DEPTHS.—Both bays have general depths of 5½ fathoms or more. The 5½-fathom curve lies close off the head of Teluk Malikabam but is ⅓ mile off the head of Teluk Mambang. A depth of 2¾ fathoms lies a little more than ½ mile westward of the east entrance point of Teluk Mambang, and depths of less than 5½ fathoms extend almost ⅓ mile northwestward from the 2¾-fathom patch.

DIRECTIONS.—To enter Teluk Malikabam, steer 038° on the 1,663-foot hill 3 miles northeastward of the bay. This round hill, covered with vegetation, is noticeable for a conspicuous tree. When Watu Bakul opens in front of the east entrance point of Teluk Mambang, bear somewhat to starboard, and continue to the desired position. Watu Bakul behind Tandjung Bata Dando (the west entrance point of Teluk Malikabam) is a useful bearing.

To enter Teluk Mambang, hold somewhat to the west side of the bay to avoid the 2¾-fathom shoal off the east entrance point.

TELUK KAKADU, an open bay with moderate depths, lies about 1½ miles northwestward of Teluk Mambang. The south entrance point is bare, steep limestone with a flat rock lying close westward of the point. Wooded limestone hills comprise the east side of the bay, and steep rock walls the west side. A stretch of sand at the head of the bay rises gradually to a wooded hill, 1,234 feet high. Teluk Kakadu offers little protection as an anchorage.

From Tandjung Kakadu, the west entrance point of Teluk Kakadu, the coast trends 3⅓ miles westward to Tandjung Nonguwawi (Ngungu Wawi). A white, triangular cliff projects above the general coastline ⅔ mile westward of Tandjung Kakadu and is a good mark. From the white cliff to Tandjung Nonguwawi several cliffs with stratified red and gray rock are to be seen; above-and-below water rocks lie close off this shore.

6A–16 TANDJUNG NONGUWAWI (Ngungu Wawi) is 669 feet high. A T-shaped, vegetated peninsula extends a short distance southward from the point. Both point and peninsula are bordered on all sides by perpendicular rock cliffs. On the west side of the point is a bight partially protected from westward by a series of islets and rocks extending seaward; the outermost islet is called Bola Komba. In favorable weather ships can ANCHOR on either side of Bola Komba in about 15 fathoms.

Watu Sipu is a wooded islet 295 feet high, joined to the mainland by a drying reef. Tandjung Lamarongi (Marongi), 2⅓ miles northwestward of Watu Sipu, is a fairly bluff, rocky point covered with tall grass. Numerous above-and-below-water rocks, extending up to ¼ mile offshore, front the coast for over 1 mile southeastward from Tandjung Lamarongi.

TELUK LASIPU (Sipu) is entered between Tandjung Lamarongi and the low, sandy Tandjung Laikameni (Lahikememe), 3¾ miles northwestward. The bay has moderate depths, especially in its north part, and, except close under the coast, is clear of dangers. Some protection is afforded in the west monsoon. The north and south shores of Teluk Lasipu have sand beaches; a black, almost perpendicular cliff on the mideast shore is conspicuous.

TELUK SENDIKARI is entered between Tandjung Laikameni and Tandjung Ta Atu, 1½ miles northwestward. The higher, outer end of Tandjung Ta Atu is flat, and bare except for a few trees. Depths in the bay decrease gradually, but above-and-below-water rocks extend to ¼ mile off both sides. A detached 3¾-fathom patch lies almost ⅔ mile southeastward of Tandjung Ta Atu; within ½ mile northnortheastward of this patch is a rock awash almost ⅓ mile offshore.

The holding ground is good in Teluk Sendikari but no protections is afforded from the southwesterly swell.

FROM TANDJUNG TA ATU TO TANDJUNG MAMBANG (MAMBA), 24½ miles westward, the coast is free of danger at 1 mile and may be closely approached. The swell breaks continuously on the coastal reef, and the line of breakers is visible at night.

The coves Teluk Loku Lisi and Teluk Tengiri lie between Tandjung Ta Atu and Tandjung Meloku, 3¾ miles westward. A rather high islet, with a conspicuous cone of rocks, lies on the east side of Teluk Loku Lisi but is not visible from all directions. A dark rock with a flat upper surface lies at the west entrance of Teluk Tengiri and is conspicuous from westward. In Teluk Lia, 2 miles westward of Tandjung Meloku, it is possible to land on the western side.

TELUK MANUKAKA, the broad bight westward of Teluk Lia, has a large sand beach behind which a plain extends inland. Praus enter the mouth of the Loku Mukaka, a stream flowing into the west side of the bight. Tandjung Ngudju, the west entrance point of Teluk Manukaka, is a gently sloping mountain spur.

6A–17 TANDJUNG KAROKA (Rua) is the south end of a short, blunt peninsula. The bight between the points offers fair anchorage, for the swell is moderate here. Ships anchor in 10 fathoms off the small Loku Rua, a stream flowing southeastward into the head of the bight. Tanah Potta, ⅔ mile northwestward of Tandjung Karoka, is a 308-foot peak right on the coast. Seen from the east the peak appears as a bare hill on the southwest side of the mentioned blunt peninsula. The villages high up in the hills behind the peninsula are visible only by a few pointed roofs projecting above the treetops.

TANDJUNG WATUBOLO (Watumbolo) is a rocky point, the south end of a fairly low, broad spur of the hills behind. The point is marked from seaward by alternating rice fields and coconut groves. It is possible to land on the west side of the point where a cove is formed in the coastal reef.

TANDJUNG MAMBANG (Mamba) is the steep south side of a short peninsula almost bare of vegetation. The peninsula—a conspicuous ridge with a few gently rounded peaks—slopes gradually to the sea. Large rocks lie on the coastal reef at the point.

FROM TANDJUNG MAMBANG TO TANDJUNG KAROSSO the coast trends 19¾ miles northwestward. Tandjung Rita, 2 miles northwestward of Tandjung Mambang, is a steep, high, wooded point. A noticeable above-water rock lies on the drying reef extending from Tandjung Lingdja, a point 3 miles west-northwestward of Tandjung Rita. In the bight westward of Tandjung Lingdja are two prominent rocks, and at the head is a low plain. About 2¾ miles west-northwestward of Tandjung Lingdja is a cove with a rock close eastward of it on the drying reef.

A SUBMARINE RIDGE, with depths from 3¼ to 6 fathoms, parallels the coast between the mentioned cove and Tandjung Waibuku 4 miles northwestward. Sudden rollers may arise over the ridge. Vessels should keep well offshore so as to pass outside the ridge.

TANDJUNG WAIBUKU rises steeply to a rather bare, slightly rising plain. Tandjung Mbulir, ⅔ mile northwestward of Tandjung Waibuku, consists of high, rocky points with two small sand beaches between. Thence to Tandjung Waiselai, 3 miles north-northwestward, there is sand beach. Loku Belala, a stream entering the sea midway between the two latter points, is rather broad but inaccessible; just inside the high north entrance point is a village.

KODI ROAD lies off Menenga Loku, a village at the mouth of a stream close northward of Tandjung Waiselai. A vessel approaching from westward sees the summit of Wajewa (a 2,411-foot peak some 22 miles eastward of the village) as a small hemisphere above the long, uniform ridge descending to Tandjung Karosso. Nearer the anchorage, the low, sandy Tand-

jung Karosso will be identified, and also the dark wood, Atedalo (sec. 6A–7).

Vessels with local knowledge ANCHOR in 11 to 15 fathoms, sand, with the north entrance point of the mentioned stream in range 065° with the northernmost house of the village. Southerly swell makes it inadvisable to anchor closer in. The tidal current in the road runs at a maximum of ¾ knot parallel to the coast.

TANDJUNG KAROSSO was described in section 6A–1.

PART B. ISLANDS AND STRAITS BETWEEN PULAU KOMODO AND FLORES

6B–1 TORO BATUMONTJONG (8°26′ S., 118°26′ E.), the northwest extremity of Pulau Komodo, is a steep, wooded point. Two bare rocks stand on the drying reef close off the point. Relatively strong currents may be encountered off Toro Batumontjong.

GENERAL REMARKS

6B–2 A general description of Pulau Komodo was given in section 5D–11, with Selat Sape.

PULAU RINTJA, between Pulau Komodo and Flores, is similar in appearance to Pulau Komodo and is likewise uninhabited except for a village on the northeast extremity. The island is mountainous, and densely wooded almost throughout. Doro Ora, the highest elevation, is in the southeast part of Pulau Rintja. It rises 2,225 feet, but, being the highest part of a ridge, is difficult to identify. Doro Radja, in the islands northeast part, is 1,151 feet high and is prominent from north or south; it is a good mark for Selat Molo. The arched east slope of Doro Radja is conspicuous for a row of trees resembling a file of soldiers; the west slope is fairly steep. Doro Karontong, close westward of Doro Radja, has four summits.

Selat Linta, between Pulau Komodo and Pulau Rintja, is, because of strong, imperfectly known currents, little or never used. Three main channels lead among the islands northward of Pulau Rintja to the south and wider portion of the strait.

Selat Molo, between Pulau Rintja and Flores, is, because of currents in its narrowest section, navigable only by small, handy craft. Information on currents is incomplete, and the strait is seldom used.

ANCHORAGES are available on both sides of Selat Linta, and in the south part of Selat Molo.

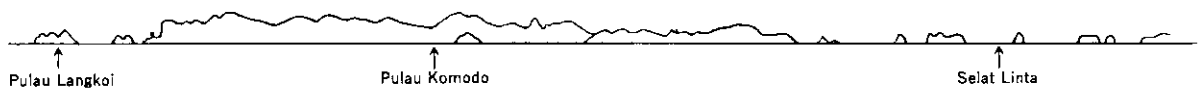
DEPTHS—DANGERS

6B–3 The three channels leading among the islands northward of Pulau Rintja to the southern position of Selat Linta have depths of more than 20 fathoms; numerous dangers lie on either side of the recommended tracks. The south portion of the strait is deep and mainly clear. A branch of this portion of the strait passes between Pulau Rintja and Pulau Padar to westward, and has a least depth of 16 fathoms; shoals on either side, however, narrow this passage to about 325 yards.

Selat Molo has a least navigable depth of 6 fathoms in the fairway, but deeper water can be found.

TIDAL CURRENTS

6B–4 SELAT LINTA.—The tidal currents are semidiurnal, and the influence of the monsoon on the currents is unknown. The northgoing current from Selat Linta divides northward of the islands between Pulau Komodo and Flores, one branch flowing westward past the north side of Pulau Komodo, and the other flowing eastward past the north side of Flores. The division is similar for a south-going current, with the branches flowing westward and eastward, respectively, past the south shore of the two islands. Because of the numerous islets northward of Pulau Rintja, the direction of the current varies in this area; whirlpools, eddies



SELAT LINTA, PULAU LANGKOI 15 MILES, 347°

and rips are found. The current along the east coast of Pulau Komodo has a maximum rate, both north and south, of 6 knots.

In the narrow branch of the south part of Selat Linta (between Pulau Rintja and Pulau Padar) a 9-knot current has been observed. A 4-knot south-going current in the passage has changed to a 4-knot north-going current within the space of ½ hour. A powerful south-going current on the west side of the passage has been noted simultaneously with a powerful north-going current on the east side of the passage.

Further details of the currents in Selat Linta are lacking.

SELAT MOLO.—The tidal currents are semidiurnal, and, though very strong in the narrows, are in other places weaker than the currents in Selat Linta. An exception is the passage between Flores and Gili Motang at the southeast end of the strait.

The maximum rate of current in Selat Molo is unknown, but as an indication a current of more than 5 knots was observed during a period of neap tides. The south-going current set hard into the bight abreast Tukoh Selat Molo, a mid-channel islet at the north end of the narrows. Craft should anchor and await the short period of slack water before attempting to transit the narrows. In no event, however, should the passage be made at spring tides.

PULAU KOMODO (CONTINUED)

6B–5 NORTH COAST.—This coast, known as Batu Montjo, is mountainous, and except for the northwest side of the northwest peninsula, the coast and its points offer no landmarks; the islets off the northeast end of Pulau Komodo are, however, conspicuous. Teluk Gili Lawa, occupying most of the north coast, is flanked on the west by the bay Loho Batuuontjong, and on the east by a smaller, unnamed bay. Loho Batumontjong affords ANCHORAGE in around 30 fathoms, sand. Though the bottom rises evenly, the 20-fathom curve is from 200 to 600 yards offshore.

Teluk Gili Lawa is separated from Loho Batumontjong by a high peninsula which rises from 778 feet near its north end to 1,388 feet 2 miles farther south. The east side of the bay is formed by the islands of Gili Lawalout and Gili Lawadarat. Teluk Gili Lawa has three bights at its head: Loho Sorao on the west; Loho Tala in the middle; and Loho Gebah on the west.

LOHO TALA, the middle bight, is recognizable by its east entrance point which resembles the back of an elephant. The bight has a white sand beach and affords good ANCHORAGE in 22 to 25 fathoms, sand, with the south point of Gili Lawadarat in range 080° with the east entrance point of the bight.

GILI LAWADARAT, the southern island on the east side of Teluk Gili Lawa, is separated from Pulau Komodo by a narrow, 6-fathom passage, and from Gili Lawalaut by a narrower 5-fathom passage. Gili Lawadarat rises to a 659-foot plateau northward of which is lower land with several pointed peaks. The island is covered with alang grass.

GILI LAWALAUT, the northern island, has a low isthmus dividing it into west and east parts. The east part has two peaks of almost equal height (around 545 feet). The west part consists of lower hills with several pointed peaks. The island is covered with alang grass.

TOKO TOKO, about 2 miles northward of the northwest extremity of Gili Lawalaut, is a small islet consisting of lightly vegetated, elevated coral. It has three summits, of which the middle one is 85 feet high. An encircling, submerged reef extends to ⅙ mile westward from the islet. A 1½-fathom coral head lies 1¼ miles southward of Toko Toko, and a rock awash lies ½ mile south-southeastward of the coral head.

The narrow, unnamed hay flanking Teluk Gili Lawa on the east extends 1 mile southwestward to its head. Drying reef fringes the shores of the bay, and midway on the east shore is a drying rock.

EAST COAST OF PULAU KOMODO.—See section 6B–7.

SOUTH COAST OF PULAU KOMODO.—This coast, known as Toro Langkoi, is almost everywhere steep. The sea strikes this coast forcefully, particularly in the Southeast Monsoon, and countless traces of its force are to be noted to a remarkable height. The south coast consists mainly of a large bight, in the east part of which is Pulau Tala. Eastward of the bight the coast tapers in a peninsula to the southeast extremity of Pulau Komodo.

The SOUTHWEST EXTREMITY of Pulau Komodo was described in section 5D–11, with Selat Sape.

PULAU TALA, in the bight mentioned above, lies 600 yards off Pulau Komodo. The island, lightly vegetated, has four summits, the highest rising 981 feet. Except for a gentler slope on the north side, the island is everywhere steep. On the south side is a cove with white sand beach. The cove is identified by an above-water rock at the west entrance point.

ANCHORAGE is afforded in a basin formed between Pulau Tala, the Pulau Komodo shore, and four lightly vegetated rocks about ¾ mile northwestward of the island. Vessels lie quietly here in 23½ fathoms, black sand and coral.

THE PENINSULA forming the southeast extremity of Pulau Komodo is narrow, high and steep. Situated toward its east end is an 823-foot hill shaped like a cheese box. A 194-foot-high rock, fringed with drying reef, lies almost ⅔ mile eastward of the east end of the peninsula, but the intervening channel is clear. A drying reef projects about ⅙ mile seaward from the midsouthern side of the peninsula.

SELAT LINTA

6B–6 SELAT LINTA, connecting Sumba Strait and the Flores Sea, passes along the east side of Pulau Komodo; it is about 20 miles long by its shortest passage. The south entrance of the strait is broad. Numerous islands lie in the north entrance, northward of Pulau Rintja, however, and cause irregular currents; for this reason the strait is little used. What is known of the currents was given in section 6B–4.

The shores of Selat Lintda will be described in the following order: east coast of Pulau Komodo; Pulau Padar; Pulau Rintja; islets northward of Pulau Rintja; and northwest coast of Flores.

PULAU KOMODO (CONTINUED)

6B–7 EAST COAST.—From the unnamed northeast extremity of Pulau Komodo to Toro Kuning 6½ miles southward, the coast is generally steep. The two Bugies Islands, off the northeast extremity, are separated from each other and from Pulau Komodo by clear channels in which, however, the currents are powerful. Both islands have a sharp summit, and both are covered with alang grass.

Westward of the Bugies Islands the coast has occasional sand beaches but southward it is mainly overgrown with mangrove. Southward of the islands numerous reefs front the coast to more than 2 miles offshore. The drying Makassar Reef has its north end nearly 1 mile southward of the Bugies Islands. Gili Makassar, a low islet on the north half of the reef, is overgrown with mangrove and is conspicuous for its light green color.

Tambunan Singkala, southward of Makassar Reef, is a slender, elevated sand and coral bank lying on the east edge of a drying reef. Another large drying reef lies southward of Tambunan Singkala, separated from it by a narrow but clear channel.

MIDCHANNEL DANGERS.—About 1⅓ miles eastward of the north end of Tambunan Singkala is a rock, 20 feet high, surrounded to a short distance by drying reef. About 1⅓ miles south-southwestward of the rock is a dangerous 1¼-fathom coral head which only an experienced eye can distinguish from the turbulence of the channel.

CLEARING MARKS.—Vessels may clear both the above dangers by steering 194° on the

(2599) **INDONESIA—Flores—Linta Strait—Shoal information.**—A depth of 4 fathoms will be charted in 8°36′52″ S., 119°31′06″ E. (approx.).

Note.—An obstruction is reported about 0.162 mile south of Lawa Island (8°36.9′ S., 119°31.6′ E. approx.).

(N.M. 12(090), Djakarta, 1965.)
H.O. Chart **3018.**
H.O. Pub. 72, 1962, page **222.**

(N.M. 18/65.)

883-foot peak marked "pyramid" in the east part of Pulau Padar (sec. 6B–8). Vessels proceeding in the opposite direction will clear by steering with the west side of Pulau Tatawa (sec. 6B–10) in range 021° with the west side of the rock ⅔ mile south-southwestward of Pulau Tatawa.

TORO KUNING is a sharp, rocky point at the end of a gradually sloping mountain spur. Westward of the point is a noticeable hill, 1,040 feet high whose summit consists of several sharp crests. Three above-water rocks lie on a small drying reef about ½ mile south-southeastward of Toro Kuning; the intervening passage is clear.

From Toro Kuning to the southeast end of Pulau Komodo the coast and its off-lying islands are generally steep and rocky. Pulau Punja lies close off Toro Liang, the northeast entrance point of Teluk Slawi, a rather large bay to be described; a 1½-fathom patch lies in the middle of the intervening channel. Pulau Punja rises to 177 feet. A smaller islet lies almost ½ mile southward of it, and the intervening channel is clear. Two small islets lie close off the south side of Pulau Punja, and two rocks awash lie within ⅓ mile of the east side.

ANCHORAGE is afforded off the coastal reef between Toro Kuning and Pulau Punja.

TELUK SLAWI, entered between Toro Liang and Toro Lawi, has a deep northeastern and southwestern bay; between the bays is Lassa, a 98-foot-high islet with a tree at its center. There are no currents in Teluk Slawi, but cross-currents at the entrance must be considered.

