 1 mile to 2 miles. Because this part of the coast offers few attractions the wisest course is to give it a wide berth by keeping eastward of the meridian 120°32′ E. A white iron ball BEACON stands on the edge of the bank midway between the Tjenrana River and Tandjung Lokoloko.

Tandjung Lokoloko and Tandjung Siwa, about 3 miles northward, are low and well wooded. About 3 miles westward of Tandjung Lokoloko there is a high, conspicuous tree.

BETWEEN TANDJUNG SIWA AND TANDJUNG DJENEMEDJA, about 26 miles northward, the depths are great close to the shore. The 100-fathom curve lies less than 1 mile from the coast off Tandjung Siwa and then gradually edges away, curving to the eastward abreast Tandjung Djenemedja across the north part of Teluk Bone.

Lamunre, a reef with a least depth of 2 fathoms, lies on the edge of the 100-fathom curve, about 9½ miles south-southeastward of Tandjung Djenemedja. It is marked on its east side by a black BEACON with a truncated cone topmark.

ANCHORAGE may be taken north of Tandjung Siwa and Tandjung Polo, about 9½ miles northward, in 5 and 10 fathoms, respectively. The last anchorage should be approached northward of Pasi Belongka.

HEAD OF TELUK BONE

8C–12 TANDJUNG DJENEMEDJA (3°15′ S., 120°25′ E.) is a low point of land with a reef that dries extending northeastward.

A LIGHT is shown on the northeast extremity of the reef.

Between Tandjung Djenemedja and Palopo Bay, about 20 miles northwestward, the coast is low with some conspicuous landmarks inland. The sea adjacent to the coast is much discolored by the rivers. Saddle Hill, 1,319 feet high, about 8 miles westward of Tandjung Djenemedja, is very conspicuous and is a useful point in making Papodo Bay from southward. Walinrang and Beteng, northwestward of the bay, are useful marks entering the road. Beteng, 872 feet high, is somewhat blunt and a lighter green than the surrounding area.

Inside the 100-fathom curve and at the north bend in Teluk Bone, north of Tandjung Djene-

medja the bottom is dark, gray clay, which provides excellent holding ground.

Tandjung Djenemedja should be given a wide berth, as a constant easterly current has been reported in the vicinity of Bron Reef.

OFF-LYING REEFS AND DANGERS.—Bali Reefs are a group of reefs near the edge of the 100-fathom curve, 10 to 14 miles northeastward of Tandjung Djenemedja. Inside these and a little to northward are the Naber Reefs and Bron Reef which dry at low water. River water is found at the surface in this area after heavy rains creating false signs of discoloration.

An obstruction was reported (1954) to lie about 5 miles northeastward of Tandjung Bua, about 15½ miles norwestward of Tandjung Djenemedja.

PALOPO BAY, in the northwest corner of Teluk Bone, is surrounded by mountains decreasing in height eastward. Libukange, a rocky islet 203 feet high, lies on the broad bank extending from the north side of the bay and stands out clearly against the background. The large town of Palopo, consisting of a collection of villages, is situated on both banks of a river.

A stone breakwater extends east-northeastward from the shore near the mouth of the river, for a distance of about 1,800 yards. Close to the breakwater is a small pier with steps.

A dangerous WRECK, the position of which is approximate, lies about 1 mile eastward of the head of the breakwater.

The best ANCHORAGE is in 6 fathoms, but smaller vessels with local knowledge anchor closer in, in 4 fathoms. The holding ground is excellent. Some reefs on the west side of the bay, somewhat obstruct the entrance.

An AVIATION BUOY for seaplanes is moored about ½ mile west-northwestward of the head of the breakwater.

Severe rainstorms may be encountered here at night, with winds from the north and northwest.

There is telephone connection with Makasar. Vessels touch here regularly. There is a doctor and a hospital at Palopo.

BETWEEN PALOPO BAY AND TELUK USU, about 50 miles northeastward, the coast is low with a drying bank of mud and sand, with occasionally coral, extending offshore about ¾ mile along the entire coast. The water is murky and muddy from 4 to 5 miles from the coast.

There is good ANCHORAGE in 6 to 7 fathoms eastward of the reefs off the mouth of the Sungai Wotu (2°38′ S., 120°48′ E).) It is approached by steering for a conspicuous clump of trees near the mouth, bearing 326°. This channel is marked on either side by unofficial beacons. There is a small drying reef southward of the channel. There is a small pier in the river, with a storehouse near the root. The large village of Wotu is upstream.

8C–13 TELUK USU lies in the northeast corner of Teluk Bone. The north shore of the bay is separated from the mountains by an alluvial plain and the south coast is abrupt and high. A wooded island lies off Tandjung Bulupula, the south entrance point of the bay, and the channel between is about 600 yards wide and safe. The middle of the bay is free of dangers, with depths of 15 to 20 fathoms. The east side of the bay is foul.

The Sungai Usu discharges in the north part of the bay. The town of Malili lies upriver on the Sungai Malili about 3 miles above its junction with the Sungai Usu.

Vessels should not anchor in less depths than 11 to 12 fathoms off the mouth of the Sungai Usu. There is a choppy and difficult sea with a seaward wind and the river at the flood.

BUOYS.—A white conical buoy and a black can buoy marks the west channel to the Sungai Usu.

MALILI, the seat of a civil administrator, is a collecting place for forest products. Some iron ore is found in the interior.

BETWEEN TANDJUNG BULUPULU AND TANDJUNG TABAKO, about 38 miles southward, the coast forms numerous small bays of little importance. Depths of 20 to 30 fathoms are found 4 to 5 miles from the coast, and close to there is usually deep water. Between Teluk Usu and Sapiri (3°02′ S., 121°03′ E.), an islet, a mountain ridge runs close by the coast. Lelewau, in a small bay east of Sapiri, is the only village on this part of the coast.

From Sapiri to Tandjung Tabako the coast is low and more populated, the high mountains lying some distance inland. The villages of any importance are Latou, Pakue, and Batunong. These consist of 10 to 30 houses and can be seen from seaward.

REEFS.—From 1 mile off Tandjung Tabako the 100-fathom curve draws farther from the coast for 14 miles to the northward and then bends sharply to westward (see sec. 8C–12). Within this depth lie a large number of coral reefs, mostly drying and of small circumference, many lying close to the 100-fathom curve. They are too numerous to describe here, and the chart should be consulted, but the navigation of the center of this part of Teluk Bone is inadvisable.

PART D. SOUTH COAST—TANDJUNG LASSA TO TANDJUNG LAIKANG, AND OFF-LYING ISLANDS

8D–1 TANDJUNG LASSA (5°37′ S., 120°29′ E.), the southwest point of Teluk Bone, and north point of Selat Salajar, is sharp and precipitous, rising to a conspicuous flat-topped hill 394 feet high, named Djangko. Off the point are some loose stones, always above water. The coastal reef is 400 yards wide, and a submerged ridge projects 2½ miles southward, with a 5-fathom shoal on it, lying about 1 mile southward of the point.

COAST GENERAL

8D–2 BETWEEN TANDJUNG LASSA AND TANDJUNG LAIKANG, about 62 miles westward, the coast forms a few bays and is backed by some very conspicuous mountains. Gunung Lompobatang, the most conspicuous, is 9,514 feet high. The mountains in the foreground of this peak form two groups. The western consists of a series of ridges descending to the coast from Bontomanai, the northern and highest summit. The others is a continuation of one of the slopes of Gunung Lompobatang, and splits into two branches by Damara, one running to the head of Teluk Malasoro and the other in a northwesterly direction.

Of the west group Bontomanai, 2,995 feet high and thickly wooded, is most conspicuous and, seen from southwestward, has a sharp top. Tjinalu, 984 feet high, is a very conspicuous isolated hill, covered alternately with light green reeds and dark woods.

Of the east group, Bukit Maja, 3,757 feet high, is the highest and most conspicuous, showing as a wooded conical summit. Bula Pinka, 2,018 feet high, has steep slopes and a fantastic outline, with two deep vertical clefts in the peak. Batu Djawia, 1,148 feet high, is conspicuous from westward by a dark clump on the light green ridge. Sirukang, 669 feet high, is a round, dark-wooded hill.

Farther eastward the only mountain of note is Slangenberg, 1,388 feet high, a steep, pointed, thickly wooded cone, rising out of the surrounding flat land, and the most conspicuous point on the whole of this part of the coast.

Selat Salajar lies between Tandjung Lassa and Pulau Salajar. This strait is part of the generally used shipping route from Makasar Strait to the east coast of the Celebes. The most used part of the strait is between Sarontang and Pasi Tanete.

DEPTHS—DANGERS

8D–3 From a position close southwestward of Tandjung Lassa the 100-fathom curve extends irregularly up to 14 miles offshore from this coast, then runs roughly parallel to the coast gradually decreasing to a position about

4 miles southward of Tandjung Laikang. There are several dangers aloug the edge of the 100-fathom curve, some of which discolor and one marked by breakers. These dangers will be described with the dangers in Selat Salajar (sec. 8D–9).

OFF-LYING ISLANDS

8D–4 Pulau Salajar, separated from Tandjung Lassa by Selat Salajar, is about 44 miles long, north and south, and is traversed throughout by a terraced-forming chain of mountains descending steeply to the sea on the east side and sloping gradually to the flat stretch of coast on the west side. Pulau Pasi lies close off the west coast of Pulau Salajar. Both of these islands lie within the 100-fathom curve which runs close-to the east and west coasts of Pulau Salajar except westward of Pulau Pasi where it extends about 7 miles westward.

Three islands lie southward of Pulau Salajar and together with numerous dangers all lie within the 100-fathom curve.

WINDS—WEATHER

8D–5 See section 8–2.

TIDES—TIDAL CURRENTS

8D–6 See section 8–3.

COASTAL FEATURES—LANDMARKS

8D–7 BETWEEN TANDJUNG LASSA AND BULUKUMBA, about 17½ miles westward, the coast recedes northward forming Teluk Birangkeke, with the bottom very uneven and the coast very low. There is good ANCHORAGE in about 14 fathoms in both monsoons.

BULUKUMBA, a large village at the mouth of the Sungai Teko, is easily recognized by the white light tower. The usual ANCHORAGE is eastward of the lighthouse, although vessels lie poorly here and communication with the shore always difficult on account of the continual surf before the mouth of the river. This anchorage is used because the lighters lie well sheltered in the mouth of the river. The best anchorage is in the bight about 1 mile westward of Bulukumba because communication with the shore is easier and there is no trouble with breakers.

A LIGHT is shown at Bulukumba.

A 2½-fathom patch lies about 1 mile southwestward of the lighthouse.

In approaching Bulukumba from southward, steer for the lighthouse in range with Slangel Slangenberg, bearing 340° between Taka Boloh and Taka Rangkap (sec. 8D–9) and thence for the anchorage. At night great care must be taken to keep this bearing of the light, as there is a fairly strong current.

BONTHAIN, the principal place of the district of the same name, lies at the foot of the mountains about 14 miles westward of Bulukumba. The place is not prosperous, and coffee is the principal export. The inhabitants have placed cribs in the sea for catching fish. Bonthain is the seat of a government official.

Bonthain Road is within the limits of a circle of 1 mile radius from the flagstaff. Coastal vessels make this a regular port of call. A small landing pier is located near the flagstaff. A doctor is stationed in the port.

During the east monsoon there is frequently a ground swell, and in southerly winds communication with the shore is very difficult.

The best ANCHORAGE is in about 5 fathoms, about 1,600 yards southwestward of the flagstaff. A 2¼-fathom shoal lies about 3½ miles southwestward of the flagstaff, and a northerly course should be steered entering the road to avoid the other shoals on the west side of the bay. Hardly any current has ever been noticed in the roads.

DJENEPONTO (5°42′ S., 119°43′ E.), the seat of a government official, lies on the right bank of the river of the same name and on the major mail route which connects Makasar and Sindjai. In clear weather the conical summit

Bukit Maja, bearing 356°, leads to the river mouth.

Between Djeneponto and Tandjung Bulu Bulu, a low, wooded point about 4 miles to the eastward, the 3-fathom curve runs very irregularly and in one place is fully 1,600 yards from the shore.

8D–8 TELUK MALASORA, about 7 miles westward of Djeneponto, is entered between Tandjung Kajuleleng, the east point of the bay and Udjung Malasoro, the south extremity of a peninsula separating this bay from Teluk Laikang. The bay is 2½ miles wide and affords good, secure ANCHORAGE in both monsoons. Pulau Malasoro, 130 feet high, lies on the west side of the bay and is surrounded by a reef extending ½ mile to the southeastward. From the opposite point the reef dries ¾ mile, and shallow water extends out over 1 mile, leaving a clear passage 1 mile broad. Northward of Pulau Malasoro the bay broadens, with regular depths of 6 to 10 fathoms. The detached drying reef southwestward of the head of the bay is steep-to.

On the northeast shore Bojong Tjinnong, 377 feet high, with two white patches at the base, is conspicuous. At the mouth of a river on the east side of the bay there are four solitary trees, and 2 miles eastward is a 298-foot high light green hill with a dark tree on the south slope.

Tandjung Kajuleleng is low and covered with dark shrubs. It is advisable not to approach the coast here within 1½ miles, as the depths southward of the point are very irregular.

The bay may be approached with the cleft summit of Bulu Pinka in range with the dark wooded hill Sirukang 021°, and entered with the white patches on Bojong Tjinnong bearing 048°.

TELUK LAIKANG is 4 miles wide between the low and sandy Tandjung Pepe on the west side and Udjung Kasi Matimpowa on the east side, but the fairway is considerably reduced by shallow water extending 1½ miles from the former, and three shoals, of 1½ fathoms least water, from the latter point. Off the north shore are four patches of stones surrounded by brown sand, partly drying at low water.

The little town, Alu, the headquarters of the controller of the Bangkala division, is about 1 mile up the river of the same name on the east side of the bay.

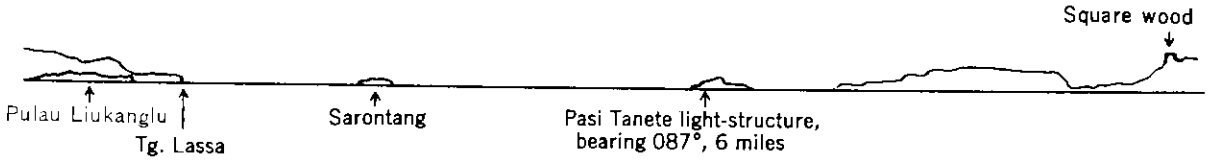
Near the northeast shore are three small darkly wooded hills: Karampuang, the central, is 374 feet high; the eastern Labu Tjinri, is lower; and the western is farther inland. Bontomanai in range with Karampuang, 038°, or with Laba Tjinri, 034°, leads clear of the entrance reefs, and between these two range marks are depths of not less than 11 fathoms. Talampuang, a general sloping hill 243 feet high, in the northwest part of the bay, can be seen from almost all directions seaward and affords a useful bearing point.

A WRECK, with its bridge and mast showing, lies sunk on the west side of the entrance of Teluk Laikang, about 1¼ miles southward of Tandjung Laikang.

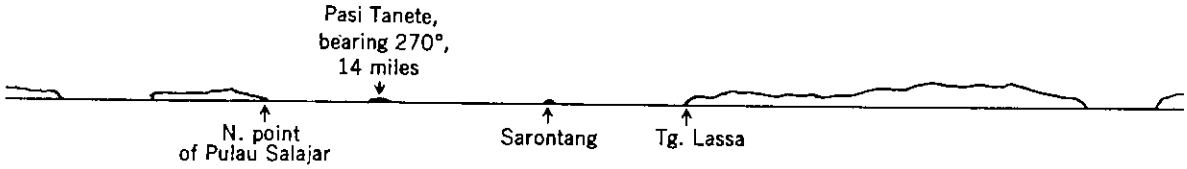
The west and north coasts of Celebes are described in chapter 11.

8D–9 SELAT SALAJAR.—This strait is about 9 miles wide between Tandjung Lassa and Pulau Salajar and the most used part of the strait between Sarontang and Pasi Tanete is about 3 miles broad, with depths of 300 to 400 fathoms, which quickly deepens eastward to 1,200 fathoms.

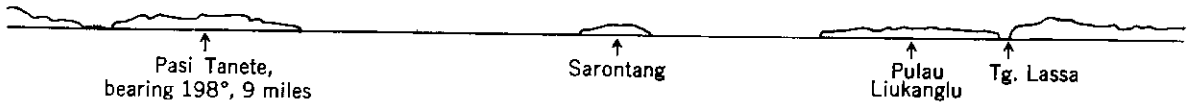
PULAU LIUKANGLU, 2 miles southwestward of Tandjung Lassa, is 170 feet high and rocky, with villages on the northeast side. It is wooded with many coconut trees on the north and east coasts. The island is surrounded by a coastal reef and ANCHORAGE, in 8 to 14 fathoms, sand, is available with the northwest point of the island in range with the left part of the hill on Tandjung Lassa, and Sarontang over the southwest point. In the east monsoon



SELAT SALAJAR FROM WESTWARD.



SELAT SALAJAR FROM EASTWARD.



SELAT SALAJAR FROM NORTH-EASTWARD.

there is some shelter from the wind and sea, but there is nearly always a swell and strong currents of 2 to 3 knots running from the west-northwestward.

SARONTANG, 137 feet high and nearly in the middle of the strait, is rocky, uninhabited, and slightly wooded. There is a surrounding reef, and on the south side the 5-fathom curve is 600 yards from shore.

PASI TANETE, is 194 feet high, steep on the north side, and stands on the edge of the 100-fathom curve surrounding Pulau Salajar. A few coconut palms grow on the low south side of the island. The channel between Pasi Tanete and Pulau Salajar is reduced by reefs from both sides to less than ½ mile in width, and although the least depth is 15 fathoms, violent and irregular tidal currents render it unfit for any but small vessels.

A LIGHT is shown on the north side of Pasi Tanete. It is difficult to pick up the light when southward of a line drawn 260° from the north end of the island.

CURRENTS.—Strong currents, causing eddies, are frequently experienced through all the passages in Selat Salajar and when running against the wind will cause overfalls resembling surf in shallow water. There is often a strong countercurrent under the Celebes shore. From June to September, at the height of the east monsoon, there is a constant current of fully 1 knot to the southwestward. At the decline of the monsoon it takes a westerly direction with a rate of ½ knot.