SORO LIANG, the northeastern bay of Teluk Slawi, is clear save for a ½-fathom patch on the east side ¾ mile northward of Toro Liang. At the head of this bay is a sand beach. The village of Komodo lies on the southwest shore of Soro Liang, in a position northward of Lassa. Very good ANCHORAGE in 20 fathoms is afforded off the village. The three prominent peaks overlooking the village rise an estimated 2,500 feet.

SORO MASANGGA (SORO GO), the southwestern bay of Teluk Slawi, has one or two islets but is otherwise clear. The shores of the bay are overgrown with mangrove.

TORO LAWI, the rocky southwest entrance point of Teluk Slawi, is the extremity of a peninsula forming the southeast side of Soro Masangga, described above.

Between Toro Lawi and the southeast extremity of Pulau Komodo, the coastal reef is very narrow. Teluk Logo, entered 3 miles south-southwestward of Toro Lawi, affords ANCHORAGE as does Loho Sera the bight at the south end of this coast.

A steep-to islet, 315 feet high, molded in the shape of a sugarloaf, lies 2 miles southward of Toro Lawi. The islet Logo, 344 feet high, lies 2½ miles southwestward of the 315-foot islet and is conspicuous for a clear white stone wall on its northeast side. A small drying reef lies on the west side of the passage between Logo and the Pulau Komodo shore.

The southeast extremity of Pulau Komodo was described in section 6B–5, with the south coast of the island.

PULAU PADAR

6B–8 PULAU PADAR, a mainly reed-covered island, divides the south portion of Selat Linta into a main western channel and a narrow eastern channel. The island has three conspicuous summits of which the most conspicuous is the 883-foot pyramidal hill in the islands east part. A conspicuous cubical rock lies close off the east side of the island, in a position 1 mile eastward of the pyramidal hill.

Several islets lie close off the southwest end of Pulau Padar. The largest of these is Padar-ketjil, 423 feet high, somewhat conical, and sparsely vegetated. A 2¾-fathom shoal head lies almost ⅓ mile eastward of this islet. Sarang, a rock ¾ mile southwestward of Padar-

ketjil, is 95 feet high. It lies on a drying reef on which are smaller above-water rocks; a rock awash, not always visible, lies about 165 yards southward of Padar-ketjil. An unnamed islet lies close eastward of the south extremity of Palau Padar; this islet is well-marked by a conspicuous rock pillar standing on the coastal reef at the south end of the islet.

PULAU PAJUNG lies in midchannel between Pulau Padar and Pulau Rintja, in a position 1½ miles southeastward of the pyramidal hill on Pulau Padar. Pulau Pajung, 118 feet high, is whitish and has some vegetation on its top. It is steep-to, but a drying reef projects a short distance northward.

ANCHORAGE.—The large, deep bay indenting the southeast side of Pulau Pandar has no sunken dangers and affords anchorage free from current. A possibility of anchoring is afforded off the drying reef which nearly fills a bay on the middle of the northwest side of the island.

PULAU RINTJA

6B–9 A general description of Pulau Rintja was given in section 6B–2.

WEST COAST.—Toro Nggikok, the northwest extremity of Pulau Rintja, is steep. Pulau Sarai, close southward of Toro Nggikok, is joined by a drying reef to Pulau Rintja. The island is hilly, whitish-yellow, and is covered with reeds and scrub. A 23-foot shoal head lies westward of Pulau Sarai, in midchannel of the passage between that island and Pulau Padar. Close southeastward of Pulau Sarai a rocky islet lies on a drying reef. Several above-water rocks also lie on the reef, and 200 yards westward of the southernmost rock is a 1½-fathom patch.

Loho Karbau, the large bight northward of Toro Lehokkarbau (Gongge), has a hilly coast descending in a whitish-yellow slope to a narrow sand beach. The islet joined by drying reef to the north entrance point of the bight is bright red.

Teluk Ginggo, entered between Toro Lehokkarbau and Toro Mbarata 1⅔ miles south-southwestward, affords the best ANCHORAGE on the west coast of Pulau Rintja. No current is found in this bay. The shores of Teluk Ginggo are convoluted, and islets lie in the north part. A drying rock, not showing discoloration but sometimes breaking, lies ½ mile westward of Toro Mbarata.

Several narrow bays, suitable only for small craft, indent the coast southward of Toro Mbarata. Sunken and awash rocks, not marked by discoloration but sometimes breaking, lie as much as ¼ mile off Toro Propa, a light-green, rocky point 1⅔ miles south-southwestward of Toro Mbarata. A 3¼-fathom shoal head lies ½ mile northwestward of Toro Natu, a point about 1 mile southward of Toro Propa.

TORO TOA, the southwest extremity of Pulau Rintja, has two above-water rocks plus several rocks awash lying up to 350 yards offshore.

SOUTH COAST OF PULAU RINTJA.—This coast is high and thickly vegetated. In places the coast forms a perpendicular wall; elsewhere are narrow sand beaches.

Loho Uadadasomi (Lehok Uwada Sami), the large bay on the south coast, is fronted in its entirety by the island Nusa Kode, leaving of the bay only a strait with an east and west entrance. This high island is thickly vegetated and has steep sides except at its north point. A drying, stony reef, awash rocks, and an islet lie off this point. About 600 yards westward of the drying reef is a rock awash not marked by breakers or discoloration.

The best ANCHORAGE in Loho Uadadasami is in its east arm, southward of the white sand beach in the eastern bight at the head of the bay. Because the mentioned rock awash in the west arm is invisible at high water, it is best to approach the anchorage through the east arm.

TORO NTA ULAH is the southeast end of Pulau Rintja.

NORTH COAST OF PULAU RINTJA.—From Toro Nggikok the coast trends almost 3

with the east coast of Pulau Komodo) are safely passed when the south point of Pulau Siaba-besar is in range with the peak Mandjaga directly on the northwest coast of Flores.

The second main channel leads from northward by eye between Pulau Siaba-besar and Pulau Mengjatan. There are no dangers on this route except for the rocks off the north coast of Pulau Rintja, westward of the entrance of Loho Kima. These rocks are well cleared to northward by steering 250° with the southeast point of Pulau Pungu-besar in range 070° astern with the saddle of Flores. This range is the lower end of the third main channel.

The third main channel leads from northward, passing eastward of Pulau Kanawa. Steer 145° with the saddle of Pulau Pungu-ketjil in range with the previously mentioned peak Mandjaga. When the southwest peak of Gili Lawalaut (sec. 6B–5) is in range 285° with the south point of Pulau Kanawa, change course to 195°. Avoid the 6-fathom patch in midchannel westward of Pulau Pungu-besar and the 2¾-fathom projection of the southwest point of the same island. When the southwest point of Pulau Pungu-besar is in range 070° astern with the saddle of Flores, steer 250° on that range to the entrance of the broader, south portion of Selat Linta.

The channel between Pulau Padar and Pulau Rintja is not recommended.

FLORES

6B–12 A mountain chain, attaining a height of 7,874 feet in the west part, traverses the middle of Flores from west to east. From both sides of the chain, ridges run northward and southward, forming steep promontories. The west part of the island has no volcanoes but the east part, especially near the east and south coasts, has many volcanoes, some still active. Numerous rivers flow out on the north and south coasts of Flores but at no time are navigable. Light craft can enter the mouths of a few of the rivers at high water.

NORTHWEST COAST.—Toro Waturamba, the northwest extremity of Flores, is the steep and rounded northwest point of a hilly peninsula, which, viewed from east or west, shows two peaks; the south peak rises 709 feet. One mile southwestward of Toro Waturamba is a bare, dark rock, 79 feet high, in the shape of a recumbent lion with head to west. One mile west-southwestward of the rock is a narrow, north and south reef with a least depth of 2½ fathoms.

ISLANDS OFF TORO WATURAMBA.—Pulau Seraja-ketjil lies close northward of the Toro Waturamba peninsula, with a deep channel between it and the peninsula and between it and the next island northward; at times a powerful current runs through these channels. Pulau Seraja-ketjil is hilly but low. The steep-to, drying coastal reef projects almost ½ mile eastward from the island.

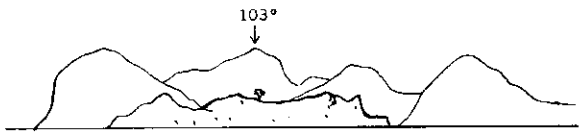
Pulau Seraja-besar, close northward of Pulau Seraja-ketjil, has three round peaks of which the central and highest rises 615 feet. The coast of the island is generally rocky and steep, with occasional sand beaches. On the southwest side is a small village on a narrow plain having some coconut palms. A reef with depths of less than 4 fathoms extends 1 mile from the northeast extremity of Pulau Seraja-besar, and intermittent drying and sunken reefs extend east-southeastward from the east side of the island.

ANCHORAGE.—A large area southeastward of Pulau Seraja-besar with depths from 20 to 30 fathoms, mud and sand, offers a good possibility for anchoring. Protection is afforded against the Southeast Monsoon.

PULAU SABOLAN-BESAR, 1¾ miles westward of Pulau Seraja-besar, has two peaks, the higher of which is 459 feet; viewed from northeast and southwest, the peaks form a saddle. The island is scrub covered, and, except for the southeast extremity where there is a sand beach, has a rocky coast. Pulau Sabolan-ketjil, close northwestward across a

deep channel, is thickly scrub-covered and drops steeply to the sea.

FROM TORO WATURAMBA TO PULAU BOASALA 10⅔ miles south-southwestward, the coast trends south-southwestward forming a large bight in the northern portion. Kukusan, an islet 2¼ miles southward of Toro Waturamba, lies on the protruding edge of the coastal reef. Kukusan is in the shape of a sugarloaf with a sharp, 522-foot peak, and is distinguishable from the coast behind by its darker color. At the head of the small reef and islet encumbered bight southeastward of Kukusan, a sharp-peaked, light-green hill rises 194 feet directly on the coast.



SOUTHEASTERN SUMMIT TENGA ABOVE MIDDLE OF TEBOLON, 103°

TEBOLON, KOKOTOAN, TENGA, AND PULAU BADJO.—These islets, with the exception of Tebolon, are joined by the same drying reef and extend from west to east in the order named. Between Pulau Badjo and the Flores mainland is the channel known as Labuhan Badjo, to be described. Tebolon, the westernmost island, is reed covered and has a coconut plantation on its south side. Two islets lie in the channel between Tebolon and Kokotoan, the next island eastward; powerful currents render this channel useless for navigation. A 2¼-fathom shoal lies ¾ mile northeastward of Tebolon. Ships may clear this shoal on its north side by steering with the 194-foot coastal hill mentioned above open just northward of the islets southward of Kukusan.

Kokotoan is 295 feet high. A dangerous drying rock lies close off the south end of Kokotoan. Tenga is triangular, with a peak at each angle; the easternmost and northernmost peaks are each conspicuous for a yellow stripe. Pulau Badjo is 321 feet high and has a village on its east side facing the village of Labuhanbadjo on the opposite Flores shore. Close southward of Pulau Badjo, on a projection of the drying reef, is Salama, an islet overgrown with mangrove.

6B–13 LABUHAN BADJO.—Labuhan Badjo is properly identified as the channel between Pulau Badjo and the Flores coast. It is of some importance for the shipping place, Labuhanbadjo, located there. The mainly clear bight formed southward of the islets extending westward from Pulau Badjo is known as the bight of Labuhan Badjo. Toro Batuputih, on the south shore of the bight, is 2⅔ miles southwestward of Kokotoan. This steep, protruding, white point, 246 feet high, has a white sand beach on its either side, and is conspicuous. Between the point and the village of Pade, 2⅔ miles northeastward, the shore is planted with coconut palms among which are a few houses. The coast is rather steep both southward and northward of Pade.

DANGERS.—Two detached 3¼-fathom patches lie in the outer part of the bight of Labuhan Badjo: one patch lies a little more than 1 mile southwestward of the south point of Kokotoan, and the other lies 1 mile south-southwestward of the same point. A shoal head, with less than 6 feet of water over it, lies a little more than 1 mile northeastward of Toro Batuputih, in a position ¼ mile off the drying coastal reef.

Two shoals lie in the south entrance of Labuhan Badjo: a 1¼-fathom patch lies in midchannel ⅓ mile southeast-by-southward of Salama (clearing marks for this shoal are given in the paragraph "Directions", below); a 2-fathom shoal lies close off a projection of the drying coastal reef, in a position ⅔ mile east-southeastward of Salama. Both these dangers are seldom visible. A 2¼-fathom shoal lies in midchannel of the north entrance of Labuhan Badjo.

TIDES—CURRENT.—At the village of Labuhanbadjo the tides are mixed but predominantly semidiurnal. The average spring and neap range (semidiurnal) is 4 feet and 2 feet, respectively. The average spring and neap range (diurnal) is 3 feet and ½ foot, respectively. Neither the spring high or low tides of the two systems can coincide.

In the bight of Labuhan Badjo, there is little or no current. The rate of current in Labuhan Badjo never exceeds ½ knot.

HARBOR.—The village of Labuhanbadjo is situated on a sandy point on the east side of Labuhan Badjo; the village at the east end of Pulau Badjo on the opposite side of the channel is also known as Labuhanbadjo. A LIGHT is shown from the stone pier on the south side of the mentioned sandy point when a vessel is expected or when one is lying at anchor; on the north side of the point is a conspicuous, white tomb. A flagstaff stands near the pier but is not seen unless a flag is flying.

ANCHORAGE.—Confined anchorage in 8 to 10 fathoms, greasy mud, is taken in the south entrance of Labuhan Badjo.

DIRECTIONS.—Vessels bound for Labuhan Badjo from northward usually pass westward of the two Sabolan islands and westward of Tebolon. To make this approach, steer 159° on Toro Batuputih, a point easily recognizable as a rule. Hold the course until the sugarloaf of Kukusan is in range about 055° with the northern of the two islets between Tebolon and Kokotoan. Thence steer 112° for the north side of the steep coast just southward of Pade village. When Labuhanbadjo village on Flores is visible between Pulau Badjo and Salama, steer 091° for the north side of the steep coast just northward of Pade village. When past Salama, steer for the anchorage, with the sandy point at Labuhanbadjo in range 021° with the 194-foot, light-green coastal hill about 1 mile northward.

Vessels from westward, passing northward of Pulau Komodo, can intersect the course "Toro Batuputih bearing 159°" mentioned above by passing either northward of or between the reefs which lie northward of Pulau Pungu-ketjil. In the first instance, the 709-foot peak on Toro Waturamba in range 084° with the rock in the shape of a recumbent lion leads northward of the northernmost reef. In the second instance, the southeast peak of Tenga in range 103° with the center of Tebolon leads southward of the outermost reef. On the latter range, the southeast peak (which on this bearing shows a yellow stripe) is held directly above an isolated tree on Tebolon.

Vessels desiring to approach Labuhan Badjo from the easternmost of the three channels of Selat Linta, keep the southwest peak of Gili Lawalaut (sec. 6B–5) in range 285° astern with the south point of Pulau Kanawa. This course leads between Pulau Pungu-ketjil and the reefs northward. The two 3¼-fathom patches in the bight of Labuhan Badjo may then be passed on their south sides, and Labuhan Badjo itself approached on the 021° range described above.

No directions are given for entering or leaving Labuhan Badjo through its north end. A 2¼-fathom shoal in the middle of this channel reduces the channel width to less than 90 yards; over this width the depth is 3¾ fathoms.

6B–14 LABUHANBADJO (BAJO) (8°-29′ S., 119°53′ E.), on both sides of Labuhan Badjo, is a small village of some importance as a place of export. A 130-foot long stone pier, for launches only, is situated on the east side of the channel below the sandy point.

Provisions other than fish and fruit are difficult to obtain; water is unobtainable. Ships call at Labuhanbadjo regularly.

FLORES—NORTHWEST COAST (CONTINUED)

6B–15 PULAU MANDJAGA is joined by drying reef to a point 1 mile west-southwestward of Toro Batuputih (sec. 6B–13). The island appears as a high cape from the west and northwest; its west side is fronted ⅓ mile off by shoals. From Pulau Mandjaga to the nar-

rows of Selat Molo, the coast is mainly marsh with occasional rocky areas.

Pulau Kelor is lightly vegetated and is conspicuous for its 197-foot hill. Mandjaga, a conspicuous, conical peak 1,207 feet high, is situated on the coast 1 mile south-southeastward of Pulau Kelor.

Pulau Gadoh, directly against the coast 2 miles south-southwestward of Pulau Kelor, is marshy except for its rocky west point; boulders lie on the drying reef extending from this point. A 2¾-fathom patch lies ¼ mile northward of the west end of the drying reef. A steep-to, partially drying reef, not always marked by discoloration, lies ⅔ mile north-northeastward of the 2¾-fathom patch.

Boasala, a vegetated islet, has two round peaks, each about 512 feet high; taken together the peaks form a plateau. On the southwest side of the islet is a conspicuous, bare, reddish patch. Nisa Purung, joined to the south side of Boasala by drying reef, is low and overgrown with mangrove.

DIRECTIONS.—Having left the north end of Selat Molo en route to the bight of Labuhan Badjo, pass midway between Boasala and Nusa Pimpe to westward. Steer 068° when the peak, Mandjaga, is in range 068° with a steep, rocky point northward of Pulau Gadoh. This course leads between the 2¾-fathom patch off Pulau Gadoh and the partially drying reef farther northward. Steer 025° when the northwest side of Pulau Kelor is in range 025° with the southern islet between Pulau Tebolon and Pulau Kokotoan, thus passing eastward of the same partially drying reef. The chart is then sufficient guide to the bight of Labuhan Badjo. The reverse courses may be steered if bound for Selat Molo from northward.

The passages among the islets and drying reefs westward of the route described above are not recommended because of the irregular currents in the relatively narrow passages. Strong eddies arise, crisscrossing each other even with a regular current through the channels.

ANCHORAGE possibilities exist almost everywhere off this part of the Flores coast. Because it is freest of current, anchorage is best in the bight formed between Boasala, Pulau Gadoh and the Flores coast. The same applies to the bight at the northeast end of Pulau Rintja which has the village of Rintja at its head. In the more open area westward and northward of Boasala, the current is never so strong that a vessel cannot properly anchor here to await slack water in Selat Molo.

SELAT MOLO

6B–16 SELAT MOLO, connecting Sumba Strait and the Flores Sea, passes along the east coast of Pulau Rintja and the southwest coast of Flores. As previously stated, the strait is only navigable by small, handy craft because of currents in its narrowest section. What is known of these currents was given in section 6B–4.

The major landfall for Selat Molo from the south is Gili Motang (sec. 6B–18), an island in the south entrance. This island has three peaks of which the highest peak, rising 1,447 feet, is quite recognizable for its being somewhat sharp. Doro Ora (sec. 6B–2), the highest elevation of the south part of Pulau Rintja, is difficult to identify. Doro Tumbuh rises 615 feet in the northeast part of Pulau Rintja, a couple of miles southwestward of the mountain complex at that end of the island.

Both shores of the broad, south part of Selat Molo are marked by a succession of relatively sharp, more or less high points generally covered with tall reeds; muddy, mangrove-covered bights lie between. A prominent exception, however, is the bight of Karontong on Pulau Rintja at the entrance of the narrows of Selat Molo. This bight has a white sand beach visible from afar. In general, the bays on either shore afford the possibility of ANCHORAGE

according to their size. All the bays are free of current.

PULAU RINTJA (CONTINUED)

6B–17 EAST COAST.—From the southeast end of Pulau Rintja, the coast trends 4½ miles northward to Toro Tongkir in a succession of small bays. Toro Sie, about 2 miles southward of Toro Tongkir, is conspicuous for its red-brown coloration and for a cave which pierces the point from southwest to northeast. A rock awash, close eastward of the point, is not always marked by breakers. (Toro Sie is called Toro Waingadjah on the H.O. Chart; the latter name is properly applied to the point 1 mile southwestward).

Toro Ama Rau (Sobor), ½ mile north-northeastward of Toro Sie, is conspicuous for a "natural bridge" of rock standing on the extension of the point. Loho Baru, entered between Toro Tongkir and Toro Tanturi 3 miles north-northeastward, affords ANCHORAGE free of current for large vessels. At the end of Sok Oto, the southwestern bight of this bay, coconut palms mark the site of a former settlement.

Pulau Muang lies with its north end 1¼ miles eastward of Toro Tanturi. The island has three peaks, the center peak being low and inconspicuous. A steep-to shoal extends a little more than ½ mile eastward from the mid-eastern side of Pulau Muang. A similar shoal, but with a rock awash at its outer end, extends almost ⅓ mile westward from the north end of the island. A rock awash, never marked by breakers or discoloration, lies ¼ mile southward of Pulau Muang. Nusa Dangka, a small islet ½ mile eastward of Toro Tanturi, is saddle shaped.

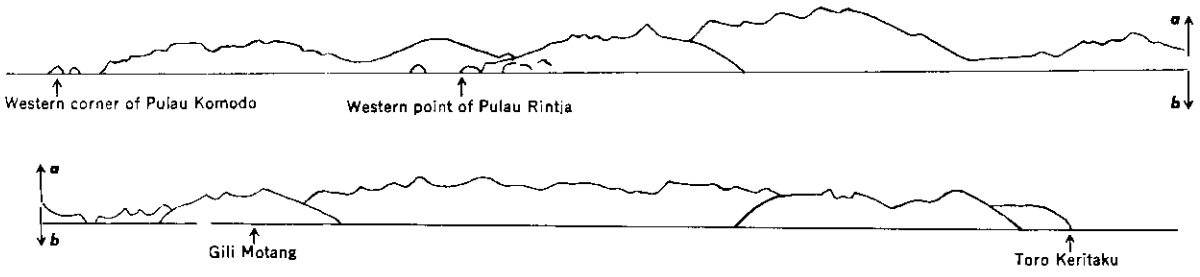
Karontong, a bight between Toro Tanturi and Toro Waitimbang 4 miles northeastward, is marked by its white, sandy beach. The island Rohbong (Reboh), toward the north end of the bight, lies ½ mile offshore. Rohbong has two bare peaks, the higher 276 feet. A rock awash and a 2¾-fathom patch lie between Rohbong and Nusa Dangka to the southwest, and show no discoloration. Nusa Kampas lies close off the north shore of Karontong in a position almost ½ mile northeastward of Rohbong. This islet is low, has rocky shores, and is overgrown with vegetation.

Toro Waitimbang is the southwest entrance point of the narrows of Selat Molo, to be described.

FLORES—SOUTHWEST COAST

6B–18 From Tandjung Keritamese (Toro Kerita) the southwest end of Flores (sec. 6C–1), the coast trends 4¾ miles northwestward to Toro Keritaku (Keritatoi). The peak, Zadelberg, 2½ miles inland, overlooks this coastal stretch. The "saddle" is formed by the blunt south peak, 2,461 feet high, and the sharp north peak, slightly higher.

Gili Motang (Moto), 1¾ miles westward of Toro Keritaku, was briefly described in section 6B–16. This island is overgrown with reeds and trees; its west and south coasts slope steeply toward the sea. A conspicuous tree with white trunk stands on Toro Kembang, the



SOUTH OF SELAT MOLO—WEST CORNER GILI MOTANG 11 MILES, 016°

northeast extremity of Gili Motang, and resembles a prau under sail. The tree is visible from southward and southeastward, and from Selat Molo as far northward as the islet Rohbang, previously described.

A dangerous drying rock lies in midchannel between Toro Kembang and the nearest Flores shore. The rock never shows discoloration and seldom breaks.

Teluk Perapat, a small bay entered 1⅔ miles north-northwestward of Toro Keritaku, is one of the two principal ANCHORAGES on the southwest coast; it is much used by praus. The rocky, yellow-brown, south entrance point of the bay is high and steep.

Sendol, a low islet, lies at the entrance of Teluk Perapat. Within ⅓ mile westward of Sendol is Nusa Baleh with two peaks. The northeast and higher peak of this island is round and rises 354 feet; the other peak is gently conical. Rocks, and a small, saddle-shaped islet, fringe the west side of Nusa Baleh. Sendol, Nusa Baleh and adjacent islet and rocks, all lie in the channel between Gili Motang and the Flores coast.

Teluk Kenupur lies 2 miles northward of Teluk Perapat. A conspicuous rectangular rock about 60 feet high, is the outermost rock fringing the south entrance point of the bay; the north point of the bay drops sheer to the sea. Lehok Rase is entered about 1 mile northward of Teluk Kenupur.

Ini Tengah, 1¼ miles northward of the north entrance point of Lehok Rase, is a rock on the extremity of the drying shore reef. The rock, estimated to be 60 feet high, stands out sharply against the sand beach behind it. The stream, Nanga-lo-oh, enters the sea through the mentioned sand beach.

Toro Ladjar, 1 mile northward of Ini Tengah, is a bare rock, 66 feet high, on a low sandspit. From a distance the point appears as an island. A 2½-fathom patch lies ⅙ mile northward of Toro Ladjar.

Toro Wairii, 1⅓ miles north-northeastward of Toro Ladjar, is the south entrance point of a small bight having the village of Linteh at its head. The village is situated on a small sand beach, and on the mountain slopes behind it are lush growths of bamboo. Because of the limited area of the bight, larger vessels ANCHOR off the bight in 10 fathoms, in the strength of the current. (See remarks on currents in section 6B–4). Smaller vessels find good anchorage within the bight in 6½ to 8 fathoms, sand and coral, with Tukoh Selat Molo, described below, in range 359° with the Flores coast southward of it.

DANGERS.—A 3-fathom reef of sand and stones lies ⅓ mile north-northeastward of Toro Wairii. Within ⅓ mile northward of the reef are patches of 4¼ to 5 fathoms, none marked by discoloration.

NARROWS OF SELAT MOLO.—The narrows are entered between Toro Waitimbang (sec. 6B–17) and the Flores coast close northward of Linteh. The shores are uninhabited and alternate rocky and muddy. Where muddy, mangrove growth occurs; this vegetation predominates on the east shore. Muleng (Mulian), nearly ⅔ mile northward of Toro Waitimbang, consists of two large, midchannel, vegetated rocks lying in close north-south alinement; a ½-fathom shoal extends 175 yards southward from the south rock.

Tukoh Selat Molo, 1⅛ miles northward of Muleng, is a single clump of vegetated rocks. The least width of the narrows (⅙ mile) is found close southward of Tukoh Selat Molo.

DIRECTIONS FOR SELAT MOLO

6B–19 The approach to Selat Molo from southward is easy, for the landfall Gili Motang is readily identifiable. The channel westward of this island, being wide and danger free, is preferable. If the east channel is used, the dangerous drying rock midway between the northeast point of Gili Motang and the Flores

shore must be avoided. To do this, bring the 615-foot peak, Doro Tumbuh, on Pulau Rintja in range 331° with the opening between Nusa Baleh and the saddle-shaped islet close westward: this course leads 650 yards westward of the rock. Then steer northward of Gili Motang.

The narrows of Selat Molo may be navigated by sight but at slack water only. Muleng and Tukoh Selat Molo may be passed on either side. Leaving the narrows, the directions given in section 6B–15 may then be followed.

The remarks on currents in section 6B–4 should be consulted before attempting the above passages.

PART C. FLORES—SOUTH COAST

6C–1 TANDJUNG KERITAMESE (TORO KERITA) (8°52′ S., 119°55′ E.), the southwest end of Flores, is the broad end of a peninsula having several small projections. A hill on the peninsula rises 1,358 feet, and, from a distance east or west, the point appears as an island. The sides of Tandjung Keritamese are rough, bare and steep, and in places precipitous. The peninsula is forested on its upper surface.

COAST—GENERAL

6C–2 The west portion of the south coast of Flores at some distance offshore appears as desolate, freakish mountain land with only occasional coastal lowland. Whole areas are covered only with reeds or thinly with trees. This part of the coast, protected somewhat by the opposite and high island of Sumba, has little sea. At times there is a little swell, increasing as the shelter of Sumba is left.

NUSA MULES (Toren Island) is a prominent landmark for this portion of the south coast. This island is hilly, largely barren, and is conspicuous for the columnar peak in its southwest part. Another landmark is the volcanic cone of Ineri, about 40 miles eastward of Nusa Mules. The cone is strikingly symetrical and stands isolated by valleys and clefts from the peaks northward. The cone is visible from great distances.

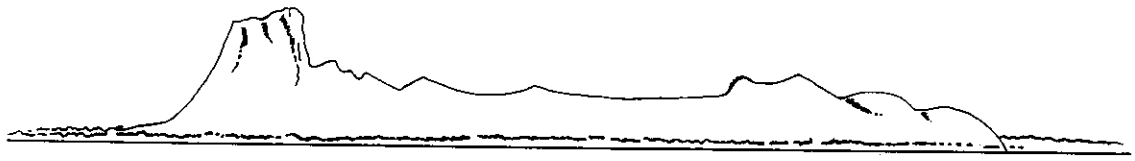
The south coast of Flores eastward of Ineri, seen from the Savu Sea, is a fierce and freakish mountainous region. Its only lower section is the area northeastward of Teluk Paga, about 73 miles eastward of Ineri, where Flores is only 6 to 7 miles wide.

DEPTHS—DANGERS

6C–3 The 100-fathom curve nowhere extends more than 2½ miles off the south coast of Flores, and for the most part is only half that distance offshore. Beyond 100 fathoms the coast is entirely clear. The steep-to Nusa Mules, toward the west end of this coast, and Pulau Ende at the mid-part in the bay of the same name, are the only islands.

CURRENTS—TIDAL CURRENTS

6C–4 The tidal currents along the south coast of Flores are semidiurnal and weak, and approximately parallel the shore. From November to March the west-going current was observed to be more powerful than the east-going current, but never stronger than 1½ knots. A current of 2 to 3 knots, however, may arise in the channel between Nusa Mules and the shore. Currents stronger than 1½ knots



SOUTH COAST OF FLORES, NUSA MULES (TOREN ISLAND) FROM THE SOUTH

are also found at the south entrance of Selat Flores at the east end of the island.

Toward the center of Sumba Strait and the Savu Sea, the monsoonal current must chiefly be reckoned with. As far as is known, the west-going drift is stronger than the east-going. It is probable that there is a regular and constant west-going ocean current in these open areas.

COASTAL FEATURES

6C–5 FROM TANDJUNG KERITAMESE TO TANDJUNG LEMU, 25 miles eastward, the coast gradually changes from a steep, rough, forested area to regular flat ridges covered with reeds. The ridges slope seaward, generally terminating in 65-foot-high bluffs which are often carved by the sea into grottoes and weird projections.

The Amaredo and Seso mountains are prominent. The former has four peaks, the northern and highest reaching 4,468 feet. The latter is a steep, massive, cupola-shaped mountain, 3,578 feet high, rising from the southeast slope of Amaredo.

OFF-LYING ISLAND.—Nusa Mules (Toren Island), the aspect of which is described in section 6C–2, is almost entirely surrounded by a sandy beach, and in a few places fringed by a narrow reef. The channel between Nusa Mules and Flores is deep and clear, but strong currents run through it.

ANCHORAGE can be taken off the northwest side in 25 to 30 fathoms with the southwest peak of Nusa Mules bearing 173°.

TELUK NANGALILI is the wide bight between Tandjung Keritamese and Tandjung Repih. Nangalele, a small village, is located about ½ mile within the mouth of a small river which flows into the head of the bay. A drying bank, about 600 yards wide, fronts the mouth of the river. Tangi, a village built on the seaward side of a 374-foot high steep ridge, is located about 3 miles inland of Nangalele.

ANCHORAGE can be taken in 23½ fathoms off the drying bank fronting the river. During the west monsoon, vessels can anchor in 25 fathoms in the middle of a small bay that indents the east side of the peninsula forming Tandjung Keritamese.

TANDJUNG LEMU (8°51′ S., 120°19′ E.), low and tree covered, is fronted by a sandy beach. Pegunungan Todo (Munti Mountains), a high chain, lie to the northward of Tandjung Lemu.

BETWEEN TANDJUNG LEMU AND TANDJUNG WATU IPU, 18 miles eastward, the coast is slightly indented by a wide bight. The shores of the bight are flat, tree covered, and backed by rising ground. Nangaramu and Mborong are small villages located at the northwest and northeast corners, respectively, of the bight. The coast in the vicinity of the former appears as a high wall fronted by a sandy beach. Mborong can be identified by its proximity to a valley with a river flowing through it.

A chain of mountains, of which Potjo Leok, 5,409 feet high, is the summit, backs the middle part of the bight. Potjo Likang, a round-topped mountain, 7,815 feet high, lies northwestward of Potjo Leok. Potjo Ndeki, an isolated peak covered with vegetation and having a rounded summit, 3,115 feet high, is located eastward of Mborong.

BEACON.—A white pyramidal beacon is located at Mborong.

ANCHORAGES.—Vessels with local knowledge can anchor close to the reef in the small bay where the village of Nangaramu is located. Depths of 39 fathoms are found in the anchorage. Anchorage can also be taken about 400 yards off the village of Mborong, in 20 to 35 fathoms.

COAST.—From Tandjung Watu Ipu, the coast is formed by the foothills of Potjo Ndeki. The coastline is a rugged cliff, about 60 feet high, usually fronted by a sandy beach. Tand-

jung Jarakeh is a prominent white rocky point. Kumbah, located 2 miles northward of the latter point, is the remains of an old crater. A rounded peak, covered with vegetation, is located about 1¼ miles northeastward of the crater.

TELUK AIMERE

6C–6 TELUK AIMERE, entered between Toro Atuoto (Tandjung Saukemeh) and Tandjung Wai Waru, a low point, about 6 miles eastward, is deep throughout. The former point is steep, crumbling, and strikingly white. The west side of the bay is steep and rocky. The land on the north side of the bay rises gradually and is very fertile. A long chain of mountains backs the east shore of the bay. Lobu Baru, located at the north end of the chain in a position about 9¼ miles north-northeastward of Tandjung Wai Waru, is saddle shaped. Watu Ata is saddle shaped and 5,315 feet high. Watu Atagae, similar in shape, rises to a height of 5,517 feet. Langa mountains, located eastward of the head of the bay, are steep, rocky, and have three summits; the highest is 4,500 feet.

Ineri, separated from Langa mountains to northward by a valley, is a conical volcano, 7,485 feet high, and very prominent. Rice fields are found on the slopes of the volcano.

CURRENTS.—There is little or no current in the middle of the bay, but strong currents are sometimes found along the shores.

ANCHORAGE can be taken off the mouth of the Wai Moko, at the head of the bay, or off Aimere, located on the northeast shore of the bay. Vessels can anchor in 27 fathoms off Aimere with the customs shed bearing 059° and the point to southward bearing 150°.

AIMERE can be identified by the wooden customs shed with a zinc roof. Aimere is connected to the radio station at Ende by telegraph.

COASTAL FEATURES (CONTINUED)

6C–7 COAST.—From Tandjung Wai Waru the coast is formed by the base of Ineri to Ngaru Bere, the south point of Flores. Between the latter point and Ngulu Tangi (Ngaru Dai), the coast forms a wide bight backed by steep mountains, the slopes of which are cultivated. Tandjung Boba is cliffy and has a large round-topped tree eastward of it. Ngalu (Tandjung) Rano is a conspicuous perpendicular rocky point with a sandy beach eastward of it. Tandjung Mbawa, 3 miles east-northeastward of Tandjung Rano, is rocky and rather prominent. Ambulombo (Amboe Romboe) is very prominent because of its wide base and particularly because of its large crater and broad bare peak. It rises to a height of 7,054 feet and dominates the whole of the bight.

TELUK ENDE AND TELUK IPI

6C–8 TELUK ENDE is surrounded by hilly land with higher mountains lying somewhat farther inland. The peninsula, separating this bay from Teluk Api, has an active volcano in its south part. The volcano attains a height of 2,161 feet, is covered with sulphur and ashes from frequent eruptions, and has an active crater on its south side.

The massive Ngaru (Ngakroe) Tangi has steep spurs and forms the west side of the larger bay. The spurs rise steeply from the sea to a height of about 4,600 feet. A prominent mass of grass-covered rocks stands near the coast, to the southeastward of Ngaru Tangi. Keri Doa, 4,173 feet high and saddle shaped, lies northward of Ngaru Tangi.

The north shore of Teluk Ende is of limestone formation and has many caves and hollows, with some prominent white and gray patches. ENDE, a village of some importance, lies in the northeast corner of the bay. Kerimana, 896 feet high and having a sharp summit, stands close to the coast in a position 1¼ miles northwestward of the village. Kingo, 1,521 feet high,

and Wonge, 2,136 feet high, stand within 2 miles northeastward of Ende.

PUI, a peak 1,290 feet high, stands on the west side of Teluk Ipi. The land, northeastward of Pui, is fronted by a sandy beach and is rather flat. The village of IPI, backed by a row of prominent trees, is located in the northwest corner of Teluk Ipi.

ISLANDS.—PULAU ENDE has 2 summits joined by a narrow ridge. The southern and higher summit is 1,549 feet high and prominent. The island is well cultivated and has several villages. A small islet lies ¼ mile off the north shore of Teluk Ipi.

LIGHT.—A light is shown from an iron post, 16 feet high, at the head of the pier at Ende.

ANCHORAGES.—Both bays are very deep. Anchorage can be taken about ½ mile offshore in 22 to 25 fathoms with Wonge in range with Tandjung Batu Ladja, and the eastern of two gray patches, westward of Nangapandan village, bearing 351°. (Tandjung Batu Ladja is located 3 miles north-northeastward of the north end of Pulau Ende). Anchorage can also be taken off Ende in 30 to 36 fathoms in a position about 300 yards from the shore. Heavy breakers occur at Ende during the east monsoon.

Anchorage can be taken in Teluk Ipi during the west monsoon. Vessels can anchor off Ipi village with the northern of the beforementioned trees in range with Kerimana hill and a tree covered point to southward in range with the southwest point of the bay, bearing 185°. A vessel will lie here in about 30 fathoms, ¼ mile from shore. Care must be taken not to anchor too close to the coastal reef to northward.

6C–9 ENDE (8°50′ S., 121°39′ E.) is the seat of a government official. The village can be recognized by a white building with a dark roof and by a white building with a red roof, both on the foreshore westward of the pier.