WEATHER.—A striking contrast in the weather conditions on either side of the strait have been frequently observed. During the west monsoon rainy weather may occur on the west side, and fine weather prevail on the east side. Rainy weather and a high sea on the east side during the months of May, June, and July will suddenly change over to calm weather on the west side.

DANGERS IN THE APPROACH TO SELAT SALAJAR.—Taka Boloh, about 15 miles west-southwestward of Pulau Liukanglu, is of sand and coral, circular and about ½ mile across, with a least depth of 4 fathoms.

Quick Reef is reported to be located about 5½ miles west-northwestward of Taka Boloh. When seen, it was marked by brown discolored water, the waves breaking on it, and tide rips around it.

Taka Rangkap, about 9 miles westward of the south point of Pulau Liukanglu, is 1 mile long east and west, ½ mile broad, and formed of coral, sand, and stones. The least depth is 2½ fathoms with 10 to 20 fathoms around. The water is of a light green color, and there are ripplings at times here.

DIRECTIONS.—From westward Taka Boloh and Taka Rangkap can be easily avoided by bearings of Djangko on Tandjung Lassa, Pulau Liukanglu, Pasi Tanete, and the high land on Pulau Salajar. Farther in the strait, Sarontang and a very conspicuous square wood on the edge of the high plateau, about 7 miles southward of the north point of Pulau Salajar, are useful marks. A wood of similar appearances to the one mentioned above is situated about 4 miles to the southward of it. Course may be steered to pass close northward of Pasi Tanete, but Sarontang must not be approached within 600 yards.

At night the Celebes shore may be approached to keep Bulukumba Light in sight, and Pasi Tanete Light, bearing 095°, will lead between Taka Boloh and Taka Rangkap, 2 miles southward of the latter.

CAUTION should be exercised at night in proceeding from the strait to the west, especially in the vicinity of Djeneponto. During the east monsoon a strong stern current is encountered.

PULAU SALAJAR

8D-10 EAST COAST.—The mountains rise almost vertically from the sea, giving the coast a rocky aspect with few interruptions by sandy beaches. The principal conspicuous points are Saleier, 2,156 feet high, Lura, 1,739 feet high, Rokoboko, 1,473 feet high, and Lajolo, 2,156 feet high. At the south end of the island is Barang Barang, 853 feet high, with a square hump on the top.

The bottom near the coast is very steep except near Tandjung Apatana, at the south point of Pulau Salajar, where the emerging spots of coral and rocks are very narrow and are entirely absent more to the northward, between Tandjung Lohea and Tandjung Batu Putih.

Navigation along the coast is easy but should not be attempted in the east monsoon. Anchorage along the coast is not recommended because of the steep bottom and extreme difficulty of approach.

WEST COAST.—The north point of Pulau Salajar rises to a plateau 384 feet high, separated from the higher land southward by a deep saddle which, seen from a distance east or west, has the appearance of an island, and it is sometimes mistaken for Pasi Tanete. A few miles to the southward a plateau rises steeply to a height of 1,093 feet and has a square wood on the north edge.

The coast between the north point of the island and Balangnipa, on which are many coconut trees, is bordered by a reef drying off ½ mile. The land behind becomes higher near Balangnipa and runs in two parallel ridges, the eastern being the higher. Balangnipa is densely populated and the scene of much native prau traffic.

PULAU PASI, parallel to the west coast of Pulau Salajar, is about 6 miles long and 2 miles broad at the south end, where it rises in a line of hills to 315 feet. The north end is low and covered with coconut trees, a hilly ridge rising to 187 feet about 1½ miles to the southward. The surrounding reef, which is very narrow on the east side of the island, extends 1¼ miles northwestward from Tandjung Baruja, the north point, and is from ¼ to ½ mile wide on the west and south sides.

WHALE (WELVISCH) REEFS consist of three detached groups of shoals of 2 to 4 fathoms least depth. The outer shoal, of 4 fathoms, lies near the 100-fathom curve and is steep-to on the west side.

The reefs are steep and visible at 2 to 2½ miles when the discoloration is visible.

8D–11 CHANNEL BETWEEN PULAU PASI AND PULAU SALAJAR.—This channel is about 1½ miles wide, except in the south part, when it contracts to 200 yards. The town of Benteng lies on the east side of the strait opposite the north point of Pulau Pasi, and 2 miles to the northward is the village of Apabatu, with a very conspicuous gap in the hills southward of it. There is a similar gap southward of Benteng. BENTENG, the seat of a civil administrator, is the chief town on Pulau Salajar. A boat pier can be reached only at high water. Provisions can be obtained in limited quantities. Vessels call here regularly. The village of Padang is on the east side of the narrows. It is touched by coastal vessels. The south exit of the channel is clustered with fishing stakes and nets.

A number of reefs divide the north part of the channel into two parts, the western being nsed by vessels of deep draft and the eastern by praus. In the narrows the depths decrease to 2 fathoms, the bottom being hard sand covered by a layer of mud.

BEACONS.—Two beacons, each with a conical topmark, indicate the channel through the narrows. The north beacon has a black and white checkered daymark.

DANGERS.—A 2¾-fathom coral patch lies in the north entrance about 1¼ miles northward of Tandjung Baruja. A 2½-fathom coral patch lies about 600 yards northeastward, and a 5-foot coral patch about ½ mile eastward, respectively, of Tandjung Baruja. Close southward of the latter is another coral patch with a least depth of 1½ fathoms. All of these patches are surrounded by deep water. Between the 5-foot coral patch and the shore eastward are two detached patches with depths of 1¾ and 2 fathoms.

Several drying and submerged coral patches lie in the channel southeastward and southward of Tandjung Baruja. The northernmost of these dangers is a 1¼-fathom shoal lying about 1 mile southeastward of Tandjung Baruja.

A ¼-fathom shoal lies in the south entrance of the channel in a position about ¾ mile eastward of the south extremity of Pulau Pasi. Several other patches, with depths of 2¼ to 5 fathoms, lie from 2 to 4½ miles southward of the south end of Pulau Pasi and within 1¾ miles of the coast of Pulau Salajar.

The usual ANCHORAGE is about ½ mile off Benteng, in depths of 6½ to 8 fathoms. Strong westerly winds quickly raise a sea in

PULAU SALAJAR, WEST COAST. CLEARING MARK FOR BYLANDT REEF.

this position, and communication with the shore is then difficult.

CURRENT.—There is very little current in the narrow passage between Pulau Pasi and Pulau Salajar. On the west side of Pulau Pasi the current runs to the northward with rising and to the southward with falling water with a rate of ¾ knot to 1½ knots. Northward of Pulau Pasi the ordinary tidal currents never exceed 1 knot to 1½ knots, but southward of the island a rate of 3 knots to the northeastward was measured. In the easterly monsoon the current to the southeastward will raise a very turbulent sea.

TIDES at Benteng are of mixed character, the semidiurnal and diurnal being of about equal value.

DIRECTIONS.—When bound for Benteng from the northward approach the roadstead with the zinc roof at Benteng bearing 139°. Alter course southward when Tandjung Baruja bears about 240° to pass westward of the 5-foot patch and southward of the 1½-fathom patch close southward of the 5-foot patch. When clear of these dangers steer 139° for the shed with a zinc roof and anchor when the flagstaff at Benteng bears about 090°.

Only small light-draft vessels with local knowledge should attempt to pass through the narrows. When proceeding southward from the anchorage cross over to the Pasi shore immediately, passing southward of the 1½-fathom patch eastward of Tandjung Baruja. Thence favor the Pulau Pasi side of the channel in order to avoid the drying and submerged reefs southwestward of Benteng. Take care to avoid a 1-foot patch lying about 300 yards offshore about ¾ mile northward of a point on the west side of the entrance of the narrows. Proceed through the narrows, passing eastward of the beacon with the black and white checkered daymark and the black beacon off the south entrance of the narrows. When past this latter beacon steer a southerly course, taking care to avoid the ¼-fathom shoal ¾ mile eastward of the south extremity of Pulau Pasi.

THE COAST between Padang and Tandjung Apatana is high as far as Lajolo Bay, then it gradually descends to Tandjung Apatana, a low spit running far out to sea and ending in a sandbank. The most prominent points are Tandjung Batu Putih and Tandjung Batu Kerapo. The former is the south point of Lajolo Bay and consists of white sandstone, very conspicuous with the sun shining on it. Tandjung Batu Kerapo is steep and rocky. From northward the village Pondang eastward of Tandjung Batu Kerapo is clearly visible.

Pulau Guang, 187 feet high, and Malimbi, 217 feet high, lie at each end of a drying reef near the coast between Tandjung Batu Putih and Tandjung Batu Kerapo.

In and around the shallow spots along the coast, the waters are filled with fishing stakes and nets.

BYLANDT REEF, west of Lajolo Bay, discolors decidedly with a least depth of 5 feet. The 3-fathom patch westward of this reef is difficult to see.

Northward of Lajolo Bay a number of coral reefs, with depths of 2¼ to 4½ fathoms, extend in a north-by-west direction at 1 mile to 1½ miles offshore.

The highest point of Pulau Guang in range with Barang Barang, 853 feet high, 148°, leads between Bylandt Reef and the reefs southward of Pulau Pasi.

8D–12 ISLANDS SOUTHWARD OF PULAU SALAJAR.—These islands lie on a large bank, steep-to, near the 100-fathom curve and consist of sand, coral, and stones. The water is extraordinarily clear, and the bottom can be easily seen in 12 fathoms.

PULAU BAHULUANG is 236 feet high and is surrounded by a drying reef extending a considerable distance northward.

PULAU TAMBULONGANG, with a 725 foot hill in the north part, is a good landmark

from all directions. The village of Pala, the residence of the chief of the islands, lies on the east coast.

PULAU PULASI has a conspicuous steep hill 745 feet high on the north side, tailing off to the southward with a series of pointed hills gradually decreasing in height. Both Pulau Tambulongang, and Pulau Pulasi are surrounded by a drying reef, the east edge of which lies close to the 100-fathom curve.

A narrow ridge of 2 fathoms least depth and steep-to on both sides, named Badjan Lamberreh, stretches from Pulau Bahuluang to Pulau Tambulongang. Between Pulau Tambulongang and Pulau Nambolaki, a small wooded islet, lying on the southwest point of the bank, are several shoals with a least depth of 2 fathoms, and about 7 miles northward of the latter island, near the 100-fathom curve, is a shoal of 1 fathom.

The passages between these islands are unsafe and best avoided. The passage between Pulau Bahuluang and Pulau Salajar presents no difficulty, and the depths are over 100 fathoms.

For the islands to the southward and eastward, see Chapter 7.

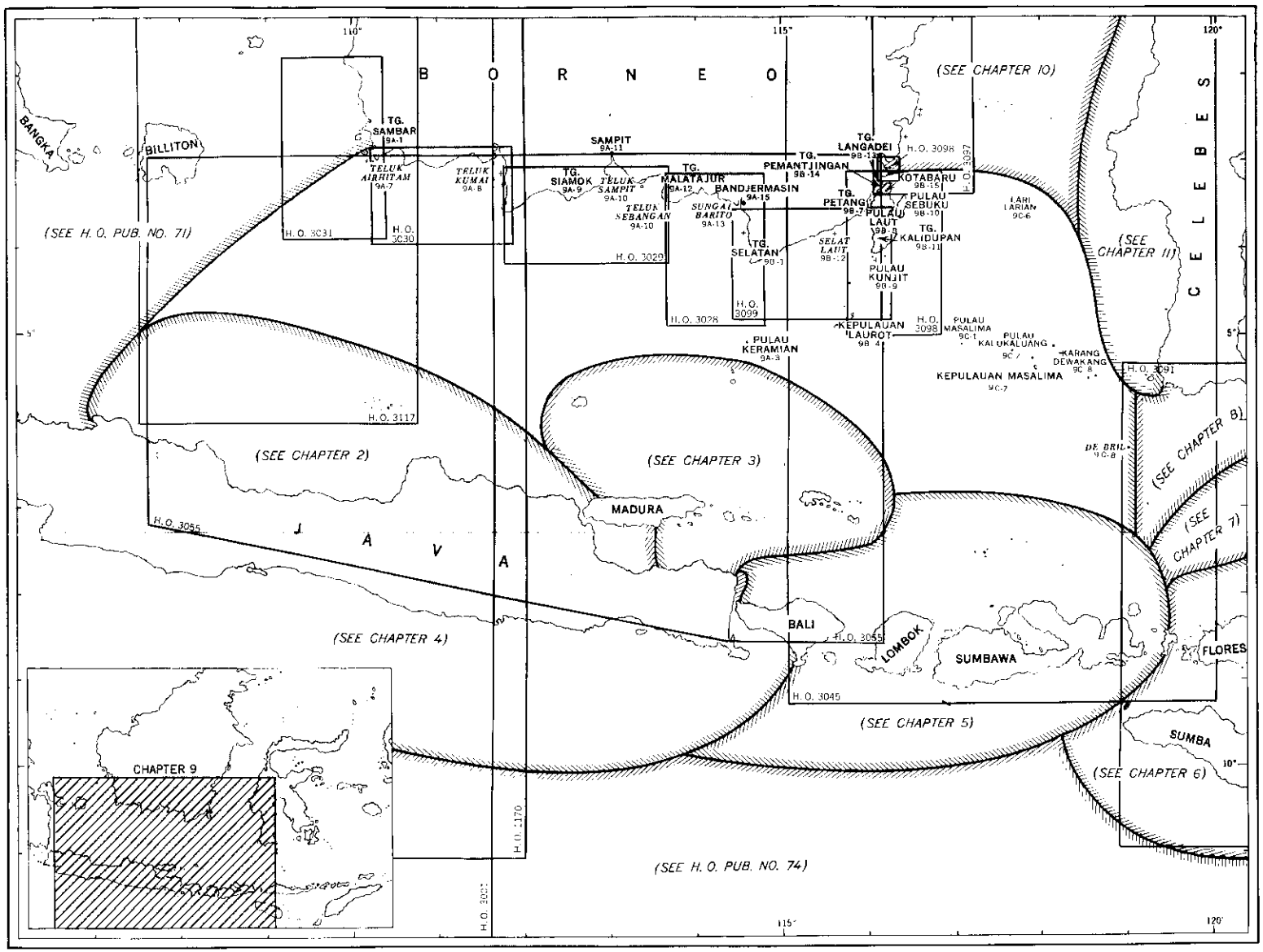


Chart limits shown are of the best scale charts issued to naval vessels by the U.S. Navy Hydrographic Office.
Numbers refer to the section in the text describing a designated locality.

CHAPTER 9—GRAPHIC INDEX

CHAPTER 9

SOUTH COAST OF BORNEO—SELAT LAUT—SOUTH ENTRANCE OF MAKASAR STRAIT

Part A. Tandjung Sambar to Tandjung Selatan.
Part B. Tandjung Selatan to Tandjung Dewa (including Pulau Laut and Selat Laut).
Part C. South Entrance of Makasar Strait.

PLAN.—This chapter describes the south coast of Borneo from Tandjung Sambar to Tandjung Selatan; the arrangement is from west to east. Thence the southeast coast of Borneo, including Pulau Laut and Selat Laut, is described; the arrangement is from southwest to northeast. This is followed by a description of the dangers in the south part of Makasar strait.

GENERAL REMARKS

9–1 The south coast of Borneo is densely overgrown with forests of moderate height. There are few distinctive landmarks, but at the river mouths the trees are somewhat taller. Bandjermasin is the most important shipping place on this coast.

PULAU LAUT, a rather large island separated from the southeast coast of Borneo by SELAT LAUT, is mountainous in its north part and hilly in its south part. The strait is very narrow in parts and should be used only by vessels with local knowledge. Setagin, a lumber port, and Kotabaru, a shipping place of some importance, are located near the northwest end of the island.

The south part of Makasar Strait is partly obstructed by numerous islands and dangers. Borneo Bank projects far into the strait and encloses numerous islands, reefs, and dangers. Between the east edge of the bank and Spermonde Archipelago (sec. 11A–3) are a number of isolated coral banks rising abruptly from great depths, with raised ridges and islands on the north and east edges.

WINDS AND WEATHER

9–2 For winds and weather in the Java Sea, see section 2–3. See section 10–2 for winds and weather in Makasar Strait.

CURRENTS AND TIDAL CURRENTS

9–3 The current along the south coast of Borneo is a mixture of tidal and monsoon currents. At high water the tidal current sets westward and at about low water it sets eastward. During the Northwest Monsoon, a predominating east-going current can be expected, and during the Southeast Monsoon, there is a west-going current. The monsoon current seldom appears to exceed a rate of 1 knot.

Between the numerous detached sand ridges, extending more than 30 miles southward from Tandjung Sambar, the currents sometimes attain rates of 2 to 3 knots with overfalls.

In the various bays into which the large rivers discharge, the usual direction of the currents is naturally altered, and the rate of the current setting in or out averages from 1 knot to 1½ knots. In the channels between the banks, and close off the points, as well as in the mouths of

the rivers, the currents may attain a rate of 3 knots.

The tides on the south coast of Borneo are nearly always diurnal, but a second tide of very small range sometimes occurs. In November, December, and January, the highest tides were observed, and the lowest in July and August.

For information on currents in the Java Sea, see section 2–4. Information on the currents in Makasar Strait is given in section 10–3.

CAUTIONS

9–4 Great caution must be exercised in approaching the south coast of Borneo and Makasar Strait due to the numerous dangers. Vessels should pass well southward of the sand ridges which extend more than 42 miles southward from Tandjung Sambar.

During the west monsoon the discharge from the rivers is great. Discolored water, edged with a streak of foam, is often seen 30 to 40 miles offshore.

Fishermen frequent the waters off the southeast coast of Borneo.

PART A. TANDJUNG SAMBAR TO TANDJUNG SELATAN.

9A–1 TANDJUNG SAMBAR (3°00′ S., 110°19′ E.) is a sharp rocky point covered with trees. Due west of the south extremity of this point stands a prominent, forked tree which looms above the other trees and is visible about 13 miles. Above-water and sunken rocks lie within about 1¼ miles southward and westward of the point. The west coast of Borneo, northward of Tandjung Sambar, and the dangers extending more than 42 miles southward from this point are described in H.O. Pub. 71.