PIER.—A pier (reported to be in poor condition), 540 feet long and having a depth of 16½ feet at its head, is located at Ende. There are two small cranes on the pier.

COMMUNICATIONS.—A radio station with 2 masts stands about ¼ mile northeastward of the pier. Ende is a port of call for interisland ships.

MEDICAL.—A doctor is located at Ende.

6C–10 COAST.—Eastward of Teluk Ipi the coast is high and steep. It is formed by the spurs of the sharp mountain ridges extending from Keli Bara (Lapi Doro), 5,680 feet high, the remains of a volcano, the slopes of which are under cultivation. A prominent village stands on a small plateau near the coast in a position about 4 miles eastward of Loo Ronga, a rock lying close offshore. A river flows into the sea thru a conspicuous eleft, in a position about 2 miles westward of the above rock.

TELUK MBULI, an open bight backed by a broad, well-cultivated strip of land fronting the mountains of the interior, is very deep. The east point of the bay is formed by a dome-shaped hill, 2,312 feet high. The point itself is of reddish color. Some dangers lie up to ¾ mile offshore eastward of the point.

COAST.—Ngaru Itju Kate is a cliffy, perforated point. Liu village is located a short distance inland on a small river which flows out just westward of the point. A conspicuous black rock lies 200 yards off the mouth of the river. A rocky islet lies in a small bight just eastward of the cliffy point. A prominent light-green hill, 1,014 feet high, stands close to the coast at the head of this bight.

TELUK PAGA is backed by Gunung Kimangboleng which has a conspicuous flat summit, 4,744 feet high. Two large villages stand on the west side of the bay, about 1 mile northeastward of Tandjung Ulu Wiro. The point is located about 2 miles northeastward of Ngaru Itju Kate. Reefs front the villages to a distance of ½ mile. LELA, a village consisting of a few

houses and a mission, is located in the northeast corner of the bay.

ANCHORAGE can be taken off Lela in 32 fathoms, with the road to the mission buildings just open, and with Gunung Dolowai bearing about 076°. This mountain, which has a wooded summit, is located about 3⅓ miles eastward of the village.

COAST.—SIKA BESAR (8°45′ S., 122°12′ E.) and TANDJUNG WOKAR-WUTUN form a long, flat plain, backed by steep mountains. A village with a church stands on this plain. The spire and zinc roof of the church can be seen from the offing. There are a number of sheds near the coast and a reef extends about ¼ mile offshore. Eastward of the latter point, the mountains rise steeply from the sea. Ngaru Baluk is a steep rocky point, about 260 feet high. Pegunungan Djele backs this point. This range was formed by a large crater, broken down on the south side and which contains a cone of ashes. To the eastward of Ngaru Baluk, the land rises gradually to the Pegunungan Dodo.

Between Ngaru Baluk and Teping-wutun (Ngaru Teping), a steep rocky point, the coast is slightly indented. ANCHORAGE can be taken in the west and middle parts of this bight in moderate depths. Anchorage can also be taken in 30 to 35 fathoms, about ½ mile eastward of this point with Ngaru Baluk just shut in behind it.

Eastward of Teping-wutun the coast is steep and inaccessible, rising inland to Egon, an active volcano which has a prominent cone, 5,587 feet high, on the north side of the crater.

Ngaru Kelahi is the extremity of a steep mountain ridge. It can be recognized from the offing by two vertical patches of white rocks, one above the other. The upper patch is somewhat more inland. The bight between this point and Tandjung Kuar is for the most part bordered by a sandy beach. ANCHORAGE can be taken as convenient. The latter point is the extremity of a spur from the steep Pegunungan Karkonata. A rock, shaped like a sugar loaf, is separated from the point by a narrow cleft. A prominent white patch, divided into two parts by a black vertical stripe, is on the east side of the point.

DANGER.—An oblong reef, with a least depth of 5 feet, lies westward of Tandjung Tuwak-wutun (Tuak) and about 1 mile offshore.

6C–11 TANDJUNG TUWAK-WUTUN is rocky and has a very prominent bare hill, 453 feet high, on it. The coast eastward, forming the southeast end of Flores, is formed by Ili Lewotobi-Perempuan, two active volcanoes. The higher rises to 5,589 feet. To westward of these is Gunung Darolung, 4,744 feet high.

NOTE.—The east coast of Flores is described in Part E.

PART D. FLORES—NORTH COAST

6D–1 TORO WATURAMBA (8°26′ S., 119°52′ E.), the northwest extremity of Flores, is the steep and rounded northwest point of a hilly peninsula, which, viewed from east or west, shows two peaks; the south peak rises 709 feet. The islands, northward of, and the coast, southward of, this point, are described in section 6B–12.

COAST—GENERAL

6D–2 THE NORTH COAST of Flores is very irregular with numerous projecting points and inlets. The coast for the most part, rises steeply to the high mountains of the interior. There are a few plains, such as the large plain of Lapeh and the smaller plain backing Teluk Maumere. The central mountains of Flores can be seen far inland, almost to the foot of Ineri (sec. 6C–6) and Ambulombo (sec. 6C–7), from abreast the former plain. The most prominent landmark is, when viewed from northeastward or northwestward, Tandjung (Toro) Besi foothills, on which there is a 1,283-foot-high plateau

with a vertical section on the seaward side. There are few settlements, the most important of which are in Teluk Reo, Labuhan Pota, and in Teluk Maumere. Many of the bays afford good anchorage during one of the monsoons, but few afford shelter from both monsoons.

DEPTHS—DANGERS

6D–3 Detached dangers lie up to 6 miles off the projecting points. All of these dangers lie within the 100-fathom curve, except Gosong Boni (8°22′ S., 122°14′ E.) and Angelica Shoal, the former is an atoll with a depth in the lagoon of 47 fathoms. The lagoon has a diameter of nearly ¾ mile and can be entered through an opening in the reef on the east side about 300 yards wide. The two south points of Pulau Pamana-besar (sec. 6D–4) in range lead northward of this atoll.

OFFLYING SHOAL.—ANGELICA SHOAL (7°46′ S., 122°18′ E.) is an atoll with two basins, and is plainly marked by discoloration. The reef dividing the lagoon into two parts runs in a west-northwest and opposite direction and has some very conspicuous, large brown rocks in the middle, which dry about 2½ feet. On the outer edge of the outside reef there are some drying patches of coral. A fish trap is laid about ¾ mile off the northwest end of Angelica Shoal.

OFFLYING ISLANDS

6D–4 PULAU PALOE (8°20′ S., 121°43′ E.), 2,915 feet high, is surrounded by great depths, the 100-fathom curve lying nowhere more than 600 yards offshore. The island has been reported (1957) to be a good radar target from a distance of 26 miles. There is a prominent, steep mountain ridge on the northwest side of the island. Labuan Bokko, a small open bight, indents the northwest coast, just southward of this ridge. There are several villages; Mage, the largest, stands near the north coast. Small vessels with local knowledge can ANCHOR off the north coast, just northwestward of Mage, in 30 to 40 fathoms about 300 yards from shore and 200 yards from the coastal reef. Such vessels can also anchor in the same depth in Labuan Bokko, about 200 yards from shore. CAUTION is required as the bottom is steep. It is advisable to run a hawser to the shore.

PULAU SUNKUN (SOEKOER) (8°07′ S., 122°08′ E.) has a conspicuous summit, 866 feet high, on its northeast side. On the west side the peak slopes steeply to a salt water lake which is enclosed by a low ridge. The peak near the southwest end of the island is 286 feet high, northward of which the land is low and flat. There is a sand strip on the west side of the island. A rock, with a lone tree on it, stands about 400 yards off the east shore of the island.

A narrow ridge, with depths of 14 to 26 fathoms, extends about ¾ mile northward from the west part of the island. ANCHORAGE can be taken, in fair weather, with the 286-foot hill bearing from 179° to 182° and the summit bearing from 110° to 113°.

PULAU PAMANA-BESAR AND PULAU PAMANA-KETJIL lie close together on the same reef, to the northward of Teluk Maumere. The larger island has two summits, 334 and 328 feet high, with a sandy plain between. The smaller island rises to a height of 246 feet. A small bay, where fairly secure ANCHORAGE may be taken in 25 to 30 fathoms, indents the south side of the larger island. Vessels having local knowledge anchor about midway on the line joining the entrance points of the bay. Just outside this line is a 7½-fathom patch.

CAUTION

6D–5 MAGNETIC DISTURBANCE.—A magnetic disturbance, causing violent oscillation of the compass card, was reported (1924) in a postion northward and northeastward of Tandjung Kopondei along the parallel of 8°00′ S., between the meridians of 122°54′ E., and 123°15′ E.

CURRENTS

6D–6 The currents off the north coast of Flores usually follow the direction of the prevailing monsoon at a rate of about 1 knot.

COASTAL FEATURES

6D–7 BETWEEN TANDJUNG WATURAMBA (sec. 6D–1) AND TANDJUNG SERAENARA (PETA BARI), the coast is indented by a number of bays and inlets. The 100-fathom curve, which lies 7 miles off the former point, closes the coast in the vicinity of the latter point. Pulau Seraja-besar and Pulau Seraja-ketjil, which lie northward of the former point, have been discribed in section 6B–12. The east side of the peninsula, of which Tandjung Waturamba is the northwest extremity, is irregular with reefs and detached dangers extending up to 1¼ miles off the salient points.

ISLANDS AND DANGERS.—Nusa Longgo, a low, stoney and wooded island, lies just northward of Tandjung Tjarmi. Its shores are marshy. Reefs connect the southwest side of the island to the point and also extend up to 1⅖ miles northwestward from the west side of the island. A chain of reefs, separated from the reef fringing Nusa Longgo by the deep channel leading to Teluk Terang, extends 2½ miles northward from Toro Lehok Tjamba and thence 8 miles westward, just within the 100-fathom curve. The westernmost of these dangers, a reef with a depth of 3½ fathoms, lies with the center of Pulau Sabolan-ketjil (sec. 6B–10) in range with the northwest point of Pulau Seraja-besar, bearing 252°.

Vesuvious Rock, a small patch of sand, coral, and stones, always awash, stands on the beforementioned chain in a position 2 miles north-northeastward of Pulau Sababi (Gili Bodo). A drying rock lies on the chain in position about 1,600 yards south-southeastward of the rock.

Pulau Sababi (Gili Bodo), 448 feet high, lies close northward of Toro Pontianah, and is quite prominent from both eastward and westward. The island is grass covered and has a few trees on it.

Toko Sari, a small islet 58 feet high, lies on the coastal reef in a position 1,200 yards to the northeastward of Toro Lehok Tjamba. The islet is covered with vegetation and contrasts darkly with the coast behind it.

Numerous reefs and dangers lie in the approaches to Telok Rangko and Telok Boleng, southward of an imaginary line joining the north end of Pulau Sababi and the south end of Pulau Seraja-besar.

TELUK RANGKO AND TELUK BOLENG, separated from each other by a steep point, 615 feet high, are of little navigational importance due to the dangers in their approaches. Vessels can, however, anchor in the area between Pulau Seraja-besar and the before-mentioned chain of reefs. Ranko village, consisting of two sections fully 1 mile apart, stands on the southeast side of the former bay. The mountains southward of the village are wooded.

A chain of mountains, curving southward from Toro Pontianah, terminates in a flat summit, 2,515 feet high to the southward of the head of Teluk Boleng.

Pulau Boleng, a small islet, is located in the middle of Teluk Boleng. A small village stands on the south side of the islet.

6D–8 TELUK TERANG, the entrance of which is 600 yards wide, is deep and clear in its outer part. The head of the bay is marshy and is fronted by a mudbank. The entrance is between the reefs extending northward from Toro Tjarmi (8°21′ S., 120°07′ E.), on the east side, and those extending northward from Toro Lehok Tjamba. The latter point is located about 3⅓ miles eastward of Toro Pontianah. Two steep, reef-fringed points project from the west side of the bay, thereby forming 3 inlets which are of little importance to shipping. Vessels can ANCHOR in the outer part of the

bay in convenient depths over a bottom of greasy mud.

TELUK LEVILIA AND TELUK BARI.—Teluk Levilia lies between Nusa Longgo and the coast to the southward and southeastward. The entrance is 800 yards wide between the reef fronting the northeast side of Nusa Longgo and the reef fronting the coast to the eastward. The south shore of the bay is swampy and the east shore is wooded. Toro Batu Londa, located nearly 2 miles east-northeastward of the east end of Nusa Longgo, is steep on its west side and is of a bright white color. A small patch of stones and coral stands on the edge of the reef that fringes Toro Batu Londa. This patch is always above water. A small village is located about 1¾ miles southwestward of the point.

TELUK BARI, entered between Toro Batu Londa and a reef-fringed point 1 mile southwestward, is clear but is exposed to northwesterly winds. Bari is a small village at the head of the bay. Provisions such as bananas, eggs, and chickens can be obtained.

ANCHORAGES.—Vessels can anchor, as convenient, in Teluk Levilia. A good anchorage is in 22 fathoms, mud, southward of the east point of Nusa Longgo. Small vessels can anchor in 20 to 22 fathoms, midway between the entrance points of Teluk Bari.

6D–9 BETWEEN TANDJUNG SERAENARU (PETA BARI) 8°18′ S., 120°12′ E. AND TANDJUNG BESI, the coast is fringed by a narrow reef and backed by high mountains. The former point is low and sandy. It has a white sandy patch, always above water, on the reef westward of it. A sharp peak, very prominent from northwestward, is 1,983 feet high and stands about 4½ miles southeastward of the point.

Saddle Mountain, when viewed from westward of Toro Besi, appears as an isolated peak. From a position off Tandjung Kurungbadja, it appears comb shaped with 2 sharp peaks.

Between Tandjung Seraenaru and Toro Gumpul, a steep point, 200 feet high, the coast is slightly indented by LEHOK BOLO, a reef-fringed bight, into the head of which a small river flows. The west part of the bight is marshy and the east part is fronted by a sandy beach. The coast between the latter point and Tandjung Besi is in many places covered with mangroves, with narrow mountain spurs rising steeply from the sea.

TELUK REO AND TELUK LINGGEH

6D–10 TANDJUNG BESI is the extremity of a very prominent plateau rising to a height of 1,285 feet. Between this point and Tandjung Kurungbadja, the coast is indented by Teluk Reo and Teluk Linggeh. Toro Lubu, a low and sandy point, has a high house standing amid some banana trees on it. It separates the two bays. A saddle mountain, 4,178 feet high and located 10 miles southward of the head of Teluk Reo, is a prominent landmark. A round-topped hill, 674 feet high, is located ⅗ mile southward of Tandjung Kurungbadja.

TELUK REO.—The west shore of the bay is backed by the before-mentioned plateau and fronted by a white sandy beach. Toro Kedindi is a low point located 2½ miles south-southeastward of Tandjung Besi. TELUK KEDINDI, a small reef-fringed bight, lies southward of this point. The shores of the bight and of the head of the bay are flat. Doro Toi, located 3 miles eastward of Toro Kedindi, is a steep point with a hillock, 138 feet high, on it. The shore of the bay, eastward of this point is low and marshy.

NANGA REO, fronted by a sandy bar, flows into the southeast corner of the bay. The valley of the river and some large dead trees on the left bank are visible from the offing. REO, the seat of a government official, stands some distance upriver. Horses, poultry, and fruit are exported. Teluk Kedindi serves as the port for the village.

NAVIGATIONAL AIDS.—A white beacon, with a triangular daymark, stands at the root of the pier in Teluk Kedindi. A black and white beacon, with a quadrangular daymark, is located 35 yards southwestward of the front beacon. These beacons, which are lighted when vessels are entering or leaving Teluk Kedindi, in range 222°, lead to the pier.

ANCHORAGE can be taken in 24 fathoms, mud, southeastward of Toro Kedindi. Small vessels can anchor eastward of the mouth of the Nanga Reo; the 3-fathom curve lies only 400 yards from shore.

PIER.—A stone pier, 262 feet long and having a flagstaff at its inner end, is located in Teluk Kedindi. Small interisland vessels call here.

TELUK LINGGEH, entered between Toro Lubu and Tandjung Kurungbadja, affords the best anchorage for large vessels on this part of the coast. The head of the bay is low, marshy, and intersected by several small rivers. Vessels can anchor in 25 to 30 fathoms, mud, in the southeast part of the bay.

COASTAL FEATURES (CONTINUED)

6D–11 TANDJUNG KURUNGBADJA (8°15′ S., 120°36′ E.) is steep and rocky. Between this point and Toro Padang, the coast is steep and is backed by high mountains.

LABUHAN POTA, entered between Toro Barat and Toro Lari, low points, is a small open bay. A sandy beach, intersected by several streams, forms the shores of the bay. These streams dry during the east monsoon. POTA, a village backed by a prominent hillock, is located on the east side of the bay, near the mouth of the Nanga Pota, a shallow stream. Two round-topped hills, about 138 feet high, are located southward of the village. When seen from northwestward, they stand out clearly against the hinterland. Some provisions can be obtained at the village. Small vessels can ANCHOR in the west part of the bay, southeastward of Tandjung Barat.

TORO ROTO, a broad mountain spur, can be identified by its light-brown color. A sharp peak, 2,080 feet high, is located about 5 miles southeastward of Toro Roto. Elephant Peak, 3,692 feet high and somewhat resembling an elephant, is located 8 miles southward of the same point.

Teluk Nanga Loho, a small inlet with marshy shores, has an entrance width of 100 yards and an entrance depth of 6 fathoms.

Labuhan Kulambu, a narrow inlet, has an entrance width of 200 yards and an entrance depth of 16 fathoms. It indents the coast to a distance of 1½ miles. An isolated hill, 140 feet high, stands near the coast between these two inlets.

TELUK DAMU AND TELUK RIUNG

6D–12 TORO PADANG, when viewed from westward, appears as a gradually sloping landspit. When viewed from eastward it appears as a high sloping point. Pulau Untelue, a large, hilly, irregular shaped island, lies close off the coast to the southeastward of the point. Reefs and dangers extend a little over 1 mile northward from the north extremities of the island. Pulau Borong, Pulau Dua, and an unnamed islet, stand on this foul ground.

TELUK DAMU.—Southward of Toro Padang, the coast is reef-fringed to a distance of 800 yards, leaving a deep and clear channel between it and the reefs and dangers extending northward from Pulau Untelue. Vessels can find sheltered ANCHORAGE in Teluk Damu, especially during the West Monsoon. A narrow, winding, and shoal channel, which leads southward of Pulau Untelue, connects Teluk Damu with Teluk Riung.

TELUK RIUNG is a large reef-strewn bay lying between the east side of Pulau Untelue and Tandjung Toreing. All dangers are contained within the 100-fathom curve which lies

up to 3 miles offshore. The shores of the bay are irregular and reef fringed to a distance of 1 mile. RIUNG village stands on the crest of a hill, 1,850 feet high, about 2¼ miles inland.

ISLANDS AND DANGERS.—Reefs and shoals extend up to 1½ miles east-northeastward and eastward from Tandjung Simpang Sua, the northeast extremity of Pulau Untelue. Batu Kolong lies on the reef that fringes the east end of the island to a distance of ½ mile.

Pulau Ruton, 148 feet high, and Pulau Tangil, 108 feet high, lie on a circular reef. The west edge of this reef lies about 1¼ miles eastward of the reef that fringes the east end of Pulau Untelue. Some detached shoals lie up to ¾ mile northwestward of Pulau Ruton. West Bampa, 172 feet high, and East Bampa, 177 feet high, lie on a triangular-shaped drying reef, located just eastward of Pulau Tangil. Pulau Tauer, 89 feet high, is a reef-fringed islet lying ¾ miles eastward of East Bampa. A chain of reefs lies parallel with the 100-fathom curve to the northward of the above island. A detached reef lies about 1,800 yards southwestward of Pulau Tangil.

Pulau Pata, located 1⅖ miles south-southeastward of the east end of Pulau Untelue, is conical and has a few trees on its summit. Pulau Gong is small in extent and has a prominent rocky point on each side. It lies on the north edge of the reef that extends over ½ mile east-northeastward from Pulau Nelo. The latter islet lies about ½ mile northwestward of Pulau Pata. Pulau Babajei, connected to the shore by a reef, lies midway between Pulau Nelo and Pulau Pata. Lainjawa, a very small islet, lies about 270 yards eastward of Pulau Nelo. Pulau Sui, a round rock covered with undergrowth, stands close offshore in position about 1½ miles eastward of Pulau Pata. The reefs extending east-northeastward from Pulau Nelo and northward from Pulau Pata show good discoloration.

ANCHORAGE—DIRECTIONS.—Vessels approaching from northwestward should steer 146° for Pulau Ruton, taking care not to open the south side of this island from the north side of Pula Tangil. When Pulau Pata bears 201° steer in on that course (on this bearing Pulau Pata is a little to the left of the ridge on which the village of Riung stands) until Toro Padang is hidden behind Tandjung Simpang Sua, when anchorage can be taken as convenient.

Vessels from eastward must keep Pulau Dua, located ⅓ mile northward of Tandjung Simpang Sua, bearing less than 270° until Pulau Pata bears 201°. Thence the above directions should be followed.

Small vessels with local knowledge can anchor in 15 fathoms, mud, in the area between the reefs surrounding Pulau Nelo, Pulau Babajei and Pulau Pata.

COASTAL FEATURES (CONTINUED)

6D–13 TANDJUNG TOREING (8°25′ S., 121°09′ E.) is the relatively low, rocky end of a narrow hillcrest sloping from southeastward to northwestward. Pulau Pangassar, a rocky islet, lies about ½ mile northwestward of the point.

BETWEEN TANDJUNG TOREING AND NGALU NBAI, the coast is low for the most part and covered with trees. Spurs come down from Gunung Wanka, a prominent mountain, 3,637 feet high, the summit of a high ridge running to the northwestward. A prominent rocky, rugged hill, 827 feet high, stands near the coast in a position about 4½ miles westward of Ngalu Nbai.

DEPTHS.—The 100-fathom curve parallels the coast at a distance of 3 miles. A long ridge of reefs, which continues to the eastward as far as Tandjung Lohakola, 18½ miles eastward, lies close within this curve. An unmarked CHANNEL, suitable only for small vessels with local knowledge, leads between this reef and the coastal reef. The best passage through the outer reefs is westward of Pasir Rita with the

827-foot hill located 4½ miles westward of Ngalu Nbai bearing 231°. Pasir Rita is a large sand bank, surrounded by a drying reef, and having some low trees on it.

BETWEEN NGALU NBAI AND TANDJUNG LAMBO, the coast is flat and is fronted by a sand strip. Inland is the extensive plain of Lapeh, described in section 6D–2. Nanga Koli, a rather large river which forms a delta just southward of the former point, flows through this plain. A small hill, 135 feet high and having a hot spring near it, stands close to the shore in a position about 2 miles south-southeastward of the same point.

BAYS BETWEEN TANDJUNG LAMBO AND TANDJUNG KARTERBILEH

6D–14 The coast, eastward of Tandjung Lambo, becomes rocky, irregular, and backed by high mountains. Several deep bays, separated by prominent points, indent the coast between the above point and Tandjung Karterbileh. There is usually a strip of marshy land at the head of these bays.

DEPTHS—DANGERS.—The 100-fathom curve fronts the projecting points to a distance of 2½ miles. Just within this curve lies the before-mentioned chain of reefs. Other dangers lie in the immediate approaches to, and within, these bays.

TELUK TODO, a small exposed bight, is entered between a conspicuous white limestone point, located 1½ miles east-southeastward of Tandjung Lambo, and Tandjung Todo, 3½ miles east by northward. The latter point is steep and rocky. A mountain with a broad summit, 1,344 feet high, stands about 1 mile southward of this point. A sharp peak, 1,819 feet high, is located 2¼ miles south-southeastward of the same point.

The shores of the bay are marshy and covered with mangroves. There are a few rocky points with sandy beaches between. The head of the bay consists of a marshy lagoon, with a steep, rocky islet lying in the entrance. Two large rocks lie on the drying reef fringing the west entrance point of the bay.

ANCHORAGE—DIRECTIONS.—Teluk Todo affords fair anchorage, especially during the west monsoon, as it is somewhat protected from the sea by numerous reefs. The anchorage is difficult to reach and should be attempted only by small vessels with local knowledge and then under only the most favorable of conditions. Such vessels should bring the 1,819-foot, sharp peak on a 158° bearing, ahead, showing just to the left of the 1,344-foot, round summit. The rear summit of this mark soon disappears, even before the vessel is between the outer reefs. However, by that time a new mark can be chosen. Continue on the 158° course until the conspicuous white limestone point bears 236°. Then steer 236° until the rocky islet lying in the entrance bears 199° then steer 199° and anchor within ⅗ or ⅘ mile of it.

TELUK SINDEH (TJIENDEH), entered between Tandjung Sindeh, located 2½ miles, east-southeastward of Tandjung Todo, and Tandjung Kaburia, nearly 2 miles southeastward, affords anchorage during both monsoons. The latter point is made prominent by a projecting point of white limestone on its west side. Pulau Sindeh (Tjiendeh), a rocky islet, 300 feet high, is separated from Tandjung Sindeh by a narrow passage. Reefs and dangers lie within 1½ miles north-northwestward of Tandjung Kaburia. The channel into the inner part of the bay leads westward of these dangers.

ANCHORAGE—DIRECTIONS.—The best passage through the outer reefs is eastward of a drying sandbank, located 2⅘ miles north by eastward of Pulau Sindeh. A course of 174° should be steered with the white point on the west side of Tandjung Kaburia ahead. When the north side of Pulau Sindeh is in range with Tandjung Todo, the course should be altered to the southwestward so as to pass in midchannel between Tandjung Sindeh and the reefs and

dangers lying in the middle of the entrance of the bay.

TELUK GOMO AND TELUK KOROKAILI, entered between Tandjung Kaburia and Tandjung Korokaili, are reef-fringed and foul.

TELUK SOPU, entered between Tandjung Korokaili and a point located 1 mile west-southwestward of Tandjung Karterbileh, is wide at the entrance, but narrows to about ½ mile at the head. The east shore of the bay is reef fringed, the reef extending ½ mile offshore to the eastward of the former point. A detached reef, with a depth of 1 fathom, lies about ⅔ mile off the east shore of the bay in position about 1½ miles east-northeastward of Tandjung Korokaili. A small reef lies about 600 yards from the west shore of the inner part of the bay.

ANCHORAGE—DIRECTIONS.—A prominent sharp, conical summit, standing about 2 miles east-southeastward of Tandjung Korokaili, bearing 140°, leads about in midchannel through a passage, ½ mile wide, in the outer reefs. After having cleared the outer reefs, vessels can enter the bay and keep more to the west shore, anchoring as convenient. The anchorage at the head of the bay is well sheltered, but should be attempted only by small vessels with local knowledge, due to the limited swinging room.

COASTAL FEATURES (CONTINUED)

6D–15 TANDJUNG KARTERBILEH (8°28′ S., 121°37′ E.) AND TANDJUNG LOLAKOTA, 1½ miles eastward, are the north and northeast points of a rugged peninsula. Between the latter point and Tandjung Batuboga, 19 miles eastward, there are a few rocky points with wide, open bays between. In several places the mountains retreat from the coast, leaving fairly broad plains which are fronted by sandy beaches.

DEPTHS AND DANGERS.—The 100-fathom curve lies up to 1½ miles off the rocky points. A chain of reefs extends along the 100-fathom curve, except to northward of Teluk Nangarudjeng. These reefs decrease in number as Tandjung Batuboga is approached.

TELUK LOLAKOTA, entered between Tandjung Lolakota and an unnamed rocky point, 1¼ miles southeastward, is reef fringed, foul, and of little navigational importance.

TELUK NANGARUDJENG, entered between the latter point and a reef-fringed point about 3 miles eastward, is deep and clear, but is open to both monsoons. Fair weather ANCHORAGE can be taken in 15 to 25 fathoms, mud, from ⅖ to ½ mile from the shore.

TELUK MAUSAMBI, entered between Tandjung Mausambi and Tandjung Ngalu Bu, about 3½ miles east-northeastward, affords some shelter from both monsoons. A 4¾-fathom reef lies about 1¼ miles north-northwestward of Tandjung Mausambi. A reef, with a depth of 3 fathoms, lies 1⅓ miles north-northeastward of Tandjung Mausambi. A narrow reef, somewhat shoaler and larger than the 3-fathom reef, lies about 2 miles northeastward of the same point. These reefs are reported to be marked by unofficial BUOYS.

Vessels wishing to enter the bay should steer a course of 180° with Tandjung Mausambi ahead. Thence they should round the point at a distance of about ¼ mile and ANCHOR in 20 fathoms, mud, about 600 yards southeastward of the point. Vessels can also enter the bay by passing between the 3-fathom reef and the narrow reef and thence heading for Tandjung Mausambi on a southwesterly course and thence proceeding as above.

TELUK DONDO is the wide bight between Tandjung Ngalu Bu and Tandjung Batuboga. The former point must not be approached closer than 1 mile due to the reef in its vicinity. DONDO, a village, is located 5 miles eastward of Tandjung Ngalu Bu. Vessels can ANCHOR

in 25 fathoms, mud, to the northeastward of the village and about 600 yards from the shore.

TANDJUNG BATUBOGA (8°26′ S., 121° 57′ E.) is the rugged north extremity of a rocky peninsula. Two small islets stand on the coastal reef that fringes the point; the largest has a couple of trees on its summit. The coastal reef extends ¼ mile northward from these islets and has some prominent above-water rocks at its seaward end. A small inlet indents the coast to the eastward of this peninsula. ANCHORAGE can be taken in 40 fathoms with the east extremity of Tandjung Batuboga bearing 334°, distant ½ mile.

TANDJUNG BATUMANUK is the termination of a high, bold, promontory. Reefs and shoals fringe the point to a distance of ⅖ mile. Between the above point and Tandjung Nanga Delan, the coast is indented by a foul bay. ANCHORAGE, however, can be taken off the north part of the east side of the above promontory. Some shelter is afforded from the west monsoon.

BETWEEN TANDJUNG NANGA DELAN AND TANO TITIR, 8 miles southeastward, the coast is fronted by a narrow reef. The 100-fathom curve, which lies 4 miles northeastward of the former point, closes the coast and lies only about ½ mile off the latter point. Numerous reefs and dangers lie within this curve. Undjuran Reef, which dries, is the outermost danger. It lies about 4 miles offshore in position 7 miles east-southeastward of Tandjung Batumanuk.

KIMANGBOLENG, a prominent flat summit, 4,744 feet high, stands at the east end of a high range of mountains which back this coast.

TELUK MAUMERE

6D–16 TELUK MAUMERE, entered between Tano Titir and Tandjung Pogong, 7¼ miles eastward, is exposed to northwesterly winds. The shores of the bay are mostly low and sandy, backed by a broad plain extending some distance inland. Maumere, a large village, is located about 1 mile southward of Tano Titir. There are several well populated villages standing along the coast, between Maumere and Geliting Wairpare; an important village is located ¾ mile westward of the latter village.

WINDS–CAUTION.—During the months of June, July, and August, strong winds, lasting many days, sweep down from between the mountains that back Teluk Maumere.

DEPTHS–DANGERS.—All dangers are contained within the 100-fathom curve which lies up to ¾ mile offshore. The approaches to Maumere Road are clear, but a number of reefs lie on either side of the approach to Geliting Road. There is a break in the coastal reef off Maumere, but the bottom rises very steeply.

LANDMARKS.—The Djele ridge, which stands near the south coast of Flores and which backs the before-mentioned plain, is connected to Kimangboleng by a long, hilly ridge 800 to 900 feet high. Ili Gai, located 5½ miles southward of Maumere, stands at the west end of Djele ridge. It is 2,982 feet high and prominent.

The Dobo mountains, located about 4 miles southward of Geliting, consist of 3 broad summits, the highest of which rises to 2,657 feet. Mapi, a sharp peak 4,830 feet high, stands about 5 miles southeastward of Tandjung Pogong. Tara, a similar peak 4,770 feet high, stands about 1¼ miles south-southwestward of Mapi and is joined to it by a deep saddle. Egon, a volcano with a bare reddish summit, 5,586 feet high, stands about 3¾ miles eastward of Mapi.

A church with a conspicuous spire is located at Maumere. The spire is surmounted by a cross.

Two large trees stand at the east end of Maumere just behind the road to Geliting. Ili Getan, a hill 197 feet high, is located ¾ mile southward of Maumere. A prominent tree stands near the east end of the village of Geliting.

NAVIGATIONAL AIDS.—A green light (unofficial) is shown from the head of a landing stage located at Maumere. It was reported (1959) that no light was shown. A white pole beacon with a cross topmark stands about ¾ mile north-northeastward of Geliting.

ANCHORAGE-DIRECTIONS. — Vessels approaching Maumere Road should steer for the landing stage on a course of 258° and anchor in 20 fathoms, about 400 to 600 yards from shore.

Vessels approaching Geliting Road should bring the prominent tree in range with the west slopes of Dobo mountains bearing 185°. This range leads to the anchorage 400 to 700 yards from the shore. CAUTION must be exercised as this range leads close eastward of a 5-fathom patch. Depths of 22 to 28 fathoms are found in the anchorage.

In early 1959, a vessel approached the anchorage with the church spire bearing 246°. When the two light stands on the landing stage were almost in line the vessel altered the course to 258° and anchored when the mangrove bushes which form the extreme limit of vegetation to seaward on the point north-northwestward of Maumere was bearing 327°. Depths of 30 fathoms good holding ground were found at the anchorage. This position is about 400 yards from the head of the landing stage.

FACILITIES.—Maumere is the official residence of a government official. Geliting is under the jurisdiction of an independent rajah. A limited amount of fresh provisions can be obtained at both villages. Interisland vessels call at Maumere.

COASTAL FEATURES (CONTINUED)

6D–17 BETWEEN TANDJUNG POGONG (8°37′ S., 122°20′ E.) AND TANDJUNG DARAT, 11½ miles northeastward, the coast is low and mostly covered with trees. The land rises regularly to the inner mountains. The latter point is low, but close inland the land rises to 4 hills, the northern hill being covered with reeds and a few trees. Teluk Wodong and Teluk Pedang, small inlets with villages at their heads, indent the southeast and east parts of this coast, respectively.

A small inlet indents the coast in a position about 1¼ miles northward of Teluk Pedang. Small vessels with local knowledge can ANCHOR in Teluk Pedang or in the inlet northward in depths of 20 to 30 fathoms.

ISLANDS AND DANGERS.—Angelica Shoal, the outer danger off this coast, has been described in section 6D–3. Pulau Sukun, Pulau Pamana-besar, Pulau Pamana-ketjil, and Gosong Boni have been described in section 6D–4.

Pulau Besar, Pulau Damhilak, and Pangah Batang lie close together on a relatively shoal plateau which is separated from the rounded peninsula forming Tandjung Darat by Selat Pangabatang, a deep and clear strait. Pulau Besar is high, steep, and wooded. There are some villages on the island. The 3,053-foot summit is very prominent, as is a lower flat peak to the southeastward. Two small islets lie close off the southeast end of the island. Pulau Kondo, a large rock, lies close off the northeast end of the island. Detached reefs lie up to 2 miles eastward of this end of the island.

Pulau Damhilak is irregular, hilly, and 718 feet high. Pulau Parmahan, on which there is a fishing settlement, lies just northward of Pulau Damhilak.

Pangah Batang, a small islet with a fishing settlement on it, lies southeastward of Pulau Damhilak, at the southeast end of the shoal plateau.

Pulau Babi, lying in the northeast approach to Selat Pangabatang, is 1,150 feet high, reef-fringed and steep-to.

BETWEEN TANDJUNG DARAT AND TANDJUNG BELA, 17 miles east-northeastward, the coast is irregular and for the most part steep-to. Northeastward of the former point is a broad valley, through which flows the

Nanga Gite, the principal river in the northeast part of Flores. ANCHORAGE can be taken westward of the mouth of this river in 20 to 30 fathoms, about 400 yards from shore. This anchorage is located about 4¼ miles eastnortheastward of Tandjung Darat.

Tandjung Watu Wulan and Tandjung Bokan are high, bold, and reef-fringed points.

TELUK WAIPRUNG, a small inlet, affords good ANCHORAGE in about the middle of the bay in 20 to 40 fathoms in a position about 700 yards from shore. The bottom is steep and irregular. Ili Lowotobi-perempuan (sec. 6C–10) can be seen over the valley at the head of the bay.

BETWEEN TANDJUNG BELA AND TANDJUNG WATUPAJUNG, the coast is deeply indented by Teluk HADING, a deep and spacious bay. The south shore is formed by high, steep, mountain land. Gunung Hedaka, 2,858 feet high, is separated from Gunung Waikrowa, 3,287 feet high, by a rather low and prominent valley. Gunung Kumarado, with two round summits, 2,661 feet high and 2,628 feet high, stands near the head of the bay. Gunung Nubi, on the north side of the bay, has 2 summits, the northern and highest rising to 2,451 feet. The summits are separated by a shallow saddle.

DEPTHS.—The bay is very deep and clear, except for some small detached reefs lying close offshore. The 100-fathom curve fronts the coast to a distance of up to 1 mile.

A small reef-fringed inlet indents the head of the bay. Small vessels can ANCHOR in the northeast corner of the bay, northwestward of the inlet, in 25 fathoms, about 300 yards from the coastal reef.

6D–18 TANDJUNG WATUPAJUNG (BATUPAYUNG) is low and covered with trees. A rock, shaped like a mushroom, stands close southeastward of the point. The coast between this point and Tandjung Kopendei is fairly well cultivated with a few scattered settlements. ANCHORAGE can be taken on either side of Tandjung Gedong, a high, rocky, and small peninsula, in 25 to 50 fathoms, very close to shore with little swinging room. Only small vessels with local knowledge should attempt this anchorage.

PART E. STRAITS BETWEEN FLORES AND LOMBLEN

6E–1 TANDJUNG KOPONDEI (FLORES HEAD) (8°04′ S., 122°52′ E.) is a high, steep, promontory. Its east side is a bare, rocky wall, dropping almost perpendicularly into the sea. A prominent flat rock lies close off the point. Magnetic disturbances have been reported off the point. (See section 6D–5).

GENERAL REMARKS

6E–2 KEPULAUAN SOLOR, consisting of Pulau Adonara, Pulau Solor, and Pulau Lomblen, belong to the residency of Timor and are well populated. The islands are very fertile. The principal crops are sago and rice. Numerous coconut plantations are scattered throughout the islands. Pigs, goats, and poultry are plentiful. There are numerous deer on Pulau Lomblen.