COAST–GENERAL

9A–2 The coast between Tandjung Sambar and Tandjung Puting is indented by a number of shoal and unimportant bays. Between the latter point and Tandjung Siamok, there are no prominent landmarks. Tandjung Siamok appears as an island from the offing.

Between Tandjung Siamok and Tandjung Malatajur, the coast is indented by two shoal bays, namely Teluk Sampit and Teluk Sebangan. Sungai Sampit, which leads to the important river port of Sampit, flows into the head of the former bay.

Between Tandjung Malatajur and Tandjung Selatan, the coast is formed by the deltas of 3 large rivers and some small rivers. Sungai Barito, navigable by vessels of 12-foot draft, leads to the important river port of Bandjermasin.

DEPTHS–DANGERS

9A–3 The dangers lying up to 42 miles southward of Tandjung Sambar are described in H.O. Pub. 71. Some patches with depths of 7 to 10 fathoms lie between these dangers and the parallel of 4°00′ S.

Between Tandjung Sambar and Tandjung Selatan, the 10-fathom curve lies from 2½ miles off the latter point to 52 miles off the coast in the vicinity of Tandjung Malatajur. The bays and rivers are for the most part shoal.

OUTER DANGERS.—Kepulauan Karimundjawa and the dangers northeastward are described in Part 2D. Pulau Bawean, Masalembo Besar, Masalembo Ketjil, and Annie Florence Reef have been described in Part 3B. A wreck with mast projecting above water is charted in position (approx.) 4°37′ S., 113°00′ E.

PULAU KERAMIAN, 52 miles southward of Tandjung Selatan, is a hilly island with a greatest height of 305 feet. It was reported (1962) that the high trees on its south tips made the island appear as two islands from the offing. There are some coconut plantations on the island. A wide reef surrounds the island. (Reported (1962) to be extending southeastward.) There is a small islet on the south side of this reef. Several detached reefs lie close off the fringing reef.

JANSSENS REEF, small in extent and having a least depth of 1¾ fathoms, lies about 30 miles southwestward of Tandjung Selatan. It is only slightly marked by discoloration.

DUAND SHOAL, the position of which is doubtful, has a reported depth of 3¾ fathoms and is charted in 4°31′ S., 114°50′ E.

TIDAL CURRENTS

9A–4 The tidal currents in the vicinity of Pulau Keramian attain a rate of 1½ knots, causing a confused sea near the south end of the island during the east monsoon. A strong inshore set has been experienced in the vicinity of Tandjung Selatan. Vessels should give the point a wide berth. For further information on tidal currents and currents, see section 9–3.

WINDS AND WEATHER

9A–5 See section 9–2.

CAUTIONS

9A–6 SHOALS (uncharted) of 3 to 6 fathoms were reported to lie in the approach to Sungai Barito, northward of the parallel of 4°00′ S.

FISH STAKES are located 5 miles west-northwestward of the north end of Pulau Keramian. In 1945 tide rips and discolored water were observed about 5 miles southeastward of the south end of Pulau Keramian. For additional cautions, see section 9–4.

COASTAL FEATURES

9A–7 TELUK AIRHITAM is a shallow bay entered between Tandjung Sambar (sec. 9A–1) and Tandjung Lumpur, a low and muddy point. The trees on the point are of a brighter tint than those on either side. The west shore of the bay is rocky just northeastward of Tandjung Sambar. It then merges into a narrow sandy beach, between which are a few hillocks of sandstone and white clay with steep faces toward the sea. There are some tjemera trees along the shore. The land behind the beach is marshy and heavily forested. A hillock, 202 feet high and having a prominent round-topped tree on its summit stands at the head of the bay. A number of shallow rivers discharge into the head of the bay.

Batu Mogung, a coral reef almost entirely submerged at high water, lies near the middle of the bay on the edge of the 3 fathom curve. A rock, with a least depth of 2 feet, lies about 1¼ miles southwestward of Batu Mogung.

The CURRENT is mostly affected by the monsoon. A current of 2 knots or more is sometimes met within the outer part of the bay and around Tandjung Lumpur.

BETWEEN TANDJUNG LUMPUR AND TANDJUNG SELAKA, the coast is indented by a shallow bight. The latter point is fronted by a sandy beach with tjemera trees, behind which there is a high virgin forest. The point is hard to identify against the dark background. Sungai Djelai, having a wide but shallow entrance, flows out into the northwest corner of this bight. A narrow sandy beach fronts the coast between the river mouth and Tandjung Selaka. Kualadjelai, a trading place, stands on the left bank at the river mouth. Sukamara, about 35 miles up river, is the seat of a government official. The customs office is located just below the village.

SELAKA BANK, having a drying place on it and having depths of 4 feet to 15 feet, coral and sand, extends 15 miles south-southwestward from a position close westward of Tandjung Selaka. CURRENTS may set irregularly across this bank at rates of up to 2 knots. Vessels should not round this bank in depths of less than 10 fathoms. A patch with a depth of 3¾ fathoms lies about 2 miles southeastward of the south extremity of the bank.

BETWEEN TANDJUNG SELAKA AND TANDJUNG PENGUDJAN, the coast is indented by Teluk Kotawaringin, a shallow bay. Some tall trees stand on the latter point and just eastward of it the land rises sharply to a 182-foot hillock which forms a good landmark.

Sungai Waringin, a shallow river with a muddy and mangrove-covered mouth, flows into the northeast part of the bay. The entrance is divided into two parts by islets and banks. A conspicuous grove of trees stands in a small village at the east side of the river entrance. The coast between the river mouth and Tandjung Selaka consists of sandy beaches alternating with somewhat high areas of white clay steeply slanted toward the sea. Many coconut trees grow along this coast and about 5 miles east by northward of Tandjung Selaka, there is a prominent tree standing on a 69-foot hillock. The coast between the river mouth and Tandjung Pengudjan consists of a strip of bright white sandy beach, behind which the land is somewhat hilly. This hilly land can be seen from a distance of 18 miles.

A stranded WRECK lies about 4¾ miles northwest of Tandjung Pengudjan. A shoal flat, as defined by the 3-fathom curve, extends 9½ miles southward from Tandjung Pengudjan. A few 2½ to 3 fathom patches lie westward of the outer end of this flat. A sunken WRECK lies about 11 miles southward of the same point. Berasbasah Banks, consisting of some low white sandbanks, which are not readily seen, lie on the north part of this flat. An islet, grown over with tjemera trees, stands at the north end of the flat, close off the above point.

A shoal with a depth of less than 6 feet, coral and stones, lies about 4¾ miles southeastward of Tandjung Pengudjan.

ANCHORAGE can be taken off the mouth of the Sungai Waringin in 3½ to 4 fathoms, mud.

TELUK KUMAI

9A–8 TANDJUNG PUTING (3°31′ S., 111°46′ E.), the southeast entrance point of the bay, is low and covered with grass; to northward is a sandy beach. The point can be recognized since its vegetation is of a lighter green tint and lower than the high trees to northward and eastward. A group of tall trees, southward of Teluk Kramat, are conspicuous and appear as an island from the offing. The east shore to the northward of the sandy beach is composed mostly of mud.

The west shore of the bay, between Tandjung Pengudjan and Tandjung Pandan, has a narrow sandy beach with high trees on it. A clump of two conspicuous casuarina trees is located about 1½ miles westward of Tandjung Pandau. Tandjung Kluang ends in a long sandy spit nearly covered at high water. Some casuarina trees stand at its outer end. Sungai Kumai, which flows out eastward of the last-named points, is of some commercial importance.

TIDES AND CURRENTS.—The tides are mixed, but mostly diurnal. The diurnal range is 3½ feet at springs and ½ foot at neaps. The semi-diurnal range is 2 feet at springs and ½ foot at neaps. The tidal currents are mostly semidiurnal at the mouth of the river and change every 6 hours. The duration of the ebb increases as the river is ascended. An ebb current of 3 knots and a flood current of 2 knots has been observed abreast Tandjung Kluang; usually, however, the rates are somewhat less. A current of more than 2 knots sometimes flows around Tandjung Puting.

TIDAL SIGNALS are displayed at the pier at Kumai. A red flag indicates flood tide. The code flag "P" indicates ebb tide.

DEPTHS AND DANGERS.—The 3-fathom curve lies nearly 3 miles southward of the rounded point forming Tandjung Puting and about 9½ miles southward of Tandjung Pengudjan. Depths of 3 to 5 fathoms are found in the middle of the outer part of the bay. The least depth on the bar is 13 feet. The deepest part of the entrance, which is somewhat obstructed by shoals is on the west side, near Tandjung Kluang. Inside the entrance the river deepens greatly, and off the village of Kumai, 13 miles from the entrance, there is a depth of 6 fathoms. The river is navigable for 15 miles upriver of Kumai for vessels that can cross the bar.

Berasbasah Banks, on the west side of the bay, have been described in section 9A–7. A reef, about 100 yards in extent and having a

See N/M 2-67 P 208

depth of 6 feet, is located about 6¾ miles southeastward of Tandjung Pengudjan. A BEACON with a red cylindrical topmark stands on this reef.

Sangora Banks and Sapagar Bank are the principal dangers on the east side of the bay. The former has three areas which fall dry and which are quite conspicuous by their bright white color. The northern two banks have two bare islets standing on them. Sapagar Bank, on which there is a drying patch, has depths of 3 to 6 feet. A circular area with a least depth of 1½ feet lies northeastward of Sapagar Bank. Numerous shoal patches with depths of 3 to 15 feet lie between the two banks. These dangers seldom show discoloration.

Two rocks with depths of less than 6 feet lie about 2 miles westward of the northernmost islet on Sangora Banks.

A 1½ fathom rocky shoal, located westward of the south part of Sangora Banks, is marked by a BEACON with a topmark of two black cones.

In 1958 less water than charted was reported to exist about 5½ miles northwestward of Tandjung Puting. The drying reef fringing Tandjung Pandan has been reported to be extending to the south-southeastward.

A drying bank, and a rock with a depth of less than 6 feet, lie nearly in the middle of the entrance of the river, about 1¼ miles northeastward of Tandjung Kluang.

ANCHORAGE can be taken in 4 to 6 fathoms, mud, in the outer part of the bay. Vessels having local knowledge can anchor abreast the flagstaff and mosque at Kumai in about 6 fathoms. The river is about ½ mile wide here.

DIRECTIONS.—Vessels from eastward should not round Tandjung Puting in less than 5 fathoms by day, or 10 fathoms by night. Vessels can enter the outer part of the bay by steering 017° with Tandjung Pandan ahead, and anchoring in convenient depths. No further directions are given due to the changing river conditions. Local knowledge is required.

KUMAI is the seat of a government official. The landing pier at the customhouse has a depth of 18 feet alongside. Some provisions can be obtained.

COASTAL FEATURES (CONTINUED)

9A–9 BETWEEN TANDJUNG PUTING AND TANDJUNG SIAMOK, the coast is indented by a shoal bay. The 5-fathom curve extends 12 miles offshore and encloses numerous shoals. Sungai Pembuang, navigable only by small craft, flows out just eastward of Tandjung Siamok. High trees stand on the entrance points. During the Southeast Monsoon there is a heavy swell on the bar. Kuala Pembuang, on the west bank, is the principal town and has a flagstaff close northward.

A shoal with a depth of 6 fathoms lies about 14 miles southwestward of Tandjung Siamok.

Between the east entrance of the Sungai Pembuang and Tandjung Bandaran, the coast consists of a bright sandy beach with a virgin forest behind. The white trunks of a dead forest, located about 12 miles southwestward of the latter point, are conspicuous.

CAUTION.—The coastal bank in this area has been reported to be extending seaward.

TELUK SAMPIT AND TELUK SEBANGAN

9A–10 TELUK SAMPIT AND TELUK SEBANGAN are two shallow bays. Sungai Sampit and Sungai Sebangan flow into the heads of these bays. Sungai Mendawai flows out through the spit separating these two bays. Tandjung Bandaran is a long, narrow tongue of sand, with a row of trees at the extremity. Tandjung Bakai is fairly noticeable because of trees which are higher than the surrounding vegetation. Four ridges of trees back Tandjung Kempeng. They resemble rows of hills from the offing. Tandjung Tjemati, Tandjung Sungnarakan, and Tandjung Setiruk, rounded points on the east side of Teluk Sampit, are hard to identify.

Pulau Damar has a tall forest on its south side. The island is separated from the coast by a channel which provides the safest access to the Sungai Mendawai. The high wooded slopes provide a good mark for approaching this part of the coast.

The shores of Teluk Sebangan are low and muddy. They are overgrown with mangroves and low scrub vegetation which give way to higher trees only at the mouths of the small rivers. Tandjung Malatajur is low and covered with mangroves, behind which is a tall forest.

TIDES AND CURRENTS.—The tides at the mouths of the Sungai Sampit and Sungai Mendawai are mixed, but predominently diurnal. Semidiurnal tides rise 4 feet at springs and 2½ feet at neaps in the Sungai Sampit and 3¼ feet and 2 feet, respectively, in the Sungai Mendawai. Diurnal tides rise 6 feet at springs and 2 feet at neaps in the Sungai Sampit and 6½ feet and 2 feet, respectively, in the Sungai Mendawai.

The currents off the shores of these bays are greatly affected by the shoal Malatajur Bank. Cross currents are often found in the vicinity of the bar channels.

TIDE SIGNALS are displayed from the pier at Sampit. A red flag indicates floodtide and a white flag indicates ebb tide. Slack water is indicated by the absence of a flag.

DEPTHS AND DANGERS.—The greater part of the inner waters of Teluk Sampit are obstructed by mudbanks extending from the shores, leaving only a small area with depths of over 5 fathoms. A depth of 7 feet at low water springs is found on the bar at the entrance of the Sungai Sampit. This depth increases to 18 feet within the mouth of the river. A depth of 8 feet is found over the inner bar which is located near the town of Basseri, about 10 miles upriver. Elsewhere a depth of 16 feet can be carried to Sampit, about 35 miles upriver.

Sungai Mendawai is shallow and suitable only for small craft with local knowledge. The river is approached from Teluk Sebangan through Selat Djerudju.

A sandbank extends about 2¾ miles northeastward from Tandjung Bandaran and is reported to be extending northeastward. A wreck lies almost 3¾ miles southeastward of the same point.

Shoal ground, parts of which dry, extends 6½ miles southward from Tandjung Bakai. Batu Mandi, 36 feet high, is the highest of a group of conspicuous yellow-gray, pointed rocks. Pulau Buaja consists of a single large flat rock without vegetation. It is only a few feet above water. Several rocks lie awash in position about 2 miles northeastward of the flat rock. A rock awash at low water lies about ⅗ mile northwestward of the same danger.

Malatajur Bank, with depths of 3 to 18 feet, extends 30 miles southward from Tandjung Malatajur. The 5-fathom curve is located 40 miles southward of the point.

NAVIGATIONAL AIDS.—A beacon with a white triangular daymark stands on the end of a drying sandbank that projects nearly 1 mile northward from Tandjung Bandaran.

A beacon with two white daymarks, the upper triangular in shape and the lower square in shape, stands on Tandjung Tjemati.

A lighted buoy, painted in black and white checkers, is located about 3½ miles north-northeastward of Tandjung Bandaran.

A buoy, painted red with a square topmark and red reflector, is moored about 3½ miles northeastward of the same point.

A white reflector beacon stands on Tandjung Serambut which is located about 9 miles northward of Tandjung Bandaran.

A black beacon, surmounted by a black truncated cone, stands on the south extremity of the drying sandbank which extends southward from Tandjung Bakai.

CAUTIONS.—The approaches to the Sungai Sampit and Sungai Mendawai are subject to change. The passage up the Sungai Sampit is reported to be hazardous due to the presence of 2 sunken ships as well as shifting shoals and sandbars. Vessels not having local knowledge should not attempt to approach or enter either river without the services of a pilot. A heavy surf is experienced at the mouth of the Sungai Mendawai during the Southeast Monsoon.

9A–11 ANCHORAGES.—The anchorages in the outer parts of the two bays afford good holding ground, but offer little protection from the Southeast Monsoon. Vessels, not having local knowledge, should not attempt to anchor in the inner part of Teluk Sampit.

DIRECTIONS.—The south part of Pulau Damar is covered with high trees and is a good mark for approaching either bay. Vessels should keep in depths of over 5 fathoms in approaching either bay.

SAMPIT is the headquarters of a government official and is an important river port. There is a lumber mill in the town. A narrow gauge railroad extends westward and northward from the town. There are several piers; the largest is 302 feet long and 59 feet wide and has an open side shelter. Rice, timber, and general cargo are handled at this pier. A pier, located 45 yards downstream of the larger pier, has a T-head, 144 feet long. Rattan is handled at this pier. Exports consist of timber, rattan, and other forest produce. Provisions can be obtained in limited quantities. Sampit is connected with the general telegraph system.

PEGATAN AND MENDAWAI, on the Sungai Mendawai, are river ports of some importance.

SUNGAI SEBANGAN is available only for small craft which carry on a lively trade in jungle products. There is a custom house about 1 mile from seaward on the left bank of the river.

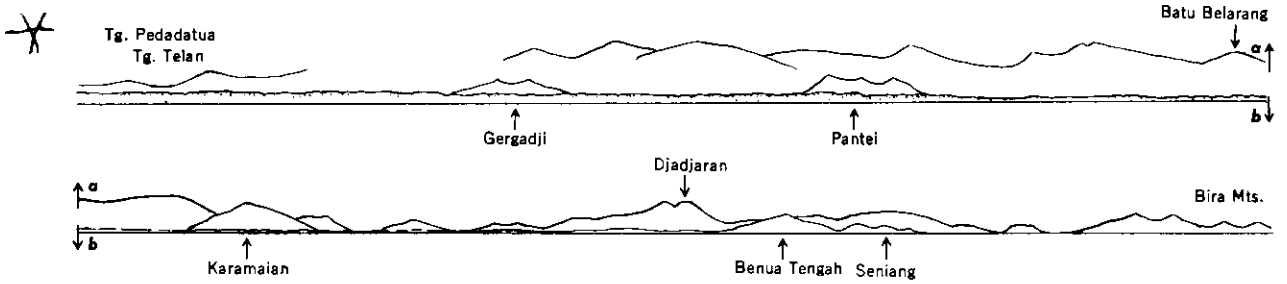
COASTAL FEATURES (CONTINUED)

9A–12 BETWEEN TANDJUNG MALATAJUR AND TANDJUNG BURUNG, the coast is low, marshy, and intersected by three rather large rivers. There are no natural landmarks, except near the river mouths, where the trees are higher and closer together. Tandjung Damaran can be recognized by its high dark trees. Tandjung Tawas and Tandjung Pemating have higher trees standing on them than those in the surrounding area. There are some tall trees standing near Tjemaralebat.