Pulau Adonara, separated from Pulau Solor by the deep and clear SELAT SOLOR, is large and mountainous. The west sides of these islands are separated from the east side of Flores by Selat Flores, which is variable in width and for the most part clear of dangers. LARANTUKA NARROWS, the north entrance, lies between the east end of Flores and the southwest side of Pulau Adonara and has a minimum width of 400 yards between the 10-fathom curves. SELAT LEWOTOBI, the south entrance, separates the southwest side of Pulau Solor from the southeast end of Flores. Selat Lewotobi has a width of 1¾ miles and is deep and clear. Some rocky islets lie off its south entrance.

SELAT BOLENG separates the northeast end of Pulau Adonara from the northwest end of Pulau Lomblen. SELAT LAMAKERA separates the east end of Pulau Solor from the southwest side of Pulau Lomblen. These straits are for the most part deep and clear, but are somewhat exposed to seas and swells.

There are few ports of importance in this general area, but vessels can find convenient ANCHORAGES, according to the prevailing winds.

OFF-LYING ISLAND

6E–3 PULAU KOMBA (7°47′ S., 123°36′ E.), about 2 miles in diameter and steep-to, has an active volcano, 2,453 feet high, in its south part. It serves as an excellent landmark for vessels approaching Selat Flores or Selat Boleng from northward.

DEPTHS AND DANGERS

6E–4 NUSA BELANG (PULAU SERBETE) (8°09′ S., 123°01′ E.), a small oblong-shaped islet, has a sandy beach on its south side. A hill, 82 feet high and covered with reeds and shrubs, stands on the islet. An extensive reef surrounds the islet. It extends 1⅔ miles east-southeastward and 1 mile northwestward from the islet. The reef partly dries at very low water (April and November). Two sand banks stand on this reef. The easternmost, near the edge of the reef, is always above water.

SELAT FLORES is deep and clear. Depths of 11 to 20 fathoms are found in the fairway of Larantuka Narrows, increasing gradually to northward and southward. Selat Lewotobi, the south entrance of Selat Flores, is deep and clear. Four small islets, which are rocky and sparsely covered with vegetation, lie off the south entrance of Selat Lewotobi.

NUHA BELENG (KAMBING) 8°39′ S., 122°51′ E., the southern and largest, is 446 feet high and prominent. It is very steep, rising nearly everywhere perpendicularly from the sea

FLORES SEA. PULAU KOMBA 244°

for the first 25 feet. A small ridge of rocks extends off the southeast side of the islet. Nuha Witi (Lobotobi), nearly 2½ miles northward of Nuha Belang, is steep, rocky, and somewhat flatter on top. It is 148 feet high. Nuha Lowowuran, located ¾ mile west-southwestward of Nuha Witi, and Nuha Laling, located ⅔ mile off the southeast end of Pulau Solor, are high rocks.

Nuha Watu, a prominent rock with a sharp white point, is located 1½ miles southward of the south end of Pulau Solor. Two small rocks lie close southwestward of the prominent rock. A rock awash lies 60 yards southeastward of Nuha Laling.

Reefs and dangers extend up to 2 miles off the northeast coast of Pulau Adonara. Selat Boleng and Selat Lamakera are deep and clear in the fairway, as is Selat Solor.

CAUTION

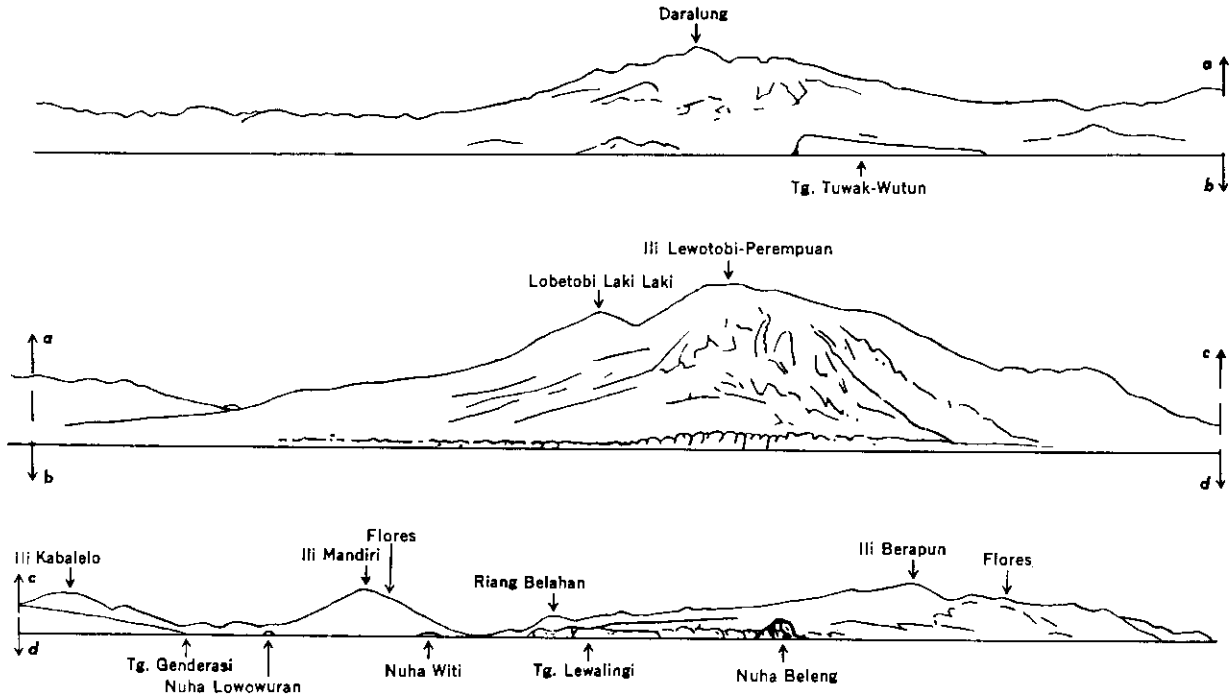
6E–5 Abnormal magnetic variation has been experienced in the north approach to Selat Flores in position 8°11′ S., 123°00′ E.

Strong currents are experienced in Larantuka Narrows, and low-powered vessels should not attempt to navigate this strait. Other ships must exercise great caution. Selat Boleng and Selat Lamakera are somewhat exposed to heavy seas and swells.

TIDES AND CURRENTS

6E–6 THE TIDES in all the main straits in this area are mixed, but predominantly of a semidiurnal nature. The lowest level is reached in April and November.

TIDAL CURRENTS—SELAT FLORES.—The horizontal tidal movement is of a semidiurnal nature, with the current turning



SELAT LEWOTOBI—NUHA BELENG (KAMBING ISLAND) 6 MILES, 022°

somewhere about the time of the moon's transit, and from 6 to 8 hours later.

From 2 to 6 hours after the moon's transit, the south-going current is very strong, with the maximum velocity occurring during the 5th or 6th hour. The north-going current is strongest from about 4 hours before the moon's transit to about the time of transit.

The greatest velocity occurs about 3 to 4 days after full and change. The south-going current may then attain a rate of 8 to 11 knots, and the north-going current a rate of about 6 knots. The least velocity occurs about 3 to 4 days after the moon's quarter phases, when both north- and south-going currents attain a maximum rate of 3½ knots.

The current in Larantuka Narrows sets northward about 1 hour after the rising and setting of the moon, the south-going current 6 hours later. Slack water, especially during springs, is of short duration. Within Selat Flores, abreast of Larantuka and off the southwest side of Pulau Adonara, the tidal currents are strong, but to the southward they gradually lose their strength, so that only weak tidal currents are found in the wide part of the strait.

In Selat Lewotobi the tidal currents are sometimes strong, attaining a maximum rate of 5 knots. The current, as a rule, flows strongest through the deepest part, being strongest between Nuha Witi and the Flores shore. The times of change are reported to be about 1 hour later than in Larantuka Narrows.

TIDAL CURRENTS–SELAT SOLAR.—The tidal currents set eastward on the rising tide and westward on the falling tide at a rate of 1 knot to 1½ knots. The direction and strength of this current is greatly affected by the currents in Selat Flores, Selat Boleng, and Selat Lamakera, at that time.

TIDAL CURRENTS–SELAT BOLENG AND SELAT LAMAKERA.—In Selat

Boleng the horizontal tidal movement is of a semidiurnal nature, and can be very strong. Limited observations indicate that the northeast-going current can be expected to occur from 2 to 3 hours before to 2 to 3 hours after the moon's passage, and usually earlier in Selat Lamakera. The southwest-going current commences from 3 to 4 hours after the moon's transit to 9 to 10 hours after transit. The tidal currents are strongest at the narrow north entrance and near the south entrance. During springs (which occur thrice daily after full and change) the current could possibly attain a rate of 7 knots. A rate of 5½ knots has been observed 2 days after springs.

In Selat Lamakera the tidal currents are very strong. A maximum rate of 7 knots has been reported. Limited observations indicate that the northeast-going current occurs from 2 to 3 hours before to 2 to 3 hours after the transit of the moon. The southwest-going current occurs from 3 to 4 hours after to 9 to 10 hours after transit.

WINDS AND WEATHER

6E–7 Stiff southwesterly winds prevail in Selat Boleng and Selat Lamakera from the latter half of October through the months of November and December.

NORTH APPROACHES TO SELAT FLORES AND SELAT BOLENG

6E–8 SELAT FLORES AND SELAT BOLENG are deep and clear, but are seldom used by other than local traffic because of the strong currents in the narrows.

NORTHEAST SIDE OF FLORES.—Between Tandjung Kopondei (sec. 6E–1) and Kari-wutun, the coast is rocky and steep with all dangers lying within ½ mile offshore. The latter point is low, covered with trees, and fringed by reefs to a distance of ½ mile. Two large sandbanks stand on the fringing reef in a position about ¾ mile northwestward of this point. The southern and largest is always above water and serves as a good landmark.

Between Kari-wutun and Tandjung Matandoi, the coast is mountainous and is fringed by a narrow reef. The channel between the coast and Nusa Belang (sec. 6E–4) is deep and clear. Teluk Mulubuhan, a reef-fringed inlet, indents the middle part of this coast.

NORTH COAST OF PULAU ADONARA.—Between Sanganji-wutun (8°14′ S., 123°09′ E.) and Horong-wutun, 3 miles eastward, the coast forms an open reef-fringed, and foul bight. The former point consists of a low ridge projecting some distance and rises nearly perpendicularly from the sea for about 25 feet. The latter point is rocky and rises nearly perpendicularly from the sea.

TELUK SAGU, entered between Sagu-wutun and Tandjung Koli-wutun, is a small reef-fringed bay that affords good shelter to small vessels. Sagu village, standing on the southwest shore of the bay, can be identified by the rajah's house, a stone building with a zinc roof. There is a flagstaff in front of the house and a conspicuous prau shed to the eastward of the house. A tall tree stands near the shed. A white stone pyramid stands at the head of the bay. A rounded hill is located southwestward of the pyramid. Poultry, pigs, eggs and fruit can be obtained in moderate quantities.

DANGERS.—A 3¼-fathom shoal lies a little over ½ mile north-northwestward of Tandjung Watu Koli. Shoal patches, with depths of 4 to 5 fathoms lie up to ⅔ mile offshore, to the northeastward of this danger. Reefs and shoals extend over ¼ mile westward from Tandjung Watu Koli. Shoal patches, with depths of 1¾ fathoms and 3 feet, lie within ½ mile southwestward of the same point. A 2-fathom patch lies near the west shore in position nearly 1 mile south-southwestward of Saga-wutun.

ANCHORAGES–DIRECTIONS.—Small vessels with local knowledge can enter the bay by steering 176° for the before-mentioned white

stone pyramid. Anchorage can be taken when Tandjung Koli Kedeh-wutun bears 062°. This anchorage has a depth of 24 fathoms, sand, and lies about 300 yards from the reefs on either side. Smaller vessels can anchor in 17 to 19 fathoms, mud, midway between the beforementioned 2- and 1¾-fathom patches, with Tandjung Koli Kedeh-wutun just open northward of Tandjung Watu Koli.

BETWEEN TANDJUNG KOLI-WUTUN AND TANDJUNG WURGOBIN, the coast is fronted by reefs and dangers to a distance of 2 miles. Mokko, a village built over the water on piles, is located about 1 mile westward of the latter point.

Watu Peni, 115 feet high, rocky and covered with vegetation, and Pulau Kroko, lower, smaller, and barer, lie together on a large drying reef. A conspicuous drying patch of white sand is located on the south side of the reef.

Pulau Ipet and Pulau Kenaweh, low and covered with mangroves, lie on an extensive reef which almost entirely dries. A narrow passage, with a depth of 5 fathoms, separates the two reefs, and a similar passage, with a depth of 10 fathoms, separates the southeast reef from the Pulau Adonara coast. The west side of Pulau Kenaweh is rocky.

A heavy surf breaks on the north and east sides of these reefs during the east monsoon.

6E–9 NORTHWEST COAST OF PULAU ADONARA.—Between Saganji-wutun (8°14′ S., 123°09′ E.) and Tandjung Pasir, the coast is low, wooded, and backed by rising land. There are some sandy beaches. Adonara, a fortified village located about ½ mile southwestward of the former point, stands on a very steep and rocky hill, 150 feet high. A mosque with a zinc roof is prominent.

During the east monsoon, small vessels can ANCHOR in 30 fathoms, 300 yards off the coastal reef fronting the village, with Saganji-wutun bearing 075° and the village in range with Gunung Kuma.

LANDMARKS.—Pulau Komba (sec. 6E–3), Gunung Nubi and Gunung Kumarado (sec. 6D–17) on Flores serve as good landmarks for vessels approaching these straits from the northward. The low isthmus backing Teluk Mulubahan and the rounded hillock, 889 feet high, on the north side of the inlet, are very prominent, especially from the eastward. The north part of Flores appears as an island from a distance eastward.

Ili Mandiri, with 2 peaks almost the same height, the higher being 4,925 feet, and Ili Sosar, 761 feet high, afford good marks when the higher mountains are obscured by clouds. In clear weather Ili Lewotobi-perempuan (sec. 6C–10) is prominent.

On PULAU ADONARA, Gunung Boleng, which occupies the entire southeast part of that island, rises regularly from all sides to a height of 5,443 feet. The Lewokemieh range, located in the northeast part of the island, attains a height of 1,939 feet and has a very prominent wooded area on one of its summits. Nela, a hill 935 feet high and prominent, is located about 1⅔ miles westward of Tandjung Wurgobin.

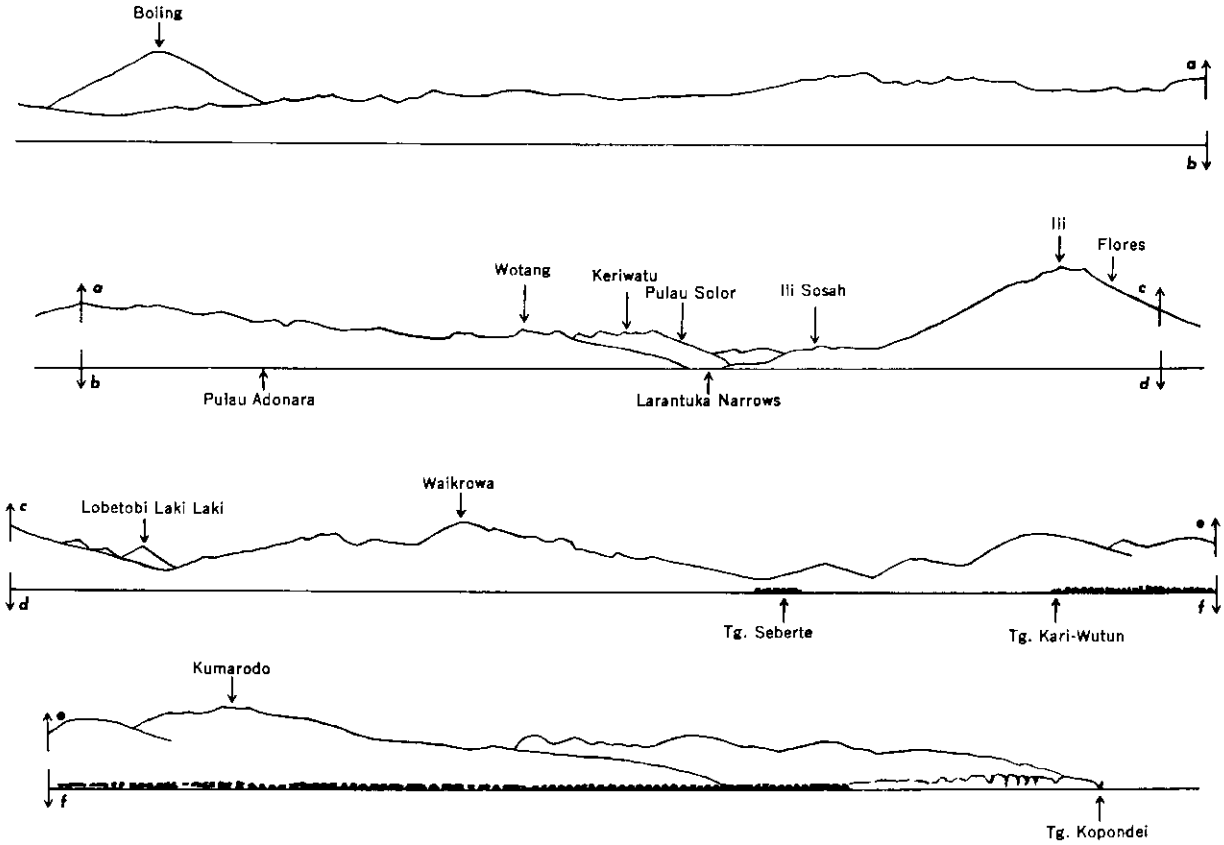
Gunung Kuma, a sharp peak 2,680 feet high, stands near the middle of the island and has high ridges extending northward and westward from it. Gunung Saburi has a blunt summit, 3,248 feet high. A prominent 561-foot hill stands near the coast, southeastward of the village of Adonara.

On Pulau Lomblen, Tandjung Wai Au (sec. 7A–1) serves as a good landmark.

SELAT FLORES

6E–10 LARANTUKA NARROWS is funnel shaped and has a least width of 400 yards, between the 10-fathom curves on either side. Depths of 11 to 20 fathoms are found in the fairway.

THE WEST SIDE of the narrows, between Tandjung Matandoi and Tandjung Podoh, slopes gradually upwards and is mostly wooded



NORTHERN ENTRANCE OF LARANTUKA NARROWS—Tg. SERBETE 4 MILES, 225°

with palms. Sandy beaches front the coast. Several villages are scattered along the shore, southwestward of Tandjung Serbete. There is a small church in the village of Tengah.

THE EAST SIDE of the narrows, between Tandjung Pasir (sec. 6E–9) and Tandjung Gonsalva, is rocky and rises gradually to the hills behind. Wureh, a village with a church, stands on a plain. The latter point is rocky and has some detached rocks close off it. Southward of this point, the coast becomes steeper and terminates in Tandjung Wotang which is backed by a 1,706-foot peak.

DANGERS.—The coast reef extends 1,200 yards eastward from Tandjung Matandoi and nearly ½ mile northwestward from Tandjung Pasir. A 1¼-fathom reef lies 600 yards from shore off the village of Wureh. Southwestward of this reef, the 10-fathom curve suddenly bends outward around a shoal of coral and stones on which is a depth of 4 fathoms, 600 yards from the shore.

LARANTUKA, standing at the foot of Ili Mandiri is the seat of government of East Flores and the Kepulauan Solar. A Catholic mission is located in the town. The remains of an old fort stands near the shore. There are three landing stages. A flagstaff is located on the northeast side of the government (middle) landing stage. The government officials' house is located near this stage. A LIGHT is shown

from a post at Larantuka. Interisland vessels call at Larantuka.

ANCHORAGE can be taken in 10 to 16 fathoms from about 250 to 400 yards off the shore fronting the town. The best anchorage is reported to be off the middle landing stage in 16 fathoms, nearly 400 yards from the shore. A 1-knot current is met with here.

WEST SIDE OF SELAT FLORES.—Between Tandjung Podoh and Tandjung Wailonga, the east coast of Flores is deeply indented by two bays which are separated by a mountainous promontory backed by the 3,094-foot Ili Kawalelo (Kabelelo). The mountains fall perpendicularly to the sea and are formed of red rock at a position ¾ mile northward of Tandjung Parigi (Prigi).

Teluk Oka (Waibalong), deep and clear, indents the north shore of the north bay. Pulau Waibalong, 98 feet high and sparsely covered with vegetation, is located ¾ mile westward of Tandjung Podoh. A narrow passage, with a depth of 10 fathoms in the fairway, separates the island from the shore. ANCHORAGE can be taken near the head of the bay, in 10 to 20 fathoms, 300 to 400 yards from the shore.

Teluk Konga, the southern bay, is entered between Tandjung Parigi and Tandjung Wailonga. Pulau Konga, 876 feet high and covered with bushes, is located near the head of the bay. Konga, a small village, stands on the shore, westward of the island. There is a small mission house in the village. ANCHORAGE can be taken northward or southward of the island, or between the island and the village. The southwest shore of the bay is low and rises gradually to the high mountains. Vessels can anchor in 20 to 30 fathoms outside the main strength of the current, from 300 to 600 yards offshore.

EAST SIDE OF SELAT FLORES.—The west side of Pulau Solor, as seen from the strait, consists of two groups of mountains separated by a low plateau, sparsely covered with palm trees. A sandy beach, backed by steep cliffs, 30 feet high, fronts the plateau. Tandjung Tulang Ikan, at the north end of this plateau, is low and rounded. A cleft in the rocky edge of the plateau is located about 3¼ miles southwestward of this point. A small stream flows through the cleft. ANCHORAGE can be taken, out of the strength of the current, from 300 to 400 yards off the shores of this plateau. Small vessels have anchored northeastward of the cleft in 15 to 20 fathoms, 300 to 400 yards from shore.

6E–11 SELAT LEWOTOBI is deep, straight, and clear, except for the rocky islets, previously described in section 6E–4.

The west side of the strait rises steeply from the shore. There are a few rocky points with sandy beaches between. LEWOTOBI (LOBETOBI), a small town, serves as the residence for the chief of the district. Tandjung Lewurang (Lowowuran) and the point close southwestward are sharp, rocky, and prominent. The aspect of this coast is described in section 6C–10.

TELUK MANGKASA, entered between Tandjung Lerangwutun and Tandjung Tuwakwutun (Tuak), affords good ANCHORAGE, well sheltered from the west monsoon and out of the main strength of the current. The shores of the bay are fronted by sandy beaches, with some rocky parts. The latter point and the coast westward are described in section 6C–10.

The east side of the strait is formed by the foothills of the high mountains. Tandjung Lewalingi rises almost perpendicularly to a height of 390 feet and is very conspicuous owing to the red color of the rocks. A broad, sandy beach is found between this point and Tandjung Matang-wutun (Lawawolo). Another sandy beach is found between the latter point and Tandjung Tuak.

DIRECTIONS.—Vessels approaching Larantuka Narrows from northward should bring Tandjung Serbate in range with Tand-

jung Udang, bearing 204°. When the church at Wuri bears 114°, the course should be altered more to southward and a midchannel course steered through the middle of the narrows into the wide part of Selat Flores.

Vessels approaching Selat Lewotobi from southward should have little difficulty due to the many landmarks. The hill near Tandjung Tuwak-wutun, and Ili Lewotobi-perempuan, described in section 6C–10, serve as good landmarks. Nuha Beleng and the rocky islets in the south approach to Selat Lewotobi, described in section 6E–4, are prominent. Ili Berapun, Tandjung Lewalangi, and Riang Belahan, in the southwest part of Pulau Solor, are prominent.

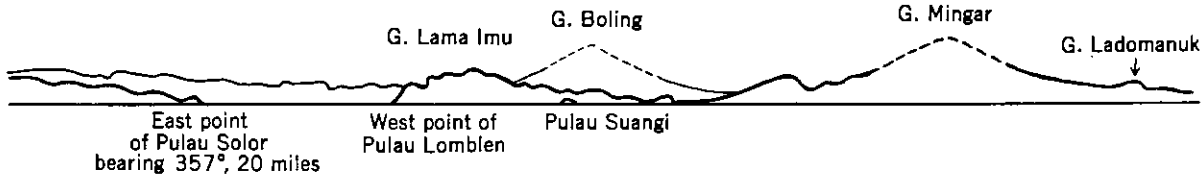
SELAT BOLENG AND SELAT LAMAKERA

6E–12 SELAT BOLENG AND SELAT LAMAKERA provide a spacious, deep, and entirely clear passage from Flores Sea to Sawu Sea. Tandjung Wurgobin, the west entrance point of Selat Boleng, and the dangers fronting it have been described in section 6E–8. Tandjung Wai Au, the east entrance point of the same strait, is described in section 7A–1.

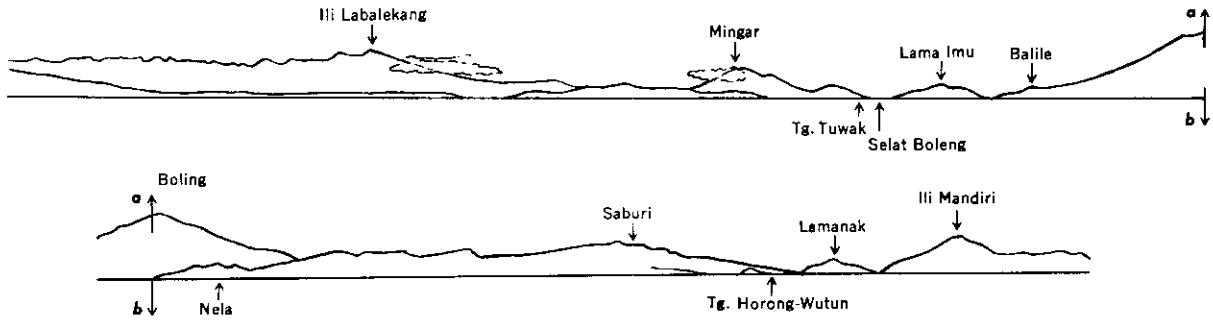
DEPTHS—DANGERS.—The width of the narrow part of Selat Boleng is considerably reduced by partly drying reefs on either side. These reefs are usually marked by discoloration. The width of the channel is about 1,600 yards.

A large reef, with a least depth of 4¾ fathoms, lies in Selat Lamakera in a position from 2¼ to 4 miles eastward of the east point of Pulau Solor. A small reef, with a least depth of 7 fathoms, coral and stones, lies about 1½ miles west-northwestward of Tandjung Mitanwutun.

WEST SIDE OF SELAT BOLENG.—The east coast of Pulau Adonara, between Tandjung Wurgobin (sec. 6E–8) and Tandjung Deri-wutun, is low and rises gradually to the hills and mountains behind. A 154-foot hill, located southward of the former point, is prominent. A reef-fringed inlet, overgrown with mangroves, is located about 3 miles southwestward of the same point. Pasar Waiwuri, a market place, stands at the head of the inlet. A sandy beach is found between this place and



SELAT LAMAKERA, SOUTH ENTRANCE.



NORTH ENTRANCE OF SELAT BOLENG 14 MILES, 202°

Tandjung Deri-wutun. Deri, a small village, stands near the coast to the southward of the latter point. From here southward the aspect of the coast changes. It consists of rocky points with small coves and sandy beaches between.

Boleng, a village surrounded by stone walls and cactus, stands at the head of one of these inlets. Balile, conical in shape and 860 feet high, is prominent from all directions. Gunung Boleng, which dominates this coast, has a large crater on its southwest side.

WEST SIDE OF SELAT LAMAKERA.—The southeast coast of Pulau Solor, between Tandjung Motang and Tandjung Kelette, is very steep and rocky. The former point is bare and rocky. Lamakera, a village of some importance, stands behind a broad, sandy beach, just northwestward of Tandjung Motang. The red roof of a mosque, a flagstaff, and the rajah's residence are good landmarks. The point northwestward of the village has some whitish yellow patches and some white graves on it.

DANGER.—A narrow ridge, with a least depth of 2 fathoms, lies close northward of the village. A narrow channel, with depths of 3 to 6 fathoms, separates this ridge from the northeast coast of Pulau Solor. The whitish yellow point in range (238°) with the wooded summit of Manga hill, leads southward of the southeast end of the ridge. Tandjung Motang in range (184°) with Tandjung Ipat, leads eastward of the ridge.

ANCHORAGE.—Lamakera Road affords safe anchorage in convenient depths. Vessels can anchor in 11 to 12 fathoms about ¼ mile offshore.

BETWEEN TANDJUNG KELETTE AND TANDJUNG TOBI, the coast is steep and rocky. Between the latter point and Tandjung Samatanji-wutun, the coast is indented by a wide bight. There is a sandy strip at the north end of this bight, off which there is good ANCHORAGE during the west monsoon. An isolated hill, 512 feet high and conical in shape, stands about 1⅔ miles northward of the latter point.

6E–13 EAST SIDES OF SELAT BOLENG AND SELAT LAMAKERA.—The low, narrow peninsula that forms the east side of the entrance of Selat Boleng is fringed by a drying reef on its channel side. Tandjung Wai Au and the general aspect of this peninsula are described in section 7A–1. Between Tandjung Wai Au and Tandjung Tuwak, the coast is low and covered with mangroves, varied here and there by a sandy beach. The latter point is flat and overgrown with reeds and a few palms. It ends in a steep, rocky cliff, about 17 feet high.

LEWOTEBA-ONE (TELUK LEBA-LEBA), entered between Tandjung Tuwak and Tandjung Lowukuma, is moderately deep and mostly clear. The north shore of the bay rises gradually to the low hills of the peninsula and eastward to Ili Lewotolo (sec. 7A–2). The head and the south shore of the bay are overgrown with mangroves and backed by a plain. Tandjung Geleko is wooded. Tandjung Wai Womang has some high trees on it. Between the latter point and Tandjung Lowukuma, the hills again approach the coast and there are some rocky points.

DANGERS.—Most of the dangers lie within the 10-fathom curve which fronts the shores of the bay to a distance of up to 1 mile. A 6– and a 7–fathom patch lie up to 1¼ miles off the northeast shore of the bay. Awalolong Reef, consisting of coral sand, part of which dries at half tide, lies within the above curve in the south part of the bay.

ANCHORAGE can be taken in convenient depths in the clear part of the bay. Good anchorage in 8 to 10 fathoms, coral sand, can be found midway between Awalolong Reef and the reef fringing Tandjung Geleko.

BETWEEN TANDJUNG LOWUKUMA AND TANDJUNG MITANWUTAN; the coast is formed by the foothills of a 1,171-foot peak. The latter point is steep and rocky.

There is a wooded area on the east side of the peak. Between Tandjung Mitanwutan and Tandjung Liangmeah, the coast is fringed by a narrow reef. The latter point is the north extremity of a steep, mountainous waste land that forms the southwest end of Pulau Lomblen. A 3-fathom reef lies about ¾ mile offshore in position about the same distance northward of Tandjung Waikrong. Two mountain ranges form the southwest end of Pulau Lomblen. Near the coast, between these two groups, is an isolated hill, 328 feet high and partly covered with palms.

SOUTHWEST COAST OF PULAU LOMBLEN.—Between Tandjung Liangmeah and Tandjung Suba the coast is rugged and steep. Pulau Suangi, 180 feet high, is located 1 mile southward of the latter point. A rock lies awash, 150 yards off the northwest point of the islet. The passage between the islet and the point is clear, but there are strong CURRENTS running through it, especially at springs.

TELUK ATU provides ANCHORAGE in 6 to 9 fathoms during the west monsoon. A conspicuous group of black rocks are found along the northeast shores of the bay. There is a sandy beach at the head of the bay.

ATAWAI-ONE (TELUK ATAWAI) is very deep. The northwest shore of the bay is formed by the slopes of Gunung Mingar. The east shore is steep and rises to Ili Labalekang. The head of the bay is a plateau extending northeastward between the two mountains. A sandy beach, fronted by a narrow reef, about 200 yards wide, fronts the north and west shores of the bay. Vessels can ANCHOR in 20 to 30 fathoms, about 400 yards from the shore.

NOTE.—Tandjung Wolowutun and the coast eastward are described in Chapter 7.

SELAT SOLOR

6E–14 SELAT SOLOR is wide and deep. It connects Selat Flores with Selat Lamakera and is used mainly by local traffic.

SOUTH COAST OF PULAU ADONARA.—Between Tandjung Wotang and Werang-wutun, 3½ miles eastward, the coast is comparatively low, sandy, and dotted with trees. The 1,704-foot peak backing the former point and a 2,175-foot peak, 2 miles northeastward, are prominent. Muda, a small village, stands close westward of Tandjung Mudawutun, a fairly conspicuous, rocky point. Werang-wutun is low, wooded, and intersected by a small stream. Pasar Lamu is a market place of some importance. Hot springs are found on the drying reef in Bani Ona. When covered, steam rises from the reef.

Between Werang-wutun and Anaburaka-wutun, the coast forms a bight which is backed by a sandy beach. Waiwerang, the residence of the administrator of the Adonara and Lomblen Districts, is a port of call for interisland vessels. A wooden pier, 132 feet long, is located at the town. A LIGHT is shown from an iron post, 16 feet high, on the outer end of the pier.

Trong and Lamahala are two other villages along this coast. They can be identified by their mosques. In addition to these villages there are several market places along this coast; the most important of these are Pasar Benabang and Pasar Samar. The latter is backed by a wide plain.

ANCHORAGE can be taken in 15 to 30 fathoms off this coast. PROVISIONS, such as poultry, eggs, gruit and fish, can be obtained at the villages or at the market places.

BETWEEN ANAKBURAKA-WUTUN and Tandjung Watuwoko, the coast is formed by the foothills of Gunung Boleng. The former point can be identified from eastward or westward by a long ridge of black rocks. Pasar Longa, a market place, stands close eastward of the same point.

NORTH COAST OF PULAU SOLOR.—This coast consists of sand and stoney ground,

dotted with trees. Kalika-wutun is steep and rocky. Between this point and Tandjung Pamakawutun is a small cove with a few huts at its head. Keriwatu, with a broad summit, 2,920 feet high, dominates this coast. Between the latter point and Tandjung Lewokawutun, the coast forms a bight, backed by a deep valley, not more than 200 feet high. A prominent small rocky point stands at the head of the bight. Pasar Angereling, a market place of some importance, is located on the northeast shore of the bight.

ANCHORAGE can be taken in the bight between Tandjung Pamakawutun and Tandjung Lewokawutun with the small rocky point bearing 149°. There is a depth of 30 fathoms 600 yards from this point and a depth of 15 fathoms 400 yards from the point.

BETWEEN TANDJUNG LEWOKAWUTUN AND TANDJUNG KEBON the coast is backed by high mountains. The Lewurung mountains attain a height of 2,894 feet. A long ridge extends eastward from the summit. A 2,067-foot peak stands ½ mile northwestward of the summit; it can be identified by its wooded summit. Kebang is a small village. Lewajong, the residence of the rajah of the district, is a fairly large town. Menanga is a small village of some importance. A narrow, but deep, inlet indents the shore, just eastward of the village. A small mountain stream flows down through a cleft from the plateau above into the head of the inlet. Tandjung Kebon ends abruptly with an overhanging cliff.

ANCHORAGE can be taken in 25 fathoms off Lawajong, about 450 yards off the remains of an old fort.

NOTE.—The east coast of Pulau Solor is described in section 6E–12.

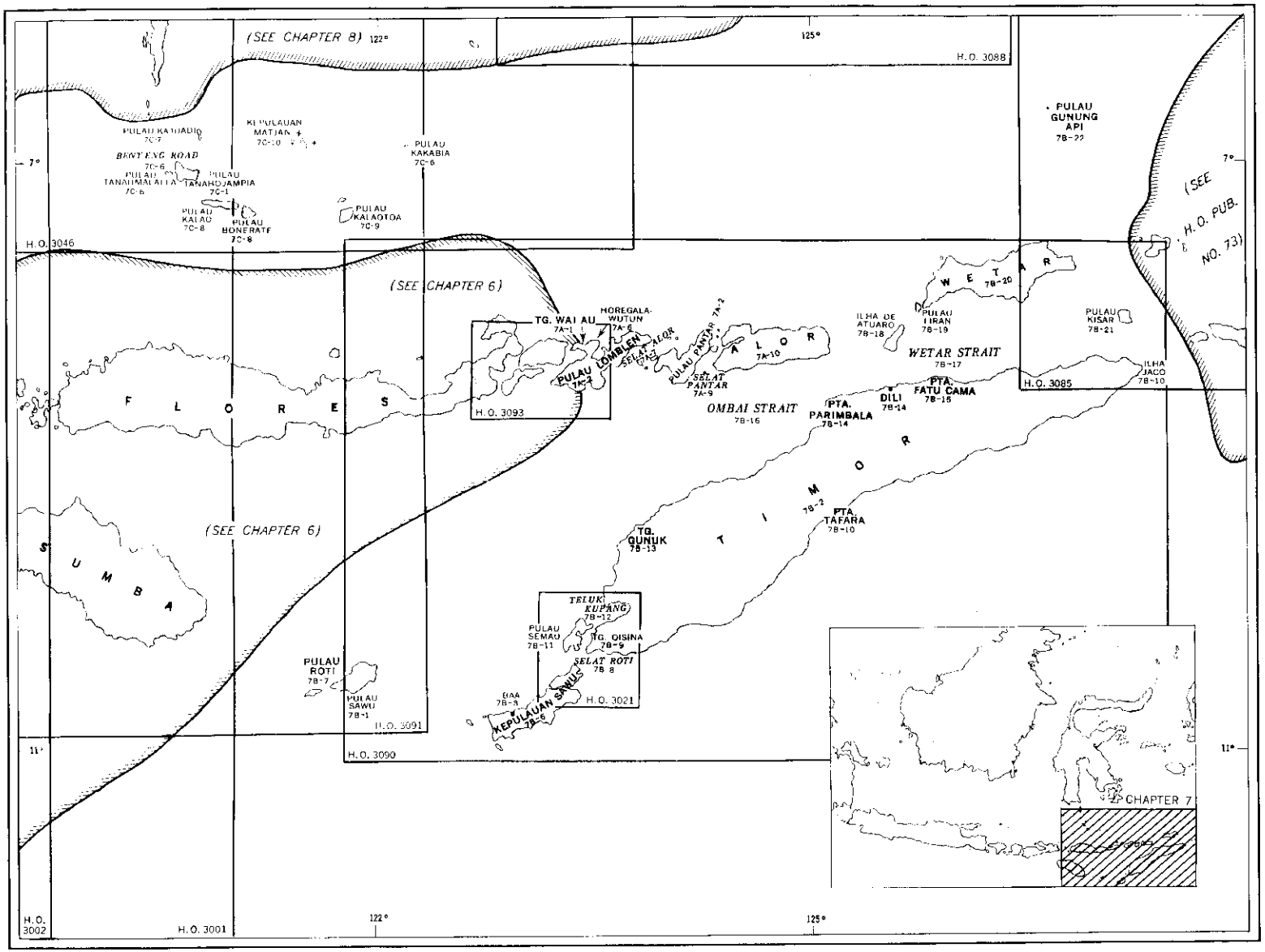


Chart limits shown are of the best scale charts issued to naval vessels by the U.S. Navy Hydrographic Office.
Numbers refer to the section in the text describing a designated locality.