BETWEEN TANDJUNG BURUNG AND TANDJUNG SELATAN, the coast is grown over with tall trees and is intersected by a number of small and shallow rivers. Pulau Datu, rocky and wooded, lies close to the coast, about 7 miles northward of Tandjung Selatan. It is about 100 feet high to the tops of the trees. There is a tomb on its summit. A prominent white house, about 13 miles northward of the islet, stands on a steep red-colored coastal bluff.

Pandan hill, 310 feet high, is located close inland, abreast Pulau Datu. The Bira mountains, which serve as a good landmark, are located northeastward of this hill. The summit of these mountains attains a height of 1,168 feet. Gunung Tunggah, located 4 miles northeastward of Tandjung Selatan, is 285 feet high. Gunung Djadjaran has a flat crest running east and west. Gunung Karamaian is conical and pointed.

DANGERS.—Malatajur Bank (sec. 9A–10), as defined by the 5-fathom curve, extends 40 miles off the entrance of the Sungai Kahajan.



SUNGAI BARITO ENTRANCE, KARAMAIAN 17 MILES, 111°

(7757) **INDONESIA—Borneo—South coast—Sungai Murung—Beacons discontinued—Beacons established.**—1. The following beacons will be expunged:

(*a*) About 6.35 miles 219°30′ from the Custom House Flagstaff (3°17.0′ S., 114°19.0′ E. approx.).

(*b*) About 1.05 miles 203°45′ from (1*a*).

(Cancel N.M. 47(6797) 1965.)

2. Beacons will be charted as indicated; distances and bearings from the Custom House Flagstaff in (1*a*).

(*a*) About 6.57 miles 222°30′.

(*b*) About 6.35 miles 219°30′.

(*c*) About 7.05 miles 217°45′.

(*d*) About 5.41 miles 208°40′.

(*e*) Approximately 5.7 miles 028°15′. (N.M. 50/66.)

(B.P.I. 36(266, 267), Djakarta, 1966.)

H.O. Chart **3028.**

H.O. Pub. 72, 1962, page **334.**

(6797) **INDONESIA—Borneo—South coast—Sungai Murung—Beacons established.**—A beacon with a white square topmark, has been established in each of the following positions:

(*a*) About 6.35 miles 219°30′ from the Custom House Flagstaff (3°17.0′ S., 114°19.0′ E. approx.).

(*b*) About 1.05 miles 203°45′ from (*a*).

(N.M. **47/65.**)

(B.P.I. 42(335), Djakarta, 1965.)
H.O. Chart **3028.**
H.O. Pub. 72, 1962, page **334.**

Its east side forms the west side of the approach to the 3 large rivers. There are some 4¾-fathom patches off the east side of this bank. A 5-fathom patch lies in the middle of the approach to the two eastern rivers.

Shoal ground, as defined by the 3-fathom curve, extends from 5¼ to 8 miles off the mouths of the three rivers. The same curve lies up to 3¾ miles off the coast between Tandjung Burung and Tandjung Selatan. Most of the dangers are contained within this curve. Pinting Belajang, a rock that dries, lies just outside this curve. A 4¾-fathom patch lies outside the 5-fathom curve in position about 7½ miles north-northwestward of this rock.

SUNGAI KAHAJAN is shoal and is suitable only for small vessels with local knowledge. Its mouth cannot readily be seen from seaward as there is a river bend just within the entrance. The tides are mixed, but are mostly diurnal. Diurnal tides rise 7 feet at springs and 2 feet at neaps. Semidiurnal tides rise 3¼ feet at springs and 2¼ feet at neaps. The ebb current in the entrance channel can reach a rate of 3½ knots, the flood a rate of 2 knots.

The depth over the bar is 6 feet at low water springs and 10¾ feet at mean level. These depths increase as the river is ascended. It is reported that the river is navigable for vessels of 9 to 10 feet draft as far as PAHANDUT, 80 miles upriver.

A custom house with a flagstaff and landing pier is located about 6 miles within the mouth of the river. PANGKOH, a village with a missionary station, is located 18 miles upriver. The village has communication with Bandjermasin by means of inland waterways.

SUNGAI MURUNG has a very shoal bar and the depths in the entrance are subject to change. The charted depths cannot always be depended upon. The depth over the bar is 3¼ feet at low water springs and 8 feet at mean level. These depths increase as the river is ascended. Vessels with a draft of 11 feet can enter the river at high water springs.

KUALA KAPUAS, 26 miles upriver, is the seat of a civil administrator. A flagstaff is located close southward of the town. The village is connected to the general telegraph system. There is a mosque and hospital in the town. Kampung Mandumai, 40 miles upriver, is a mission center.

SUNGAI PULAU PETAK, a waterway with a length of 31 miles, connects the Sungai Murung with the Sungai Barito. It can accomodate vessels of 11¾ feet draft and of 164-foot length.

SUNGAI BARITO AND BANDJERMASIN

9A–13 SUNGAI BARITO is the largest and most frequented river on the south coast of Borneo. The river has a length of 400 miles. Sungai Martapura flows into the east side of the river at a position about 10 miles within the entrance and leads to Bandjermasin.

TIDES AND CURRENTS.—Springs rise 6¼ feet and neaps rise 2 feet. A strong CURRENT may flow around Tandjung Selatan. In general, the flood runs in a north-northeasterly direction and changes with an increase in force at spring tides to east-northeast. The ebb current usually runs in a south-southwesterly to westerly direction. The tidal currents are diurnal. The river current, on the bar and at the river mouth, changes direction during periods from 0 to 2 hours after high and low water. At neap tide, about 3 days before quarter moon, the current flows out for 16 hours continuously and the flood current flows inward for 6 to 8 hours. The rate of the current is 4 knots at the moons greatest declination. The flood current seldom seems to be stronger than 2½ knots. The ebb current is stronger than the flood current. Only during the rainy season is it more than 2 knots. The times of high and low water at Bandjermasin occur 2½ hours later than on the bar.

TIDE SIGNALS are shown at the harhor control post as follows:

SIGNAL	SIGNIFICATION
A cylinder having a cone, point up, above and a cone, point down, below.	Slack water.
A cylinder, above which is a cone, point up.	Incoming current.
A cylinder, above which are two cones, points up.	Strong incoming current.
A cylinder, below which is a coue, point down.	Outgoing current.
A cylinder, below which are two cones, points downward.	Strong outgoing current.

NOTE.—The color of the signals is red or black in accordance as to whether the background for approaching ships is dark or light.

A TIDE GAUGE is located on the downstream end of the head of the central government pier.

WINDS.—Heavy squalls from westward are experienced during the month of May.

DEPTHS.—In 1955 the depth on the bar at lowest low water was 3¼ feet. The highest high water depth was 15½ feet. Vessels drawing 8 feet can always cross the bar at high water, and vessels drawing up to 9 feet can cross at high water nearly every day, there being few exceptions. It is reported that vessels drawing 12 feet can cross the bar at high water by forcing their way through the upper layer of mud. The narrowness of the channel leading to Bandjermasin limits the length of ships to 300 feet or less, depending upon conditions. Vessels, the draft of which allows for crossing the bar, can as a rule, go 150 miles upriver and will have adequate depths for reaching Bandjermasin. The bar is composed of hard sand and mud.

OBSTRUCTIONS.—Obstructions, consisting of partly submerged piles, are located on each side of the river, close southward of Pulantan light structure. A white conical buoy, with reflectors, is moored near the eastern obstruction.

9A–14 NAVIGATIONAL AIDS.—Lights are shown from beacons on the west bank of the Sungai Barito at Tandjung Telan, and at the mouth of the Sungai Djinga. A light is shown on the east bank at Tandjung Pulantan.

Lighted buoys are moored off the entrance of the channel and at convenient points inward from the entrance. A number of beacons also mark the channel. Many of these aids are in conformance with the new Indonesian system. The buoy and beacons are moved as necessary to conform with the shifting channel.

The outer (old) beacon, 2½ miles southward of Tandjung Burung, has a red truncated cone topmark with a white band. A beacon, standing nearly 3 miles westward of Tandjung Barung, has a white truncated cone topmark with a red band.

SIGNALS.—Signals are shown from the Harbor Control Post at the mouth of the Sungai Martapura and at the harbor office at Bandjermasin. The following signals, which indicate when the passage between these two points is clear, are shown:

SIGNAL	SIGNIFICATION
DAY—A white triangle above a red ball.	Passage prohibited.
NIGHT—A white light above a red light.	Passage prohibited.
DAY—A white triangle	Passage permitted.
NIGHT—A white (lantern) light.	Passage permitted.

In this portion of the river, a ship proceeding downstream has the precedence over a ship going upstream.

The following signals, when shown by a vessel, will be repeated from the flagstaffs to the harbor office.

SIGNAL	SIGNIFICATION
Red light over a white light	I require medical assistance.
3 lights in the form of a triangle, the upper white and the others red.	I require police assistance.

CAUTIONS.—Uncharted shoals, with depths of 3 to 6 fathoms are reported to lie in the approaches to the Sungai Barito, northward of the parallel of 4°00′ S. The bar and river channels are subject to frequent shifting.

Tree trunks and floating debris come down the river, especially during the r: ıy season.

Vessels rounding Tandjung Selatan often experience a heavy beam sea during the west monsoon.

ANCHORAGES.—The area seaward of the outer lighted buoy affords anchorage for vessels waiting for high water. The bottom is of mud, providing good holding ground. This anchorage is exposed to the west monsoon. Anchorage is prohibited in the entrance channel of the river. Vessels sometimes anchor off the month of the Sungai Martapura to await orders or quarantine inspection.

DIRECTIONS.—The mountains northward of Tandjung Selatan serve as good landmarks for vessels approaching the river from southward. Vessels from westward must keep well to southward of Malatajur Bank. Vessels from eastward should steer for a position 10 miles southward of Tandjung Selatan. The approach to the bar channel should be made from southward, keeping in depths of over 6 fathoms.

Vessels of limited draft and local knowledge should pass close eastward of the outer lighted buoy and thence proceed across the bar on a course of about 028°, keeping all buoys close aboard. After entering the river, vessels should steer for the south point of Pulau Tempurung Ketjil until Tandjung Pulantan is abeam. Thence Tandjung Telan should be kept a little on the port bow. After rounding the latter point, vessels should pass along the west bank, westward of the islets in midriver. From a position just northward of the lighted beacon northward of the entrance of the Sungai Djinga, vessels should steer a course of 044° for the mouth of the Sungai Martapura. Pulau Tamban, with a customs office (a white house) on its south point, is located off the west bank, abreast the mouth of the Sungai Martapura. A bank extends eastward and southward from the islet, narrowing the channel between it and the east bank to a width of about 400 yards. A mud bank extends from the north side of the entrance of the Sungai Martapura; the south side is clear.

Sungai Martapura is narrow and winding. It has heavy prau traffic. Vessels bound for Bandjermasin should not attempt to navigate with a flood tide. Vessels wishing to secure alongside the pier at Bandjermasin during the outgoing tidal current are advised to turn at a distance of 164 to 273 yards downstream from the pier; these distances are marked by notice boards on the right bank of the river.

NOTE.—The Sungai Martapura is closed to navigation from 1800 to 0600 local time.

In 1961, a new channel, about 200 yards wide, between Sungai Barito and Sungai Martapura was opened to navigation. The entrance is about 1 mile northeast of Tumban Islet and there is a depth of 15 feet in the fairway.

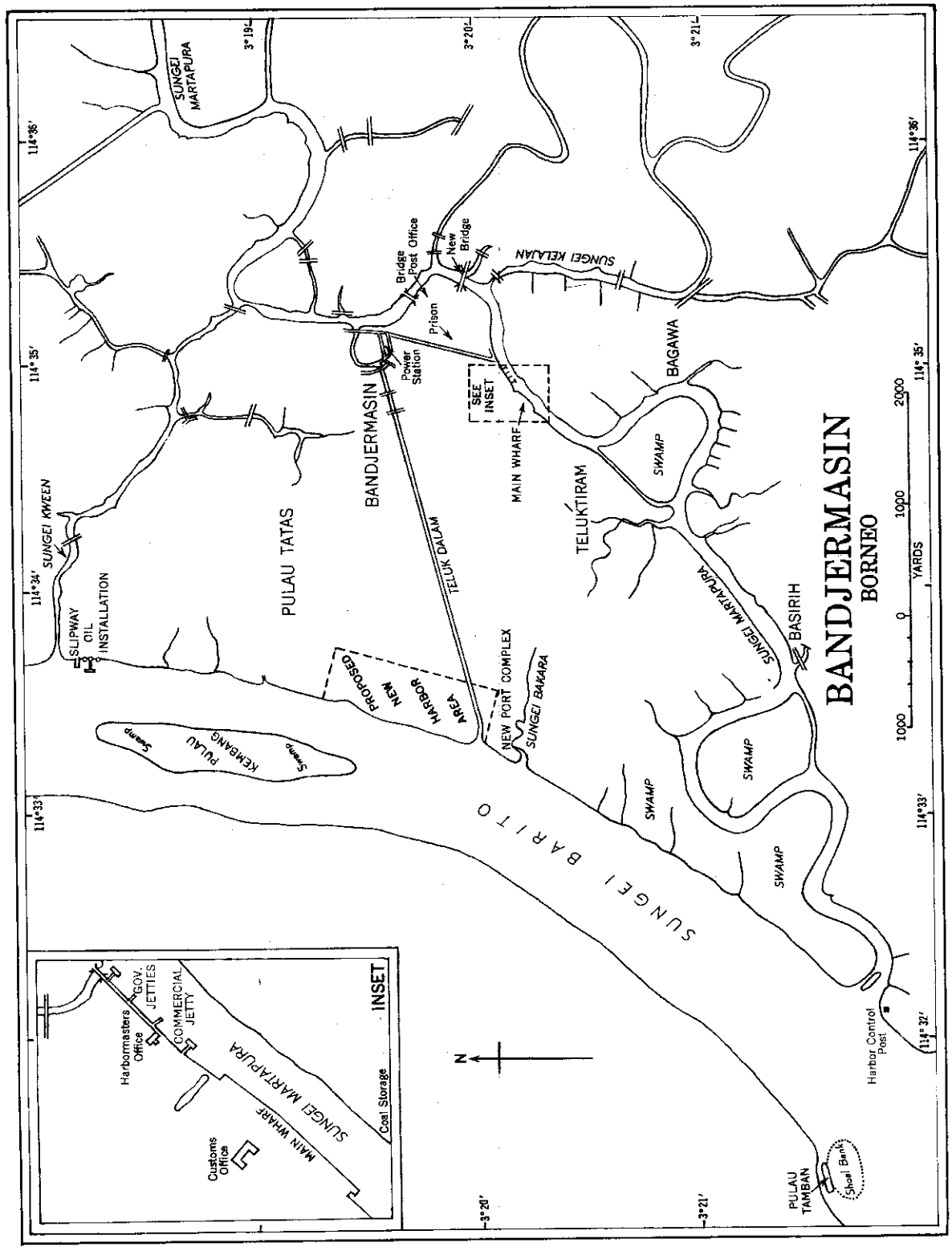
BANDJERMASIN (3°20'S., 114°35'E.)

9A–15 FACILITIES.— Bandjermasin, which is built on a marshy island, is one of the most important trading centers in Borneo. In 1961 the population was 214,096. Both domestic and foreign trade is carried on. The town and surrounding area is subject to flooding. Bandjermasin is the center of a system of canals and waterways, through which extensive trade is carried on. There are two bridges which cross the river, upriver of the port area. The chief exports are rubber, jelutang, forest products, coconut oil, copra, gums, sago, and wax.

In 1960, a new port complex was under construction on the left bank of the Sungai Barito in the vicinity of Teluk Dalam.

PIERS.—The large commercial wharf (main wharf), about 380 yards in length, is located near the customs office. It has a depth of 7 feet alongside its downstream end; 15 feet off the wharf, at the same end, the depth was 13½ feet.

Close upstream of the Main Wharf, the commercial jetty, with a length of 46 feet on its face, has a depth of 13 feet alongside. There


BANDJERMASIN
BORNEO
SUNGEI BARITO
PULAU TATAS
BANDJERMASIN
TELUK DALAM
SUNGEI KWEEN
SLIPWAY
OIL
INSTALLATION
PROPOSED
NEW
HARBOR
AREA
NEW PORT COMPLEX
SUNGEI BAKARA
KEMBANG
PULAU
Swamp
Swamp
SUNGEI MARTAPURA
BASIRIH
TELUKTIRAM
SWAMP
SWAMP
SWAMP
SWAMP
BAGAWA
MAIN WHARF
SEE INSET
Power Station
Prison
Bridge
Post Office
New Bridge
SUNGEI KELAYAN
SUNGEI MARTAPURA
PULAU TAMBAN
Shoal Bank
Harbor Control Post
N
YARDS
2000
1000
0
1000
INSET
Harbormasters Office
GOV. JETTIES
COMMERCIAL JETTY
MAIN WHARF
SUNGEI MARTAPURA
Coal Storage
Customs Office
114° 36'
114° 35'
114° 34'
114° 33'
114° 32'
3° 19'
3° 20'
3° 21'

H.O. 72

SEE SHORT CORRECTIONS

are several small jetties, just upriver of the wharf. An oil pier, with a depth of 15 feet at its outer end, is reported to be located 2 miles down river from Bandjermasin.

CARGO INFORMATION.—Cargo is handled at the large wharf. There is covered and open storage. Cargo handling is sometimes interrupted by heavy rains; December being the wettest month. Small launches and praus are available. A 10-ton crane is located on the wharf. A floating crane is located at the port.

PROVISIONS.—Vegetables, poultry, fish and fruits are obtainable.

COAL is obtainable. The coal depot is located on the left bank, abreast the southwest end of the main wharf.

WATER is obtainable at the large wharf. The pressure is low and the water should be purified before using. The river water is fresh during the west monsoon, but in other seasons it is salt for some miles upriver.

REPAIRS can be made to small craft. There are two small slipways and a small floating drydock of 100-ton capacity.

COMMUNICATIONS.—Bandjermasin is connected to Java by telegraph. It has local telephone service and a radio station. There is regular steamship service with Djakarta, Surabaja, Makasar, and Singapore. Communication by ship is carried on with most foreign countries.

MEDICAL.—There is a public hospital and a mental hospital. There are several doctors in the town. The harbor doctor will board ships at the anchorage off the mouth of the Sungai Martapura, upon request. Means for fumigation are available.

PART B. TANDJUNG SELATAN TO TANDJUNG DEWA (INCLUDING PULAU LAUT AND SELAT LAUT)

9B–1 TANDJUNG SELATAN (4°10′ S., 114°39′ E.) is the southernmost point of Borneo. The point is low, but noticeable at a distance because of high vegetation. The hills behind and the light structure serve as good landmarks. The 5-fathom curve to southward of the point lies nearly 2 miles from the coast. A LIGHT is shown from the point. A strong inshore set has been experienced in the vicinity of Tandjung Selatan; vessels should give the point a wide berth. About 5 miles eastward of the light structure, the 5-fathom curve lies up to 5 miles offshore.

COAST–GENERAL

9B–2 BETWEEN TANDJUNG SELATAN AND TANDJUNG PETANG, the coast is low, flat, and covered with high trees, chiefly causarinas. Far inland the Pegunungan Meratus run almost parallel with the coast. This range can be seen at a great distance during the west monsoon, but during the east monsoon there is much haze. During the change of seasons the summits show up through the clouds. A number of small rivers flow out along this coast. There are few landmarks, but vessels some distance offshore will sight the Moresses Islands soon after rounding Tandjung Selatan.

BETWEEN TANDJUNG PETANG AND TANDJUNG DEWA, the coast is low, densely wooded, and intersected by a number of small rivers. This coast forms the west side of Selat Laut. Vessels approaching Selat Laut will see the high peaks of Pulau Laut. A general description of the strait and island is given in section 9–1.

DEPTHS–DANGERS

9B–3 The 5-fathom curve lies up to 7 miles off this coast and about 6 miles off the narrow southwest entrance of Selat Laut. Some patches with depths of 2 to 3 fathoms and some drying rocks and reefs lie within this curve. Vessels should keep in depths of over 8 fathoms when navigating along this coast and avoid a 4½-fathom patch located 11½ miles eastward of Tandjung Selatan. A wreck with a depth of

less than 2 fathoms lies 9¾ miles offshore in position 4°04′ S., 115°18′ E.

SELAT LAUT is narrow, tortuous, and has depths of 15 to 25 feet.

OFF-LYING ISLANDS AND ADJACENT DANGERS

9B–4 DUAND SHOAL and the dangers southward of Tandjung Selatan are described in section 9A–3. KEPULAUAN LAUROT consists of a triangular group of three large islands and some small islets. The large islands are high, rocky, and densely wooded. They can be seen from a distance of 50 miles in clear weather. PULAU KALAMBAN, the southwest island, is 1,002 feet high. Some detached rocks lie close off the south and west sides, but there is deep water around. PULAU KADAPONGAN, 935 feet high and steep-to on all sides, is densely wooded.

It was reported (1963) that Pulau Kadapongan was a good radar target at a distance of 22 miles.

PULAU MATASIRI is wooded and rises to a height of 1,378 feet. A small islet lies ½ mile off its east coast. Another small islet lies close off its south point. Teluk Sungai, a reef fringed bight, indents the northeast end of the island and provides shelter from both monsoons. Tandjung Pandang, the northeast entrance point, has a prominent tree standing on it. Tandjung Katombo, the south entrance point, rises to a height of 361 feet.

ISLETS AND DANGERS.—Pulau Pamelikan, covered with some tall trees and fringed by reefs, is separated from Tandjung Pandang by a deep channel, about ¾ mile wide. Pulau Kunjit, small in extent and having a drying reef extending nearly ¼ mile from its northwest side, is separated from Tandjung Katombo by a deep channel, a little over ¼ mile wide. A 5-fathom shoal lies in midchannel between the two islets.

ANCHORAGE can be taken, as convenient, in 6 to 14 fathoms in the middle part of the bay. Care must be taken to avoid a 3-foot and a 16-foot patch which lie ⅓ mile north-northwestward and ½ mile northward, respectively, of the north side of Tandjung Katombo.

MORESSES ISLANDS consist of one island, three small islets and two rocks, all above water and rocky to the water's edge. The slopes have a heavy cover of vegetation. Moresses Island rises to a fairly regular cone, 965 feet high, and is wooded. A sandy beach is found on the east side of the island and also on the north side of North Islet.

It was reported (1963) that Moresses Island was a good radar target at a distance of 24 miles.

THE BROTHERS (4°24′ S., 116°10′ E.) consist of two rocks covered with vegetation and joined by a nearly drying reef of sand and coral. From a distance they appear as three islets, as the southern rock has two summits, the northern of which is 148 feet high.

It was reported (1963) that The Brothers was a good radar target at a distance of 18 miles.

DWAALDER ISLAND, 207 feet high, narrow, wooded, and reef fringed, is visible from a distance of 15 miles. It is saddle shaped when viewed from southward. A light is shown from the island. A shoal, with a least depth of 6 fathoms, lies northeastward of the island. Georges Bank, a shoal with a least depth of 4¾ fathoms, lies about 6 miles eastward of the island.

TIDES AND CURRRENTS

9B–5 The tides are mixed, but mostly of a semidiurnal nature. In Selat Laut semidiurnal tides rise 5½ feet at springs and 1 foot at neaps. Diurnal tides rise 3¼ feet at springs and 1½ feet at neaps.

Close inshore and near Selat Laut, vessels are under influence of the tidal currents. Further offshore, they are under the influence of wind drift and there is a weak constant southwesterly current.

The flood current, as a rule, sets northward and the ebb southward in Selat Laut. Often, however, it happens that the contrary is observed, especially in the north part of the strait. The rate is from 1½ to 2½ knots. For further information on currents, see sections 9–3, 9A–4,

and 9C–4.

A strong westerly current was experienced (May, 1962) between The Brothers and Pulau Kalambau.

WINDS AND WEATHER

9B–6 For winds and weather in the Java Sea, see section 2–3. See section 10–2 for winds and weather in Makasar Strait.

COASTAL FEATURES

9B–7 The coast between Tandjung Selatan and Tandjung Petang is low and flat. A grove of tjemera trees near Kampung Salumati is prominent. A small white mosque, which serves as a good landmark under favorable light, is located on the west side of Kampung Pedjalan. There are no ports of importance and vessels should keep in depths of over 8 fathoms in passing along this coast.

PULAU LAUT AND ADJACENT DANGERS

9B–8 The south part of Pulau Laut is hilly; the north part is mountainous, rising to a height of about 2,330 feet. The island is densely wooded and the coast, for the most part, is fringed by a broad drying reef.

ASPECT.—Gunung Sebatung, a high range, forms the north part of the island. The north peak is 2,329 feet high. The 1,476- and 1,099-foot peaks are prominent from northeastward and eastward because of their conical shape. The south peak attains a height of 2,297 feet. A prominent black hill, which shows plainly against the surrounding bright green country, is located close southwestward of the northeast end of the island. The hill is 285 feet high.

Gunung Sejaka is an isolated conical peak, 689 feet high. Gunung Sumbawa, standing in the middle of the east part of the island, is 1,555 feet high and surrounded by a chain of hills. Flat Hill, 1,063 feet high, is conspicuous.

The 312-foot hill on the beach, northward of Tandjung Lalak, is steep and has a round-topped tree on its summit. The 390-foot peak, the central of the three hills northward of the above hill, is very sharp in form.

Gunung Sebakau has three small peaks; the summit of which attains a height of 797 feet. It is covered by a darkly tinted forest above which when viewed from east or west, a thin tree projects like a broom. The south slope in contrast to the surrounding area is somewhat bare and is strewn with very large rocks which from a distance have the appearance of a large village. A 620-foot hill, with a small dark tree on its summit, is located northeastward of this hill.

The Palopalo mountains stand near the middle of the west side of the island. When viewed from the southwest they clearly show 5 small peaks. Gunung Djambangan, the summit of this range, is 1,621 feet high and quite conspicuous. It is conical with a double peak standing north and south.

Tjapee, a round hill 532 feet high, has a dark wood on its top. Gunung Lebatan is prominent because of a tall conspicuous tree on the thinly covered peak at the south end. The hills northward are distinguished by their lighter green vegetation. A 253-foot hill at Sebanti has a couple of slanting coconut palms on it.

9B–9 SOUTHEAST COAST.—PULAU KUNJIT (4°06′ S., 116°03′ E.) marks the south end of Pulal Laut. The south end of the islet rises steeply from the sea to a height of 243 feet; the center rises in a conical hill, 459 feet high. A LIGHT is shown from the islet.

A shoal with a depth of 3 fathoms lies about 1¼ miles east-southeastward of the south end of the islet. An extensive bank covered by 6 to 10 fathoms is centered about 4 miles westward of the islet.

Tandjung Lojar is low and marked by dense vegetation. Between this point and Tandjung Lalak, a densely wooded point, there are two shallow bights. Tandjung Seloka is rocky, covered with high trees, and prominent. The coast between this point and Tandjung Lalak forms two shallow bights.

DEPTHS.—The 10-fathom curve lies up to 7 miles off this coast and encloses a number of small islets. Numerous rocks and dangers lie within the 5-fathom curve.

ISLETS AND DANGERS.—Dwaalder, The Brothers, and St. George Bank, the outer dangers off this coast, are described in section 9B–4.

Pulau Karajaan is 335 feet high and has a broad summit. A conspicuous round-topped tree stands on the northwest point of the island. A narrow-topped tree with a light crown stands on the high south point of the island. The south and east sides of the island are rocky, but there is a narrow, sandy beach on the north and west sides. A reef surrounds the island and has some casuarina trees on it. A small sandy islet stands on the northwest side of the reef.

Pulau Anakkarajaan is a rocky islet, about 200 yards in diameter and covered with vegetation. A round-topped tree, 98 feet high, stands on the islet. A drying rock lies 100 yards off the southwest side of the islet.

Pulau Karamputan has three peaks, the northeastern and highest being 479 feet high. The southeast side is steep-to. The northwest side is rather flat, reef fringed and connected to the shore by foul ground.

Pulau Kerisian is about 469 feet high and has a tree standing on its conical summit. The east and west ends of the island are rocky and steep. The northwest side of the island is low and sandy and is connected to the shore by foul ground.

CHANNEL DIRECTIONS.—Vessels from westward using the channel between Pulau Karajaan and Pulau Karumputan should bring the large tree on Tandjung Seloka in range with the east side of Pulau Kerisian bearing 038°. They should steer on this range until Pulau Anakkarajaan opens out eastward of Pulau Karajaan; thence a course of 056° leads out of the channel.

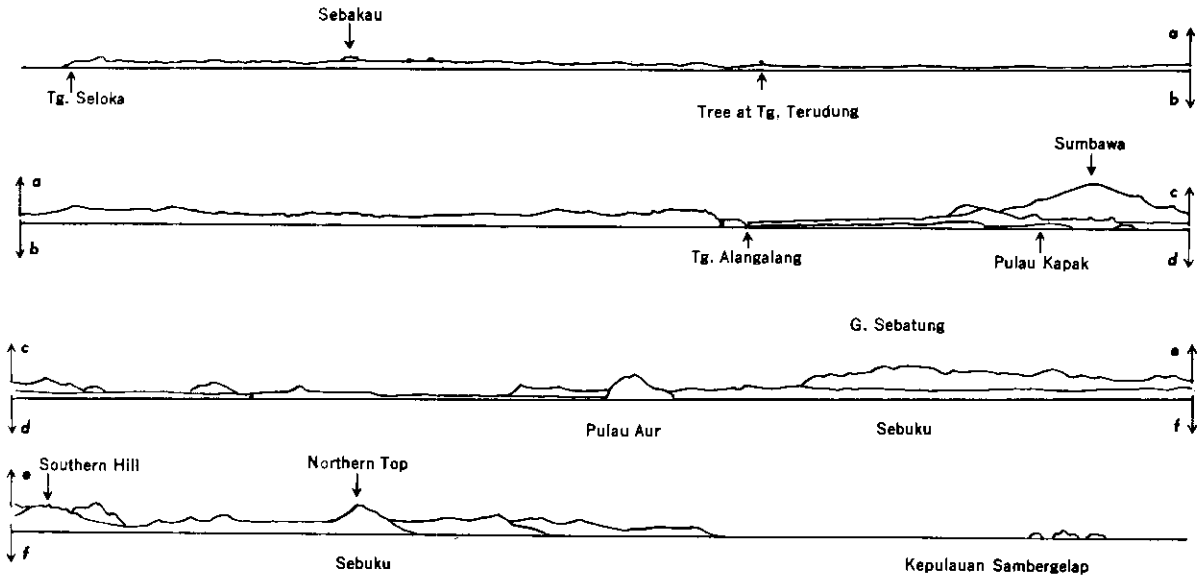
Vessels from eastward should steer for the light structure on Pulau Kunjit in range with the south side of Pulau Karumputan, bearing 257°, until the 620-foot hill is in range with the east side of Pulau Kerisian bearing 314°. Thence a course of 247° leads about 1,200 yards southward of Pulau Karumputan. When the west side of the latter island bears 002° and is in range with the 620-foot hill, the course can be altered more to the southward so as to avoid the shoals off Pulau Kunjit.

9B–10 EAST COAST.—BETWEEN TANDJUNG SELOKA AND TANDJUNG ALANGALANG the coast is indented by a shoal, reef-fringed bay. The latter point is formed by a prominent hillock, 203 feet high. Pulau Serudung, which is not visible as such from seaward, is located in the south part of this bay. Tandjung Terudung, which forms the north point of this island, appears as a separate islet from the offing, with a group of dead trees to southward.

PULAU SEBUKU is densely wooded. Gunung Saung (Sau), 679 feet high, some white cliffs to northward, and South Hill, 459 feet high, are all prominent. Tandjung Mangkok, the northeast end of the island, is marked by a grove with one tree somewhat higher than the rest. Selat Sebuku, of little importance to shipping, is shoal and strewn with dangers. Pulau Kapak and Pulau Aur are reef-fringed islets lying in the south entrance of the strait. The former is surrounded by a broad strip of sand; the latter is covered with dense vegetation and rises to a fairly regular cone, 279 feet high. The channel between Pulau Aur and Pulau Sebuku is foul. The north part of the strait is filled by a large mudbank.

Pulau Gosongmangkok, 1½ miles from the north point of the island, is a drying reef. The passage between it and the north end of the island has strong currents running through it. Pulau Manti, reef fringed and covered with coconut palms, is located in the north entrance of the strait.

Seratak, a small village, stands on the west shore of the shoal bay which forms the north entrance of Selat Sebuku. The coast between the village and Tandjung Pemantjingan is rather steep and has a number of rocks on the coastal reef. See section 9B–8 for aspect of this



EAST COAST OF PULAU LAUT, PULAU KAPAK 6½ MILES, 290°

coast. A LIGHT is shown from Tandjung Pemantjingan.

KEPULAUAN SAMBERGELAP (3°40′ S., 116°36′ E.) is a group of 4 islets and some rocks, all lying on the same drying reef. The largest islet is 400 yards long and has a prominent tree visible from a great distance when seen from northwest or southeast. A LIGHT is shown from the west islet. This group of islets is identifiable by radar, with charted features, at a distance of 8 miles.

DANGERS.—A 6-fathom patch is charted 9 miles eastward of the light structure and there may be other shoals in this vicinity. A 5-fathom shoal, 400 yards wide and ½ mile long, was reported (1945) to lie about 27 miles northeastward of the light structure.

9B–11 WEST COAST OF PULAU LAUT.—Between Pulau Kunjit and Tandjung Kalidupan the coast rises steeply to a range of hills (sec. 9B–8) and is fronted by a sandy beach. The latter point is low and densely covered with high trees. Numerous rocks lie on the fringing reef, including Pulau Tokong which has the appearance of two islets. The summit of Gunung Semiaran bearing due north leads about 1¼ miles westward of the outer edge of the fringing reef.

Between Tandjung Kalidupan and Tandjung Karambu, the coast is fringed by a wide drying reef. The latter point is densely wooded. Between this point and the village of Sekatung (Sekojang) there is a narrow sandy beach, fronted by a mudbank. A few huts are visible in the village, and there is a prominent, isolated house near the north entrance point of the small river which flows out near the village. A group of casuarina trees, located on the same side of the river, show up dark against the background.

TANDJUNG LAURAN is formed by a salient rocky hill covered with tall straight trees with white trunks. This hill is 266 feet high and can be seen from a great distance. Between Tandjung Lauran and Tandjung Semisir there are some small islets and rocks on the fringing reef. One of these, just northward of the former point, is quite prominent due to its light brown color and grayish top. Tandjung Semisir is rocky and densely wooded.

There are two prominent round-topped trees on the point.

SELAT LAUT

9B–12 SELAT LAUT is narrow and tortuous, especially in the vicinity of Pulau Suwangi. The south entrance is considerably narrowed by two large sandbanks and a number of smaller ones, between which and the coast there are three channels. The west channel is the best and is the one most used. The northeast entrance is wider and except for some charted wrecks is clear of dangers. Setagin and Kotabaru, on the northwest coast of Pulau Laut, are shipping places of some importance.

TIDES AND CURRENTS.—Strong confused currents are found off the north end of Pulau Laut. For further information see section 9B–5. TIDE AND CURRENT SIGNALS are shown from the pier at Setagin. A red flag indicates a northeasterly current, a blue or black flag indicates a southwesterly current, and a white flag indicates slack water.

WINDS AND WEATHER.—The weather is usually fine during the morning hours, but squalls can be expected in the afternoons. See section 9B–6 for further information on winds and weather.

DEPTHS of 15 to 25 feet are found in the strait.

ISLANDS AND DANGERS.—Kramat Bank, parts of which dry, has a channel on either side of it; the channel eastward of it is recommended.

Pulau Suwangi, 518 feet high, is overgrown with high trees, some of which grow in the water. The north and south slopes of the island are shelving. The south end of the island is rocky. Pulau Anak Suwangi is a thickly wooded islet close off the east side of the larger island. A drying rock lies 300 yards eastward of the islet on the projecting bank.

Suwangi Bank is an extensive area of foul ground extending from the coast of Pulau Laut, abreast Pulau Suwangi. The depths in the channel leading between this bank and Pulau Suwangi are very irregular, and in spite of close and careful soundings new heads are continually being found.

Pulau Tampakan, connected to Pulau Suwangi by a shoal sand flat, is low and densely wooded. There are two prominent trees standing along the south shore. A dangerous rock, which dries, lies on the east side of the channel, abreast Pulau Tampakan.

Gosong Payung is a large sandbank, parts of which dry. There is a good channel on each side of this bank, but the east channel is preferable.

WRECKS.—A wreck is located 5¾ miles north-northeastward of Tandjung Pemantjingan. A wreck with mast showing is located 5¼ miles northeastward of the same light structure. A similar wreck is located 3⅓ miles east-northeastward of this light structure. A wreck lies stranded in position about ⅓ mile northward of Tandjung Kemuning.

9B–13 WEST SIDE OF SELAT LAUT.—The Borneo side of the strait consists mainly of low land which is densely wooded. Some high trees stand at the waters edge. Tandjung Petang is low, and between this point and Tandjung Kramat there are fish stakes along the shore. The Sungai Pegatan discharges along the north side of the latter point. A conspicuous white house stands about ½ mile southward of this point.

Sungai Pegatan is reported to be navigable for small ships with local knowledge. Vessels 160 feet long can turn off the pier near the village of Pegatan. A government official resides in the village. A dated report states "the channel cannot be entered from Pulau Laut because of shallow water and fishing stakes in the approach. A waterway (not shown on the chart) leads into the river from southward, westward of the above village".

Between Tandjung Kramat and Tandjung Kresik Putih, the coast is fronted by Kramat

Bank. The Sungai Merah flows out just northward of the latter point.

The Sungai Batulitjin, shallow and narrow, flows out abreast of Pulau Suwangi. Batulitjen, a large village, stands on the south side of the mouth of the river. A wire cable ferry crosses the river just upriver of the village.

Between the mouth of this river and Tandjung Langadei the coast is intersected by a number of small rivers. A few villages stand along the shore. The latter point is low and covered with dense vegetation.

Between Tandjung Langadei and Tandjung Dewa there is an extensive mudbank which partly dries. The land is somewhat hilly near the latter point.

9B–14 EAST SIDE OF SELAT LAUT.—The Pulo Laut coast forming the southeast side of the strait is high. In the narrows it is low and has dense vegetation to the waters edge. Tandjung Kiwi (3°39′ S., 116°00′ E.) is a salient rocky point with a prominent white house close eastward of it. The coast here rises to the high land of the Palopalo mountains (sec. 9B–8). The shore is rocky near the foot of Gunung Semiaran. To northward there is a strip of land with trees standing in the water.

Between Tandjung Serdang and Tandjung Ajun, the coast is intersected by many small rivers. There are some scattered villages along the shore. Selukutan is visible from the strait. The latter point is low and muddy and is marked by dense vegetation.

Between Tandjung Ajun and Tandjung Kemuning, the coast is intersected by many small rivers. Setagin and Kotabaru, shipping places of some importance, are located on this coast. The coast northward of the latter town is rocky. Between Tandjung Kemuning and Tandjung Pemantjingan, the coast is indented by a shallow, reef-fringed bight.

NAVIGATIONAL AIDS—A light is shown from Tandjung Petang.

A range beacon consisting of a white iron framework, 23 feet high, stands on the south end of Pulau Suwangi. The rear beacon consisting of a white iron framework tower, 23 feet high, is located 467 yards 010° from the front beacon. These beacons in range 010° lead through the fairway eastward of Kramat Bank.

A beacon consisting of an iron framework tower stands on the east side of Anak Suwangi. The narrow passage eastward of this islet is reported to be marked by beacons and buoys.

A beacon, painted black and having a truncated conical topmark, marks the south end of Gosong Payung. A black buoy is moored on the east side of this danger.

A light is shown from the head of the pier at Kotabaru. A light is shown from Gunung Balingkar, northeastward of Kotabaru. This light and the light on Tandjung Pemantjingan are in range (257°–077°). A small black hill obscures the light on Gunung Balingkar on the bearing 224°.

A lighted buoy, painted red, is moored about 1⅔ miles northwestward of Tandjung Pemantjingan. (Reported missing, 1962). A black and white checkered conical buoy with a diamond-shaped reflector topmark is moored about 1½ miles northeastward of the same point. The light on this point has been mentioned in section 9B–10.

ANCHORAGES.—Selat Laut offers good anchorage, except in the narrows where the bottom is rocky and uneven.

Anchorage is prohibited within 550 yards of the telegraph cable crossing the strait in the vicinity of Tandjung Kramat.

Small vessels can anchor about 400 yards off the pier at Kotabaru in 5 fathoms. During the east monsoon there is some swell in the roadstead.

DIRECTIONS.—Vessels from southward can use Gunung Djambangan (sec. 9B–8) for making the approach by keeping it a little on the starboard bow. Tandjung Petang, when identified by the lighthouse, may be steered for, bearing 026°, in not less than 4 fathoms, and when the light is favorable cross bearings can

be taken of the white houses near Tandjung Kramat and Tandjung Kiwi.

Vessels from westward can head for Gunung Sumbawa bearing 069° until Tandjung Petang bears 026° and then follow directions as given in above paragraph.

Tandjung Petang should be passed rather close to and when abeam of it the course should be shaped for the southeast peak of the north group of the Palopalo mountains (sec. 9B–8) on a course of 040°. An alternate course is to steer 033° for the northern of the Palopalo Mountains. The course should be altered to 010° when the range beacons on Pulau Suwangi come in line. This will lead clear of Kramat Bank.

The channel eastward of Pulau Suwangi is marked, but great care must be used. This channel is very narrow and has a bar with a least depth of 15 feet. The beacon on Pulau Anak Suwangi in range with the rear range beacon on Pulau Suwangi bearing 212°, astern, leads through the north part of this channel. This range should be followed until abreast of Sungai Sambaluan when a course of 016° is made good leaving the buoy on Gosong Payung on the port hand.

From Tandjung Ajun a midchannel course is steered through the fairway passing northward of the lighted buoy moored about 1⅔ miles northwestward of Tandjung Pemantjingan and southward of the buoy moored about 1½ miles northeastward of the same point. Thence a course of 077° should be steered with the light structures on Gunung Balingkar and Tandjung Pemantjingan in range astern (257°), which will lead out of the strait.

SETAGIN (STAGEN) AND KOTABARU

9B–15 SETAGIN is a lumber port lying between the mouths of Sungai Setagin Besar and Sungai Setagin Ketjil.

KOTABARU is the most important port of Selat Laut and is the residence of a government official.

BERTHS.—A small pier, 180 feet long, extends into the strait at Setagin. There is a depth of 9 feet at the northeast end of the pier, 12 feet at its midpart and 17 feet at the southwest end.

There is a jetty, 935 feet long, at Kotabaru. A mooring buoy is moored off its outer end. Only small vessels can use this jetty.

CARGO INFORMATION.—Tug and prau service are obtainable at both ports. Ships gear is used in cargo handling operations.

WATER is obtainable at the pier and at the jetty. It should be boiled before use and is scarce during the east monsoon.

PROVISIONS are obtainable at Kotabaru.

COMMUNICATIONS.—There is a telegraph station at Kotabaru. An airfield is located eastward of the town.

MEDICAL.—There is a doctor in Kotabaru.

PART C. DANGERS IN SOUTH ENTRANCE OF MAKASAR STRAIT

9C–1 PULAU MASALIMA (5°03′ S., 117°03′ E.), the western and highest of the Kepulauan Masalima, is covered with tall trees. The fringing reef is narrowest on the east side, and the stones along the north edge cover only at high water. The fringing reef is reported to be extending southwestward.

GENERAL REMARKS

9C–2 BORNEO BANK, which projects far into Makasar Strait from the southeast part of Borneo, encloses in the north part the Little Paternoster Islands and in the south part the Kepulauan Masalima. The part of the bank, southward of the parallel of 3°00′ S., contains few islands, but many coral heads. The latter are usually of small extent and rise abruptly from the bottom.

Between the east edge of Borneo Bank and Spermonde Archipelago, a number of isolated coral banks rise abruptly from great depths. Raised ridges and islets are found on the north and east edges of these banks.

(1611) **EAST INDIES—Makassar Strait—Depth information.**—A depth of 8½ fathoms *Rep.* (*1963*) will be substituted for the depth of 12 fathoms "Rep. (1956)" charted in approx. 3°54′ S., 117°15′ E.

(N.M. 12/63.)

(N.M. 8(413), London, 1963.)
H.O. Charts **3045, 3001, 5592, 5591.**
H.O. Pub. 72, 1962, page **346.**

Most of the islets are inhabited and are planted with fruit and coconut trees. These islets are a part of the Residency of the Celebes and are governed by a native chief who resides on Pulau Dewakang-lompo, the northern islet on Laars Bank.

WINDS AND WEATHER

9C–3 For winds and weather in the Java Sea, see section 2–3. See section 10–2 for winds and weather in Makasar Strait.

TIDES AND CURRENTS

9C–4 Tidal currents, which flow north or south close to Pulau Laut, must be reckoned with. Wind drift currents prevail farther out and in the vicinity of the Kepulauan Masalima. There is sometimes a rate of 1½ knots. Tides are mostly diurnal and of small range. For further information on currents and tidal currents, see section 9–3.

KEPULAUAN MASALIMA AND ADJACENT DANGERS

9C–5 KEPULAUAN MASALIMA consists of a group of five, low and wooded islets covering an area of about 6 miles in length, north and south, and 4 miles in width, east and west. Pulau Masalima, the westernmost island, has been described in section 9C–1.

Pulau Sabaru, the largest and southernmost, is about 1 mile long and densely wooded with tall trees. The surrounding reef, which is only 200 yards wide on the north side, is ½ mile wide in other directions. The reef is reported to be extending in a west-northwesterly direction. A raised ridge of stones stands along the outer edge of the reef. The other islets of the group are lower, and more or less treeless. Each islet is reef fringed and separated from the others by deep passages. Strong currents run through these passages.

Numerous shoal patches, with depths of 2¾ fathoms to 6 fathoms, lie within the 100-fathom curve, between Pulau Sabaru and Aurora Bank. Trinidad Reef, with a least depth of 2¾ fathoms, is located 2 miles south-southwestward of the above islet. Aurora Bank has a least depth of 4¼ fathoms. Many shoal patches, with depths of 6 to 15 fathoms, have been reported to exist along the 100-fathom curve, between Aurora Bank and Pulau Sakala (6°56′ S., 116°15′ E.). This islet and Kepulauan Kangean have been described in Part 3F.

ISLANDS AND DANGERS BETWEEN KEPULAUAN MASALIMA AND LITTLE PATERNOSTER ISLANDS

9C–6 LAUREL REEF, consisting of numerous shoal patches with deep water between, lies between Kepulauan Masalima and Martabon Bank. These dangers lie mostly from 3 to 15 miles within the 100-fathom curve and have depths of 2 to 6 fathoms. Patches with depths of 5 fathoms or less are usually marked by discoloration.

Lari Larian (3°31′ S., 117°28′ E.) is a reef-fringed islet, 400 yards long. The islet is overgrown with coconut trees and has a house on it. A reef, about 600 yards wide and having a least depth of 4¾ fathoms, lies 6½ miles south-southwestward of Lari Larian. A 3¼ fathom patch lies 5 miles westward of this reef. These dangers are not easily seen. Some dangers, with depths of 7½ to 12 fathoms, have been reported to exist between the reef and Martaban Bank.

Pulau Takatalu is a small islet of dead coral standing on a submerged reef. It is about 10 feet high and can be seen from a distance of 5 miles. The formation is subject to change, according to the monsoon. A 6½-fathom coral patch lies 8 miles east-northeastward of the islet.

Pulau Lumulumu is a small sandbank standing on a submerged reef which dries in places. Natives come to this sandbank during the months of April, May, and June to collect

edible seaweed. A 6-fathom coral patch lies about 15 miles eastward of Pulau Lumulumu. Coral Reef, located 30 miles west by northward of the sandbank, has a least depth of 3 feet and is marked by discoloration.

Little Paternoster Islands and adjacent dangers, on Borneo Bank, are described in section 10B-2.

PULAU KALUKALUKUANG AND ADJACENT ISLANDS

9C-7 PULAU KALUKALUKUANG (5°11'S., 117°40' E.) stands on the northwest side of a large bank in the middle of the south entrance of Makasar Strait. The islet is covered with coconut trees and can be seen from a distance of 14 miles. There is a village on the northwestside of the islet. A coral reef fringes the islet and a smaller islet lies close off its south end. A number of shoals with depths of 2 1/2 to 5 fathoms lie along the edge of the 100-fathom curve between Pulau Kalukalukuang and Pulau Butongbutongan.

Pulau Butongbutongan is a low and small islet, covered with banana trees. The east side of the islet is steep-to. Vessels can anchor in 3 to 5 fathoms from 1/4 to 1 mile off the west side of the islet.

Pulau Bankobankoang is a small islet. The fringing reef dries out nearly 1/2 mile from the southwest side, but at less distances in other directions. Numerous shoals with depths of less than 6 fathoms lie between this islet and Pulau Butongbutongan to the northward and Pulau Kalukalukuang to the westward.

Pulau Doangdoangan-ketjil, an extremely narrow islet, stands on a dangerous coral reef. The islet is densely wooded with tall trees, including coconut palms and banana trees. Pulau Doangdoangan-besar is densely wooded and can be seen from a considerable distance. Drying reefs fringe the islet to a distance of 3/4 mile. A village is located on the west side of the islet. A narrow shoal, with depths of 3 3/4 to 10 fathoms, is located about 4 1/2 miles southward of the south end of the islet. Shoals, with depths of 3 1/4 to 10 fathoms, lie westward and southwestward of the islet.

It was reported (1963) that Pulau Doangdoangan-besar was a good radar target at a distance of 17 miles.

Sibbalds Bank (5°47' S., 117°06' E.) lies westward of the southwest end of the large bank and has a least depth of 4 1/4 fathoms near the center. A 6 1/2-fathom patch is located about 5 miles northeastward of the shoalest part of Sibbalds Bank. A 6-fathom shoal lies southward of the southwest end of the large bank.

Pulau Marasende (5°07' S., 118°09' E.) is triangular in shape, each side being a little more than 1 mile long. Pulau Marasende was sighted (1964) from a distance of 16 miles, but was reported to be unconspicuous. A village stands on the west side of the islet and a group of trees stand on the north point of the islet. A drying reef fringes the islet. ANCHORAGE can be taken in 3 1/2 fathoms, about 1/2 mile from the southwest end of the islet or in 3 to 6 fathoms, about 3/5 mile north-northwestward of the north point of the islet.

In 1964 a RADAR RETURN in excess of 40 miles from Pulau Morasende was reported.

Karang Marasende is a coral reef of small extent.

LAARS BANK AND ADJACENT DANGERS

9C-8 LAARS BANK consists of four detached banks of fine white sand. Bone Laisi, the south bank, has a ridge, with depths of 6 to 10 fathoms, along its northeast side. A 4 1/4 fathom shoal was reported (1950) to lie about 7 miles westward of the middle part of this bank.

Bone Poete is separated from Bone Laisi by a deep channel through which a strong current runs causing rips and overfalls. Patches with depths of 3 1/4 to 6 fathoms are found near the north end of the bank and of 7 to 10 fathoms near the southwest end.

Karang Bangka-uluang is a narrow shoal with depths of 5 to 11 fathoms. DeGreve Shoal, with a least depth of 6 fathoms, is

located southwestward of this shoal.

Karang Dewakang, the north part of Laars Bank, is filled with reefs and shoals. Pulau Dewakang-lompo and Pulau Dewakang-tjadi, small islets, stand on the ridge forming the northeast side of this bank. The first-named islet is 1 mile long and is densely covered with vegetation. It is fringed by a drying reef. A prominent tree stands in the middle of the islet. A LIGHT is shown from the north end of the islet. An islet, about 16 feet high and covered vegetation, stands on the coastal reef northward of this islet. Pulau Dewakang-tjadi is 1/2 mile in length and densely covered with coconut palms.

In 1964 a RADAR RETURN in excess of 40 miles from Pulau Dewakang-lompo was reported.

TIDES AND CURRENTS.—The tides are mixed, but predominently semidiurnal. The maximum range is 2 1/3 feet. The currents are variable.

CHANNEL.—A reef extends nearly 3 miles southward from the south point and 4 miles southeastward from the southeast side of Pulau Dewakang-lompo, forming a funnel-shaped channel by which small vessels with local knowledge can approach the island. The channel is encumbered with many shoals and drying rocks.

BEACONS.—The channel is marked by three sets of range beacons. The front beacon of the first range stands about 1 1/4 miles westward of the south extremity of the reef that extends southeastward from Pulau Dewakang-lompo. The rear beacon stands 1 mile 296° from the front beacon. The front beacon of the second range stands off the west side of the reef in position about 2 miles north-northwestward of its south extremity. The rear beacon stands 1 1/4 miles 339° from the front beacon. The third set of beacons stands about 1 mile southeastward of the south end of the islet. They are in range about 320°. The first two sets of beacons are painted black and the third set is white and conical.

ANCHORAGE.—Small vessels with local knowledge can anchor about 1/4 mile southeastward of the front beacon of the inner set.

DIRECTIONS.—The channel should only be attempted by vessels with local knowledge and then only under favorable conditions. Vessels from eastward should bring the first pair of beacons in range 296° which will lead between the reef extending southeastward from Pulau Dewakang-lompo and the shoal patches off the northeast side of Pulau Dewakang-tjadi. When the second pair of beacons come in range alter course to 339° and steer on this range for about 1 1/2 miles. When the front beacon of this range is about 1/4 mile distant, the course should be altered so as to pass eastward of the beacon. Vessels should then steer a northerly course until the third pair of range beacons bear about 320°. This range should be maintained until the front beacon is about 500 yards distant. These ranges should be carefully maintained so as to avoid the numerous shoals and rocks that encumber the channel.

SETTLEMENT.—There is a settlement on the islet. A native chief lives here. A stone pier is located on the southeast side of the islet.

PULAU BANKA-ULUANG (5°30′ S., 118° 38′ E.) is 3/4 mile long and 1/4 mile wide. The islet is covered with coconut palms which are highest on the northeast and south points.

It was reported (1963) that Pulau Banka-uluang was a good radar target at a distance of 13 miles.

DeBRIL (6°05′ S., 118°54′ E.) is an atoll-shaped coral reef with a basin having depths of 3 1/2 to 4 fathoms in its south part. The remainder of the reef dries. There is a break in the reef on the southwest side with depths of 5 to 14 feet, giving access to the basin. A LIGHT is shown near the southwest end of the atoll. A westerly current, sometimes more to the north and sometimes more to the south, depending on the prevailing wind, predominates. At times, during the west monsoon, fairly strong easterly currents have been reported.

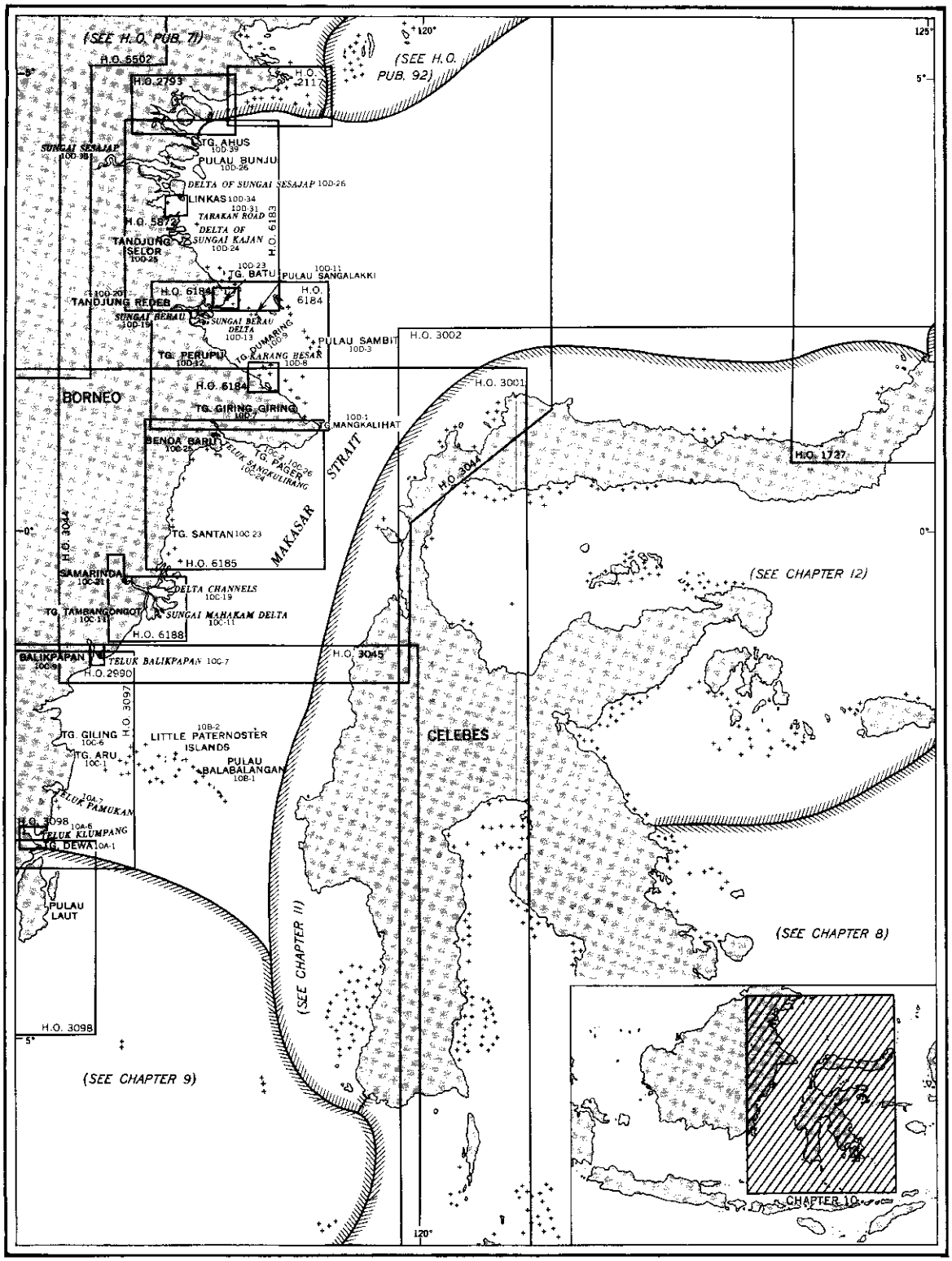


Chart limits shown are of the best scale charts issued to naval vessels by the U.S. Naval Oceanographic Office.
Numbers refer to the section in the text describing a designated locality.

CHAPTER 10

MAKASAR STRAIT—EAST COAST OF BORNEO

PLAN.—This chapter describes the southeast coast of Borneo; the arrangement is from south to north. Thence the Little Paternoster Islands are described; the arrangement is from east to west. A description of the east coast of Borneo, between Tandjung Aru and Tandjung Ahus, follows; the arrangement is from south to north.

GENERAL REMARKS

10–1 MAKASAR STRAIT is a main route for shipping. The south entrance of the strait has been described in Part 9C. The dividing line between the east and west parts of the strait runs along the 100-fathom curve directly eastward of Kepulauan Masalima and Laurel Reefs from the parallel of 6°00′ S. to the same curve enclosing the Little Paternoster Islands; thence along a line to the midpoint between Tandjung Mangkalihat and Tandjung Benar.

Between the parallels of 2° and 3° S. the strait is separated into two channels by the Little Paternoster Islands. The west channel is 20 miles wide and much frequented. There are numerous dangers in this channel and moderate depths are found along the Borneo Coast. The east channel, between the 100-fathom curves, has a least width of 22 miles and is extremely deep. The coast of Celebes is steep-to.

THE COAST OF BORNEO, northward of Tandjung Dewa, is low, marshy, and covered with dense vegetation. Numerous rivers, some of which have large deltas, and bays indent the coast. There are few landmarks as the coastal hills usually stand inland 6 miles or more. Balikpapan and Lingkas are the most important deep-water ports on this coast. Samarinda is a river port of some importance.

WINDS AND WEATHER

10–2 The monsoons in Makasar Strait are not as marked and are weaker than those in the Java Sea. Near the shores of Borneo and Celebes the land and sea breezes blow throughout the whole year. Thus the local topographical features and direction of the coast may greatly influence the force and direction of the wind then blowing in the strait. Land breezes can be expected between about 1900 and 0700 and sea breezes from 1000 to 1700. Where the monsoon is strong on a lee shore, the land breeze may not occur.

The east monsoon sets in over the south part of the strait in April, blowing from northeast to southeast. Calms and northwesterly winds are sometimes felt. This unsettled weather lasts until June, when the wind begins to blow with some regularity from southeast, occasionally shifting to the southwest. At night, during June, the wind is mostly east to southeast, but it also blows from the south and southwest. These winds will bring in a swell and, blowing

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in opposition to the prevailing southerly currents, produce a short and troubled sea.

In September and October there is a decrease in wind and sea, and, changing through south and west, winds blow from westward in November, and in December from southwest to northwest. These winds, however, cannot be relied upon.

The west monsoon is at its height in January and blows from the northwest. Heavy squalls, much rain, and heavy seas, which begin to abate in February, occur. Light breezes from northwest to northeast and east occur in March.

December to March are considered the rainy months, but there are showers in all other months. July to September can be termed the dry season. Squalls and thunderstorms occur in December.

In the north part of the strait the force of the wind is still less. The monsoons from northward and south-southwestward are variable and depend to a great extent on the strength of the wind circulation in the Celebes Sea and Java Sea. The seasons are not well defined and much rain occurs.

South-southwesterly winds commence in May. These veer occasionally to west and northwest, and are more or less variable and unsteady. The monsoon is at its height from June to September, and south-southwesterly winds prevail both day and night.

In October the monsoon decreases in force and is lowest in November, the wind sometimes veering to the northward and northeastward. In December the general direction is northwesterly, in January northerly, and in February north-northeasterly winds blow with some steadiness, decreasing in April, when calms and variable breezes can be expected.

There is less cloudiness in the north than in the south part of the strait, but rain is heavier and more continuous. Rainfall is greater on the Borneo side than on the Celebes side of the strait. The rainy season is from November to March, and the dry season from July to September.

Squalls and thunderstorms are rare, but mist occurs.

TIDES AND TIDAL CURRENTS

10–3 TIDES are mixed with a predominating semidiurnal character, except in the southeast part of the strait. The high tides occur at 0700 and 1900 and the low tides at 1300 and 0100. Along the Borneo Coast this phenomena is most noticeable in the south part of the strait; on the Celebes coast in the north part of the strait.

TIDAL CURRENTS.—In the south part of the strait the flood runs north and the ebb runs south. In the area within the 10-fathom curve between Kepulauan Masalima and Little Paternoster Island the tidal currents are weak and do not greatly affect the usual south-going current.

CURRENTS.—A southerly or southwesterly current is usually met within the open part of Makasar Strait throughout the year. It is sometimes, but not always, stronger on the east side of the strait, towards the Celebes coast. The average rate for the whole year is about ½ knot, varying somewhat in different months. A maximum rate of 2 knots has been recorded.

A constant northerly current has been reported in the bight southward of Tandjung Mangkalihat along the Borneo coast with a rate of ½ knot. Just outside this current the usual south-going current may be running at a greater rate. The influence of the tidal currents are felt under the Borneo coast.

Experienced pilots state that during the Southeast Monsoon (April to October), the current runs northward along the whole of the east coast of Borneo as far as Tandjung Mangkalihat, where it turns southeastward and southward to joint the usual south-going current.

When the Southeast Monsoon is, or has been, strong the northerly set off the entrance of

Teluk Balikpapan attains a rate of 1½ to 2 knots, while the southerly set off Pulau Balabalangan, the outer island of the Little Paternoster Islands, has been observed to attain a rate of 2 knots.

Vessels crossing the strait from Teluk Balikpapan to the Celebes coast during the Southeast Monsoon may experience a northerly set for a distance of 75 miles from the coast of Borneo, and thence a southerly set for the rest of the passage.

In the south part of the strait the direction of the south-going current is influenced by the prevailing monsoon. From June to September the current is southwesterly and so, on emergence, passes into the west-going current of the Java Sea. From November to March the current is southeasterly and so passes into the east-going current of the Java Sea and Flores Sea. April and May are months of transition, with the current in the west part of the strait turning southwestward as it emerges, while the part towards the Celebes shore turns southeastward. During the transition month of October, the whole of the emerging current turns southwestward and westward.

After long-continued wind, the surface drift is considerable and sometimes appears as a reversal of the prevailing set. As the wind slackens, however, the normal current is resumed with somewhat increased rate, accelerated or retarded by the tidal currents.

In the Celebes Sea during the Southeast Monsoon drift currents from eastward will cause a gyrating motion which increases the southerly set on the west side of that island and gives an easterly current along the north shore of the Celebes.

CAUTIONS

10–4 Muddy water extends from 8 to 9 miles off the east coast of Borneo, so that reefs can seldom be identified by discoloration. During the rainy season this muddy water may extend 12 miles out to sea, and beyond that distance only those dangers are readily seen which are composed of light-colored coral or when white sand is found among the heads.

PART A. TANDJUNG DEWA TO TANDJUNG ARU

10A–1 TANDJUNG DEWA (3°08′ S., 116°16′ E.) is low and reef fringed. A hill, 243 feet high, stands close within the point.

GENERAL REMARKS

10A–2 BETWEEN TANDJUNG DEWA AND TANDJUNG ARU, the coast is low, marshy, and for the most part covered with vegetation. Teluk Klumpang and Teluk Pamukan, two rather unimportant bays, indent this coast. Both bays are ports of call for interisland shipping because of the coal mines on Pulau Nangka, and at Gunung Batu Besar. Some 6 or 7 miles inland, between the two bays, a range of prominent hills run parallel with the coast. In fine weather, the mountains in the interior, which attains heights of over 6,000 feet, are visible from the offing.

DEPTHS–DANGERS

10A–3 Numerous dangers lie within the 5-fathom curve which lies from 2½ to 7 miles off this coast. A group of reefs and shoal patches lie outside the 10-fathom curve, between it and the Little Paternoster Islands which are described in Part 10B. Coral Reef, the southeasternmost danger, has been described in section 9C–6.

Addington Reef (2°44′ S., 116°46′ E.) has a least depth of 3 feet and consists of dark coral and stones. A small reef with a least depth of 2¼ fathoms was reported to lie northeastward of the above reef in position 20 miles east-southeastward of Tandjung Pamukan. A dangerous wreck is charted about 15 miles east by southward of the same point.

Cora Reef (2°29′ S., 116°53′ E.) is a coral reef with a least depth of 4 fathoms. Blenheim

Reefs, which consist of several separate parts with depths of 2 to 8 fathoms and deeper water between, lie just northward of Cora Reef. The shoalest part, near the middle of the reef, is nearly awash at low water.

Coral Bank, with a least depth of 5 fathoms, lies about 3½ miles westward of Blenheim Reef and sometimes shows discoloration. Anna Reefs are two drying coral heads with a depth of 3¾ fathoms between. Cecil Reefs consist of a number of detached portions with shoal water over them and deep water between. The largest, which uncovers, is located about 15 miles east-southeastward of Aru Bank Light structure. It is circular in shape and about ½ mile in diameter. The channel eastward of Anna Reefs and Cecil Reefs and between these reefs and the Little Paternoster Islands (sec. 10B–2) is 6 miles wide but two small shoals have been reported (1952) in midchannel.

Hercules Reef (2°22′ S., 116°43′ E.) is about ½ mile long in a north-northeasterly direction and 300 yards wide. A circular portion, about 200 yards in diameter, dries, and a part of this is above high water. The reef consists of coral with sand and stones. A LIGHT is shown from a beacon, 30 feet high, standing on the reef.

September Reef consists of coral, sand, and stones. A drying patch, about 400 yards long, lies near the center of the reef in position about 9 miles east-southeastward of Aru Bank light structure. There are several coral heads with depths of 2 to 6 fathoms. Two patches, with depths of 6½ and 5 fathoms, respectively, lie between September Reef and Coral Bank.

A WRECK, marked by a lighted buoy painted green, lies sunk about 6 miles east-northeastward of Aru Bank light structure.

CURRENTS AND TIDAL CURRENTS

10A–4 Rather strong currents set in or out of the bays and rivers along this coast. Between Tandjung Dewa and Tandjung Aru, at distances of up to 10 to 12 miles offshore, the northerly currents had a preponderance of two to one during the month of May. The direction varied from north to northwest. The rate did not exceed ¾ knot. In July the currents set mostly north to northeast. The maximum rate was 1¾ knots for northerly and 1½ knots for southerly currents. The average rate, however, was ½ knot.

During the first half of August, the directions varied between northeast and southwest. The maximum rate was 1¾ knots for northerly and 1½ knots for southerly currents. During the latter part of this month, the maximum rate was ¾ knot.

During September, a southeasterly current prevailed, but later there were south-southeasterly and southerly currents. The maximum rate was 1 knot.

The currents between Laurel Reefs and Little Paternoster Islands is determined by the wind direction. During the Northwest Monsoon southerly currents prevail. During the Southeast Monsoon, which blows mostly from a south-southeasterly direction, the main direction of the current is northwesterly; the maximum rate being 1½ knots.

For further information on tides and tidal currents, see section 10–3.

WINDS AND WEATHER

10A–5 See section 10–2.

TELUK KLUMPANG

10A–6 TELUK KLUMPANG is irregular in shape and has several shallow rivers flowing into it. A village, having a flagstaff and a prominent mosque, stands on the southeast side of Tandjung Batu. A native chief lives in the village. A village stands at the mouth of the Sungai Trusan. Some coal mining facilities are located on Pulau Nangka.

TIDES AND CURRENTS.—The tides are mostly semidiurnal. The semidiurnal range is

(3081) **INDONESIA—Borneo—Southeast coast—Aru Bank—Buoy nonexistent.**—The lighted buoy charted in (approximately) 2°12.5′ S., 116°45.0′ E. should be expunged.

(N.M. 18(862), London, 1964.)
H.O. Charts **3097, 3045.**
H.O. Pub. 72, 1962, page **354.**

(N.M. 24/64.)

6½ feet at springs and negligible at neaps. The diurnal range is 3¼ feet at springs and 1 foot at neaps.

After heavy rains, currents of 1½ to 2 knots flow out of the bay. Strong currents run through the narrow passages between the islands in the south entrance of the bay.

DEPTHS of 3¾ fathoms are found over the entrance flat. Depths of 5 fathoms and over are found in the channel. The bottom in the outer bay is of mud, sand, and small stones. In the inner bay it is of mud and sand.

ISLANDS AND DANGERS.—Four small islands are located on the south side of the entrance of the bay. Pulau Nangka, the largest, is 190 feet high and is the site of some coal mines. Pulau Pabuan, the outermost, is 138 feet high and reef fringed. A reported (1963) emerging island is located a little more than ⅛ mile northwest of the summit of Pulau Pabuan. A drying rock lies on the south side of the channel in position about ¾ mile northward of Pulau Pabuan.

The shore bank, as defined by the 3-fathom curve, extends about 8 miles east-southeastward from the north entrance point of the bay. Gosong Karbau, a group of reefs that dry at half tide, stand on this bank in position about 4 miles east-southeastward of Tandjung Batu. Some shoal patches with depths of 2 to 2¾ fathoms lie on the north side of the channel to the southward of these dangers.

Batu Timbal, a dangerous rock, lies awash in a position about 1 mile south-southwestward of Tandjung Batu. A reef with a depth of less than 6 feet lies close off this point. The channel into the inner bay leads between these dangers.

DIRECTIONS.—There are no suitable marks for entering the bay. The channel is unmarked and the shoals are not marked by discoloration. Vessels should approach the entrance on a course of 298° and pass between the drying dock northward of Pulau Pabuan and the shoal patches of the north side of the channel. When the flagstaff in the village southeastward of Tandjung Batu bears 350°, the course should be altered to 304°, so as to pass between Batu Timbal and the 6-foot patch to northward.

COASTAL FEATURES (TELUK PAMUKAN)

10A–7 BETWEEN TANDJUNG BATU AND TANDJUNG SAMALANTAKAN, the west entrance of Teluk Pamukan, the coast is low and is backed by hills (sec. 10A–2). All coastal dangers are contained within the 5-fathom curve which lies up to 7½ miles off the entrances of the two bays.

TELUK PAMUKAN, entered between Tandjung Samalantakan and Tandjung Pamukan, is irregular in shape and has several rivers flowing into it. The shores of the bay are of mud, low, and overgrown with mangroves except for a rocky portion about midway between Tandjung Samalantakan and Tandjung Kersik Hitam. The former point is formed by a sandy beach and just westward of it is a village built mostly over the water. The Sungai Sampanahang, which is navigable by small vessels with local knowledge, flows out along the west side of the latter point.

The north side of the entrance between Tandjung Pamukan and Tandjung Sapada-ketjil is steep and covered with tall trees, 192 feet high. From the offing it appears as an island. Tandjung Merah can be identified by the conspicuous red rocks forming it. A large village stands on the right bank of the Sungai Tjengal, about 1 mile upriver.

It was reported (1963) that Teluk Pamukan was a good radar target at a distance of 17 miles.

TIDES AND CURRENTS.—The tides are mixed, but predominently semi-diurnal. The semi-diurnal range is 6¾ feet at springs and 1⅓ feet at neaps. The diurnal range is 3½ feet at springs and ½ foot at neaps.

The currents flow across the entrance of the bay. Within the bay there are tidal currents which flow particularly strong around the south entrance point. The maximum rate is 1½ knots. A maximum rate of 2½ knots sometimes occurs in the Sungai Sampanahang.

DEPTHS.—Depths of 15 feet are found over the bar. This depth can be carried by small vessels with local knowledge as far as the coal mining settlement abreast Gunung Batu Besar, on the right bank of the Sungai Sampanahang.

DANGERS.—A wide bank, with depths of less than 3 fathoms, extends up to 7½ miles off the entrance points. A number of small patches, with depths of 1½ to 2¾ fathoms, lie in the middle of the entrance. These dangers of stones, sand, and mud lie from 1¼ to 2¼ miles south-southeastward of Tandjung Pamukan.

A dangerous wreck is located about 4 miles eastward of the above point. A danger area with a diameter of 1½ miles is centered on this wreck.

A drying rock lies near the edge of the shoal bank extending from the north shore. Its position is about 2¼ miles northward of Tandjung Samalantakan.

A small islet lies close offshore about 2½ miles west-northwestward of the above point. A shoal, with depths of less than six feet, is located about 1 mile northward of this islet.

CAUTION.—Tandjung Samalantakan is reported to be extending seaward. Dangers other than those charted and marked may exist.

NAVIGATIONAL AIDS.—A red beacon with a red cylindrical topmark stands on the south side of the channel in a position about 2 miles southward of the above point. A similar beacon stands on a 1¼-fathom patch located 1⅘ miles northward of Tandjung Samalantakan. A similar beacon marks the shoal, with depths of less than 6 feet, located 1 mile northward of the before-mentioned islet.

A black beacon with a black conical topmark, point up, stands about ⅔ mile north-northeastward of Tandjung Kersik Hitam.

A buoy, painted in black and white checkers, marks a 2½-fathom patch which lies about 1½ miles eastward of the same point.

SETTLEMENT.—A coal mining settlement stands on the right bank of the Sungai Sampanahang. A pier about 80 feet long with a depth of 16 feet is located at the settlement. Regular tug and prau service is maintained with Kotabaru (sec. 9B–15). The customhouse, a white building, stands on Tandjung Samalantakan.

COASTAL FEATURES (CONTINUED)

10A–8 BETWEEN TANDJUNG SAPADA-KETJIL AND TANDJUNG ARU, the coast is low, muddy and covered with trees. The north part of the latter point consists of sand and has some coconut trees on it. A small fishing village is located on the west side of the point.

The 3-fathom curve fronts this coast at a distance of 3 miles. Riouw Reefs lie within this curve, about midway between the above points. The north reef, located 11½ miles north-northeastward of Tandjung Sapada-ketjil, dries.

Aru Bank, located 7½ miles south-southeastward of Tandjung Aru, consists of three detached drying reefs of coral and stones covered with mud and sand. The south reef consists of two drying parts lying close together. The northwest part of the westernmost reef is covered with fine white sand and only covers at high water springs. A LIGHT is shown on the northwest point of the easternmost reef. The north reef is located about ½ mile northward of the south reef. Two 3-fathom patches lie about 2½ miles northward of the light structure.

It was reported (1963) that Aru Bank light structure was a good radar target at a distance of 11 miles.

NOTE.—The dangers lying outside the 10-fathom curve are described in section 10A–3.

PART B. LITTLE PATERNOSTER ISLANDS.

10B–1 PULAU BALABALANGAN (2°-32′ S., 117° 57′ E.), the easternmost islet of the group, is nearly 600 yards long, covered with tall trees, and serves as a good landmark. A LIGHT is shown from the islet.

It was reported (1963) that Pulau Balabalangan was a good radar target at a distance of 14 miles.

GENERAL REMARKS

10B–2 The Little Paternoster Islands lie between the parallels of 2°00′ S. and 2°44′ S. and

between the meridians of 117°00′ E. and 118°08′ E. They consist of several groups of islets and reefs lying on the northeast edge of Great Borneo Bank. The islets are visited by fishermen from Borneo and Celebes. Large quantities of dried fish are exported, also birds and turtles' eggs, sharks' skins, shells, and sea slugs.

The islets were formed of coral and sand, covered by driftwood, vegetable debris, and guana. Grasses, creeping plants, and brushwood are found on most of the islets, and trees, up to 180 feet high, are found on some of the larger islets.

A chain of reefs, drying in many places, is found along the northeast edge of Borneo Bank. This chain rises steeply from depths where no bottom has been found at 100 fathoms. Many small islets are found on these reefs. This chain is of little width and has deep water between it and the inner reefs.

A group of islets and reefs, lying from 9 to 17 miles within the above chain, forms an irregular line roughly parallel to that chain. Between the two there are depths of 16 to 30 fathoms, coral bottom, sand and shells being only exceptionally met with. Southward of this group, the bottom consists of sand and shells, and growing coral is met with in some places.

A double row of reefs, which extend north and south and which partly dry, lie westward of this inner group. The channel, between the west row of reefs and Anna and Cecil Reefs, is described in section 10A–3. Pulau Sauga (2°14′ S., 117°08′ E.) is located about in the middle of the east row of reefs.

TIDES AND CURRENTS

10B–3 The currents in this area are mostly wind drifts. The influence of the south-going currents through the deep part of Makasar Strait can be felt near and along the outer side of the 100-fathom curve. The edge of the 100-fathom is marked by rips and overfalls when the current runs with any strength. These are more pronounced during the west monsoon. The currents run through the deep channels between the reefs at a considerable rate at times and are quite variable. For additional information on tides and tidal currents, see section 10A–4 and 10–3.

WINDS AND WEATHER

10B–4 See section 10–2.

CAUTIONS

10B–5 Ships without local knowledge should not attempt to pass between these dangers.

OUTER CHAIN OF ISLETS AND REEFS

10B–6 UNION BANK (3°02′ S., 118°20′ E.), located southeastward of Little Paternoster Islands and near the east edge of Great Borneo Bank, is small in extent and has a least depth of 7 fathoms.

In 1950 heavy breakers were reported just northward of Union Bank in a position about 35 miles southeastward of Pulau Balabalangan. The water in this vicinity is very clear so that depths of up to 10 fathoms may appear as dangers.

A narrow ridge, with depths of 2¼ to 6½ fathoms, extends 7½ miles southeastward from a position 7 miles southeastward of Pulau Balabalangan. Semarang Shoal is located at the southeast end of this ridge. Depths of 6 to 21 fathoms are found along the edge of the bank between Semarang Shoal and Union Bank. A bank, consisting of two 10-fathom coral heads about 1¾ miles apart in a northeast-southwest direction, lies about 16 miles southeast by eastward of Pulau Balabalangan.

DJAITAN SHOAL, a reef that uncovers at half tide, stands on a ledge of foul ground which extends about 4 miles southeastward from the above islet.

PULAU KABALADUA, partly covered with grass and brushwood, stands near the northwest end of a reef which extends nearly

4 miles northwestward from a position about ½ mile northwestward of Pulau Balabalangan. The islet is nearly 600 yards long and has some tall trees on it. Two sandbanks, always above water, stand on the south part of this reef. The passage between the reef and Pulau Balabalangan is nearly barred by an inner ridge of shoal ground.

PULAU SETURIAN, about 19 miles northwestward of Pulau Kalaladua, is small and densely wooded. It can be seen from a distance of 16 miles. Some tall trees stand on the west side of the islet. A drying sandbank, covered with grass, is located about 11 miles southeastward of Pulau Seturian. Several partly drying reefs, with narrow gulleys of deep water, lie between the sand-bank and the islet. Reefs and shoal ground extend 5 miles southeastward from the sandbank. A number of drying reefs and shoals lie up to 7 miles northwestward and 9 miles westward of Pulau Seturian.

PULAU SEBANGKATAN (2°13′ S. 117°25′ E.), a small islet, is thickly wooded with coconut trees. The east side of the islet is steep-to. Reefs and shoals extend 1¾ miles southward and 3 miles north-northwestward from the islet.

PULAU AMBUNGI, located 12 miles northwestward of Pulau Sebangkatan, is a drying reef, a very small portion being always dry. Shoals with depths of 2½ to 6½ fathoms lie up to 3 miles northwestward of Pulau Ambungi and between that reef and Pulau Sebangkatan.

INNER ISLETS AND REEFS

10B–7 BYRON REEF (2°34′ S., 117°48′ E.) is 800 yards in diameter. On it is a small sandbank, always dry and grown over with light shrubs. Discolored water, marked by tide rips, was reported (1950) to lie in the vicinity of Byron Reef in a position about 10 miles westward of Pulau Balabalangan (sec. 10B–1). A small detached reef with a depth of 3 feet lies about 4 miles westward of the same islet.

PULAU SELOANG, located 11½ miles northwestward of Byron Reef, is fringed by a narrow reef. The islet is ½ mile long and wooded. The trees, however, are not as high as those on other islets. Discolored water was reported 1¼ miles southward of this islet. A reef, nearly awash, steep-to, and about ½ mile long, is located 6 miles east-southeastward of the islet. A shoal, with a least depth of 3¾ fathoms, lies about 1¾ miles northeastward of the islet.

PULAU PINAAT, located 4⅓ miles northwestward of Pulau Seloang, stands on the north end of a narrow reef, more than 1 mile long. The islet is covered with tall trees, two of which stand out above the others. Detached reefs lie up to 3 miles northeastward and 1¾ miles southwestward of the islet. There is a small sandbank, nearly always visible, on one of these reefs.

PULAU MELAMBIR stands near the middle of a narrow ledge of reef and foul ground that extends 3½ miles southwestward from a position 2 miles westward of Pulau Pinaat. The islet is ¼ mile long and densely wooded. A tall tree near its center can be seen from a distance of 16 miles. A sandbank, always above water, is located on the south end of the reef.

PULAU LAMUDAAN-KETJIL AND PULAU LAMUDAAN-BESAR stand about 1 mile apart on parallel reefs, located from 3¼ to 4½ miles westward of Pulau Melambir. These islets lie near the northeast end of a group of reefs that extends 5 miles southwestward. The larger islet is covered with tall trees and is visible from a distance of 16 miles. The smaller islet is wooded.

PULAU SEMANGA-KETJIL stands near the middle of a narrow ridge of foul ground that extends 4½ miles northward from a position 4 miles westward of Pulau Lamudann-besar. The islet is low and has one small tree. Pulau Semanga-besar, located 1 mile southwestward of the smaller islet, is covered with

tall trees, one of which is considerably taller than the others. Foul ground extends nearly 2 miles southward from this islet.

PULAU POONG POONG, a very small islet, is located near the northeast end of a triangular area of foul ground that extends 4 miles southwestward and thence 5 miles northwestward from the islet. There are some trees, 100 feet high, on the islet. Pulau Samataha, located 3 miles westward of this islet, stands near the northwest edge of this foul ground. It is about 600 yards long and wooded. Both islets are visible from a distance of 16 miles.

PULAU KAMARIAN-BESAR AND PULAU KAMARIAN-KETJIL are two small islets standing on a shoal bank that extends 2¾ miles northward from a position about 5¼ miles north-northwestward of Pulau Samataha. The larger islet is 200 yards long and covered with high trees. The northern and smaller islet is a sandbank covered with creeping plants and one small tree.

PULAU SABOJAN, located 3 miles eastward of the larger islet, is 600 yards long and has a clump of trees on its north part, attaining a height of 180 feet.

PULAU SALINGSINGAN (2°19′ S., 117°14′ E.) is small in extent and surrounded by foul ground. A small reef, part of which is always above water, is located 2 miles northward of the islet. Reefs and foul ground extend up to 17½ miles north-northwestward from the islet.

WESTERN REEFS AND DANGERS

10B–8 A double row of reefs, which extend north and south and which partly dry, lie westward of the inner islets and reefs of the Little Paternoster Islands. This area is about 30 miles long, north and south and 15 miles wide, east and west. Some of these reefs never cover. Unarang Reef (2°29′ S., 117°03′ E.), the southernmost of these dangers, is nearly always dry. A large reef, which dries in parts, is located nearly 8 miles eastward of this reef.

PULAU SANGAI (2°14′ S., 117°08′ E.) is partly covered with brushwood and has one small tree, which is visible from a distance of 8 miles.

ANCHORAGES AND DIRECTIONS

10B–9 Vessels can anchor anywhere on the bank in suitable depths with coral and sand bottom. The water usually deepens on approaching the reefs, which, as a rule, are steep-to.

Only vessels having local knowledge should attempt to pass between these dangers and then under only the most favorable of conditions. Such vessels should be on the alert for charted and uncharted dangers.

FROM SOUTHWESTWARD: Vessels should steer 047° with the high trees on Pulau Samataka ahead and thence pass about 2 miles westward of that islet. Thence they should pass eastward of Pulau Sabojan. Thence they should steer a northeasterly course and pass out through the 6-mile-wide passage southeastward of Pulau Sebangkatan.

FROM NORTHWARD: Vessels may follow the reverse of the above directions. The reefs and dangers extending westward from Pulau Seturian can be avoided by keeping Pulau Lamudaan-besar bearing 187°. These dangers are hard to identify when submerged.

FROM NORTHEASTWARD: A passage, about 1 mile wide, leads between Pulau Seturian and the large drying reef to the northwestward. There is 16 to 19 fathoms in this passage.

FROM EASTWARD: A passage, about 3 miles wide, leads between the reef enclosing Pulau Kabaladua and the reefs and dangers to the northwestward. The high trees on Pulau Seloang can usually be seen from the entrance of this passage.

PART C. TANDJUNG ARU TO TANDJUNG MANGKALIHAT

10C–1 TANDJUNG ARU (2°10′ S., 116°35′ E.) is sandy at its north point and has some coconut trees on it. A small fishing village is located on the west side of the point. The 10-fathom curve fronts the point at a distance of 8 miles.

GENERAL REMARKS

10C–2 BETWEEN TANDJUNG ARU AND TANDJUNG MANGGAR, the coast is low and marshy. It is deeply indented by three bays. These bays are actually the estuaries of the many rivers which flow into them. Teluk Balikpapan, the north bay, is the site of a large oil refinery.

BETWEEN TANDJUNG MANGGAR AND TANDJUNG SANTAN, the coast is formed by the vast delta of the Sungai Mahakam, the most important river on the east coast of Borneo. Northward of the latter point, the coast is flat and is backed by some hills. Between this point and Tandjung Sengata, some hills from 1,043 to 1,142 feet high stand within 12 miles of the coast.

BETWEEN TANDJUNG SENGATA AND TANDJUNG BUNGOLUN, there is a hill, 571 feet high and having a prominent wooded summit. A chain of hills extends in a westerly direction from this hill.

BETWEEN THE LATTER POINT AND THE WEST ENTRANCE OF TELUK SANGKULIRING, Pegunungan Sekaret, a mountain range attaining heights of 1,850 to 2,146 feet, lies close to the coast and is visible from a distance of 40 to 50 miles.

TANDJUNG PAGER, the east entrance point of Teluk Sangkulirang, is a hilly ridge having a strip of low mangrove-covered land. Pegunungan Tindehhantu, a range of three peaks, the highest rising to 1,673 feet, is located northeastward of Tandjung Pager. A prominent range, consisting of four peaks, forms the east side of Teluk Bakong. The highest peak rises to 1,722 feet.

DEPTHS AND DANGERS

10C–3 Between Tandjung Aru and Tandjung Manggar, the 10-fathom curve, which contains the coastal dangers, lies up to 10 miles offshore. Between the latter point and Tandjung Santau, all dangers, except Attaka Reef, lie within the 100-fathom curve which fronts the coast to a distance of up to 32 miles. Attaka Reef has a least depth of 6½ fathoms, coral and stones. It is located about 21 miles east-southeastward of Tandjung Santau.

Between Tandjung Santau and Tandjung Pager, the 100-fathom curve lies up to 10 miles offshore. Sengata Reef lies outside this curve in a position about 7 miles southeastward of Tandjung Sengata. The reef consists of 2 parts; the south part dries at low water. A least depth of 1½ fathoms is found on the north part. The reef is steep-to on its east side, and can be identified by discolored water and rips.

The 100-fathom curve lies fairly close offshore between Tandjung Pager and Tandjung Mangkalihat. It, however, lies up to 6½ miles off the head of Teluk Bakong. Pulau Birah, the outer danger, is located 9 miles southeastward of Tandjung Pager. The islet is fringed by a partly drying reef. The center of the islet is grown over with trees, 140 feet high. Near its shore is a belt of mangroves. A 3¾ fathom patch lies 2½ miles southward of Tandjung Pager.

Johanna Antonia, a small steep-to shoal with a least depth of 3½ fathoms, is located 5½ miles east-northeastward of Pulau Birah. The water over it shows discoloration.

TIDES AND TIDAL CURRENTS

10C–4 For a considerable distance outside the delta of the Sungai Mahakam there is an inset or a strong outset of the currents. The constant south-going current setting through Makasar Strait is felt outside the 100-fathom