CHAPTER 7—GRAPHIC INDEX

CHAPTER 7

PULAU LOMBLEN AND KEPULAUAN ALOR, WITH STRAITS—TIMOR AND WETAR, WITH ADJACENT ISLANDS AND STRAITS—PULAU TANAHDJAMPEA, KEPULAUAN MATJAN AND ADJACENT ISLANDS

Part A. Pulau Lomblen, Pulau Pantar, and Alor—Selat Alor and Selat Pantar.
Part B. Kepulauan Sawu, Pulau Roti, Timor, and Wetar—Ombai and Wetar Straits.
Part C. Pulau Tanahdjampea, Kepulauan Matjan, and adjacent islands.

PLAN.—This chapter continues with the discussion of the Lesser Sunda Islands eastward of Pulau Lomblen, and includes all the remaining islands in this group. Also discussed in this chapter are the islands in the Flores Sea lying between Flores and Pulau Salajar, off the south coast of the Celebes (chapter 8).

GENERAL REMARKS

7–1 A general description of the Lesser Sunda Islands, comprising the islands between Bali and Timor, has been given in section 5–1. This chapter will deal with those islands and straits at the east end of the Lesser Sunda Islands.

WINDS—WEATHER

7–2 The characteristics of the climate in the Flores Sea between Celebes and the Lesser Sunda Islands has been discussed in section 5–3.

CURRENTS—TIDAL CURRENTS

7–3 The currents in the Flores Sea have been discussed in section 6–3, and the tidal currents in the straits will be discussed along with the description of the straits.

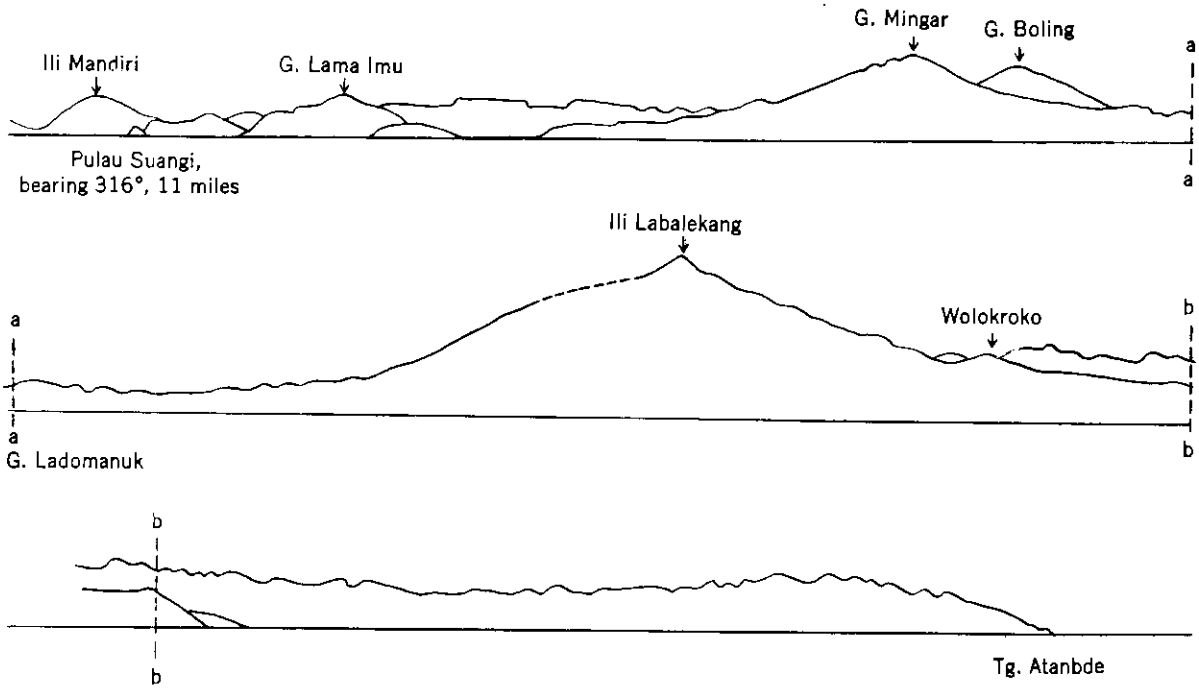
PART A. PULAU LOMBLEN, PULAU PANTAR AND ALOR—SELAT ALOR AND SELAT PANTAR

7A–1 TANDJUNG WAI AU (8°15′ S., 123°25′ E.), at the northeast entrance of Selat Boleng (sec. 6E–12), is bare, but partly covered with alang alang and a few trees. The coast slopes gradually upward to an elevation of 492 feet.

COAST—GENERAL

7A–2 The north coast of Pulau Lomblen has two dominant landmarks in Ili Lewotolo, 4,757 feet high, an active volcano with smoke and sulphur continually rising from it in the northwest part of the island, and Ili Udjolewung (Kedang), 5,029 feet high, the summit of a broad mountain complex in the northeast part of the island. Ili Lewotolo has a broad, bare top and Ili Udjolewung, when seen from northward, has the appearance of a cone. A 2,438-foot peak, about 5 miles southwest of Ili Udjolewung, is also conspicuous and with the points of the island are used as landmarks when Ili Lewotolo and Ili Udjolewung are covered with clouds.

On the south coast of Pulau Lomblen there are the highest mountains on the island. Ili Labalekang (Lamararap) on the west side of Labala-one is the most conspicuous; it has a



VIEWS, IN THREE PARTS, OF THE SOUTH COAST OF PULAU LOMBLEN.

sharp summit 5,394 feet high, with a deep cleft on the southwest side. On the southeast slope of Ili Lahalekang are two cones, Wolokroko, 2,037 feet high, and another one, 1,388 feet. Northeast of Ili Labalekang are Boge, 3,291 feet high; a round, bare summit of 3,130 feet; and another bare summit of 3,704 feet with a slightly higher peak to northward. Radan has a long summit, 3,268 feet high.

Ili Beloppo, on the east side of Labala-one, has a regular, dome-shaped summit, 2,917 feet high. To the south are two other conspicuous mountains; Lapangona, has a fairly sharp summit of 3,169 feet and Lamanuma is slightly sharper and 2,874 feet high.

Selat Alor is only of importance for the Indonesian traffic, which itself rarely frequents it. Insofar as the international traffic is concerned it may be said that it invariably runs through the other straits in the islands.

Pulau Pantar is very rugged and intersected by deep ravines in its northeast part. The plateau, 1, 457 feet high, on the southwest extremity of the island, can be seen from the north and south; it appears as a flat island from the Sawu Sea. Delaki (Dlaki Dlama), at the south end of Pulau Pantar, 4,478 feet high, is steep on its southwest side, but continues northeast in a thickly wooded ridge, slightly lower. A very conspicuous double peak, 3,077 feet high, is located southwest of Delaki.

Selat Pantar, like Selat Alor, is only of importance for the Indonesian traffic; the international traffic almost always uses the other straits in the islands.

Alor is high throughout, especially in the east part, where Kolana Peak, 6,033 feet high, and a 5,850-foot hump west of it can be recognized at a great distance out at sea. The mountainous country is covered with undergrowth and stunted trees or reeds. The land is intersected by a number of deep ravines, through which the

rivers flow into the sea. The northwest part of Alor is a high peninsula joined to the remainder of the island by a narrow strip; it appears as an island from a good distance away.

DEPTHS—DANGERS

7A–3 The 100-fathom curve lies close off all the islands discussed in this part and will be described in detail with the coastal features and landmarks.

WINDS—WEATHER

7A–4 See section 5–3.

TIDES—TIDAL CURRENTS

7A–5 See section 6–3.

NORTH COAST OF PULAU LOMBLEN

7A–6 East of Tandjung Wai Au there is a wide bay divided in two parts by Tandjung Munuwutun, a conspicuous high, steep point, 207 feet high. The west part is entirely obstructed by reefs, and in the east part there is a fairly large village, Lewobela, located at the east end of a long sandy beach.

WAIENGA-ONE and LEWOLEIN-LALENG are two bays entered between Horegalawutun and Badjak-wutun and separated by the Neira Peninsula. Badjak-wutun is low, flat, bare, and rocky, rises steep from the sea, and has a few stunted trees on it. In the west part of Waienga-one there are some detached shoals which do not discolor; the 5-fathom shoal east of Tandjung Lamariangwutun also does not show discoloration.

The Neira Peninsula is covered with alang alang and eucalyptus trees and attains a height of 886 feet in the southwest part. Lewolein in the southeast corner of Lewolein-laleng, is the principal village.

Good ANCHORAGE is available, during the east-southeast monsoon, about 400 yards off Lewolein, in about 20 fathoms. There is also anchorage in 20 to 28 fathoms on the north side of the isthmus of Neira, east of the conspicuous southeast point of the Neira Peninsula.

In Waienga-one there is very good anchorage in the south part, off Pasar Hadakewa, in 20 to 25 fathoms 110 yards offshore.

THE COAST of the hilly peninsula east of Lewolein-laleng is readily distinguished from both east and west; it is entirely covered with reeds, with occasional small groups of trees, and forms a very conspicuous part of the coast. Tandjung Menapawutun, the northeast point of the peninsula, is fairly high and also rises steeply from the sea.

BALAURIN-LALENG, entered between Tandjung Menapawutun and Uhowutun, a conspicuous rocky point about 187 feet high, is of little importance as the depths in the greater part of the bay prohibits anchoring. Balaurin village stands on a gap in the coastal reef in the east part of the bay. The south part of the bay is divided into two inlets by Tandjung Liangbonowutun; the eastern is almost entirely filled in by the coastal reef, but in the west inlet there are moderate depths on either side of a projecting part of the coastal reef, on which is a sandbank always above water.

THE COAST BETWEEN UHOWUTUN AND LEUR-WUTUN, the east extremity of Pulau Lomblen, consists of ridges from Ili Udjolewung (Kedang) covered with trees with some beaches here and there to Pau-wutun, the north extremity of the island. The villages of Dololong and Kalikur are located southwest of Pau-wutun; the latter village can be readily recognized by the mosque and a white tomb on a large rock by the sea. Southeast of Pau-wutun the coast is less steep with occasional rocky spurs. A fairly wide coastal reef lies along the northwest coast of the island to Leur-wutun.

SELAT ALOR

7A–7 SELAT ALOR (8°20′ S., 123°52′ E.), lying between Pulau Lomblen and Pulau Pantar, appears to be entirely clear, but has the

disadvantage of few anchorages. The strait is easily recognized from northward and southward by the high mountains in the northeast part of Pulau Lomblen and from the north by the high island, Pulau Batang. In the north part of the strait, the passage east or west of the islands, Pulau Lapan and Pulau Batang may be taken. Vessels should pass to the west of Pulau Rusa; the passage between Pulau Kambing and the southwest point of Pulau Pantar, Selat Ambeang, and between Pulau Marisa and Pulau Pantar is not recommended. Coming from the south, one as a rule, enters the strait west of Pulau Rusa.

TIDAL CURRENTS.—In Selat Alor the tidal currents can sometimes be very powerful and are of a semidiurnal character; they follow the direction of the strait. During the east monsoon, the southwest current is stronger and remains longer than the northeast current. It was recorded that the southwest current prevailed from about 2 hours to 9 hours after the moon's transit, and the northeast current the remainder. During the west monsoon, the northeast current is probably stronger and remains longer than the southwest current.

Spring tide appears to fall 2 to 3 days after the full moon and new moon, and neaps 2 to 3 days after the quarter. Currents during spring tides may average 5 to 6 knots.

In the north part of the strait the strength of the current is considerably less than in the south part, except off Leur-wutun where a current of 5 knots was experienced. In the narrows between Pulau Pantar and Pulau Marisa, a current of 8 knots was recorded.

ISLANDS AND DANGERS IN SELAT ALOR.—Pulau Lapan, in the north entrance of the strait, is very low. There is a high tree on the west coast of the island, affording a conspicuous mark. A drying reef extends about 2½ miles from the north side, with a sandbank, always above water, on the northwest edge.

Pulau Batang is covered with grass and is 846 feet high. The island has the shape of a cone when seen from the north or south. A narrow coastal reef extends from the northeast point of the island; elsewhere the coast is steep-to.

Pulau Rusa, in the middle of the strait, is 1,119 feet high and overgrown with alang alang. The south part is fairly low, except two steep points at the south and southeast end of the island; the latter point is 325 feet high and appears as a separate island from a distance. The coast is mostly steep and rocky; a plateau, with gradually increasing depths, extends from the west and south sides. The depths increase rapidly off the north and east coasts. Watu Balu, a wooded rock 92 feet high, lies on the above plateau. There is fairly good ANCHORAGE off the west coast of the island in 30 fathoms, sand, with Watu Balu bearing 180°, and a point at the middle of the west coast bearing 090°; there is little current here.

Pulau Marisa, 633 feet high, is separated from Pulau Pantar by a passage only fit for praus. The west point of Pulau Marisa is very conspicuous because of a beach of white sand and some isolated trees.

Pulau Kambing has a hillock 322 feet high on the northeast side; elsewhere it is fairly low, with a rocky coast occasionally interrupted by sandy beaches. Close off the south side there are some black rocks above water; Batu Bawa, a rock, lies about 500 yards offshore.

A 4½-fathom shoal lies midway between the northeast point of Pulau Kambing and the southeast point of Pulau Rusa.

7A–8 WEST SIDE OF SELAT ALOR.—THE SOUTHEAST COAST OF PULAU LOMBLEN, south of Leur-wutun is low to Gelugala-wutun (Komi Wutun); it has a small sand beach with the coastal reef broken in only a few places. Several points along this stretch of coast are conspicuous. The bay, entered between Tandjung Batu Merah and a point about 3 miles westward, affords good ANCHORAGE

in about 19 fathoms, sand, out of the strong current running along the coast. Both of the entrance points of the bay are conspicuous and just east of the west entrance point there are some huts and a conspicuous round-topped tree a little inland.

Farther southward there is ANCHORAGE off Ata Nila, the only village on this part of the coast.

WAITEBA-ONE, entered between Gelugala-wutun and Paugora-wutun, is surrounded by steep mountains and affords ANCHORAGE in about 30 fathoms, sand, south of Wae Teba, a river, emptying into the bay about 3 miles north-northwest of Paugora-wutun. There is also good anchorage in the north part of the bay south of Tandjung Tepiwutun in about 28 fathoms, sand, about 400 yards offshore.

LABALA-ONE, entered between Tandjung Atande, high, steep, and rocky, and Tandjung Lolowutun, is entirely surrounded by high mountains, which descend fairly steeply to the shores of the bay. The head of the bay is divided into two parts by Tandjung Lewowutun, a low, wooded ridge. On the east side of the bay is Tandjung Lusi Tobiwutun, a small peninsula, 108 feet high, which appears as a cone when seen from the west; this peninsula is joined to the coast by a narrow, low isthmus.

Because of the great depths, ANCHORAGE can only be taken in the two inlets at the head of the bay. Labala village, where the ruler of the district resides, is located on the beach in the eastern of these inlets, and on a small plateau to the west is Mulan, another village. There is ANCHORAGE off the sandy beach east of Labala in 25 fathoms, mud and sand, 300 yards offshore, with the flagstaff at Labala bearing 310° and Tandjung Lewowutun 248°. There is also anchorage in the west inlet in 25 fathoms, coarse sand and stones, 250 yards offshore, with Wolokroko (sec. 7A–2) bearing 238° and the 3,704-foot summit north of the bay bearing 353°.

TANDJUNG WOLOWUTUN, the south point of Pulau Lomblen, is formed by a long sharp ridge from Ili Labalekang (sec. 7A–2), which ends in a narrow plateau rising steeply out of the sea to a height of 121 feet. Tandjung Boler, close westward is a long, low, rocky point having the appearance of a pier; about 1,400 yards to the west and close off the coast is a conspicuous, sharp rock, 102 feet high, named Nubi, with a few trees on it. Lamalerap, a town 1½ miles east of Tandjung Wolowutun, is divided into two parts; the lower part stands on the beach, and the upper part, where the chief of the district resides, is built on a rock by the sea.

EAST SIDE OF SELAT ALOR.—THE NORTHWEST COAST OF PULAU PANTAR, southwest of Tandjung Muna, is almost entirely overgrown by mangroves, with occasional breaks of sandy beaches to Kabir, one of the most important villages on the island and the residence of the ruler of the north province of Pantar. The coast south of Kabir is rocky until near Teluk Blangmerang where the mangroves begin again.

KABIR lies in a low, narrow plain and is readily recognized from seaward by the houses on the beach. A reef with a least depth of 1 fathom in its north part extends about 1,600 yards north from a position on the coast the same distance southwest of Kabir. The basin off the village is entered between the north end of this reef and the edge of the coastal reef marked by a BUOY. There is fairly good ANCHORAGE in the basin in 25 fathoms with the buoy bearing 000° and the bridge over the river south of the flagstaff at Kabir bearing 135°. A 16-foot patch lies west of the anchorage.

TELUK BLANGMERANG indents the coast for 5 miles and terminates in an inner bay; the entrance of the latter between the coastal reefs on either side is only about 220 yards wide. The village of Blangmerang, where the ruler of the district resides, stands on the west en-

trance of the inner bay. When the reefs are visible there is no difficulty in entering the inner bay; the east side of Kura, an island in the inner bay south of Blangmerang, in range with the summit of Delaki (sec. 7A–2), when not hidden by clouds, bearing 178°, leads clear of the coastal reef. When past the narrows, there is good anchorage in about 22 fathoms, mud and sand. Anchorage can also be taken farther in the bay.

THE COAST southwest of Nuhawutungwutun, the northwest extremity of Pulau Pantar, has few distinguishable points because of the confusing topography. The south coast of the island between Tandjung Sojang, its southwest extremity, and Tandjung Delaki (Boda), its southern extremity, forms a large bay with great depths.

SELAT PANTAR

7A–9 SELAT PANTAR (8°20′ S., 124°20′ E.), lying between Pulau Pantar and Alor and little frequented by international traffic, is well clear, the islands rising steeply out of the water. The strait is easily recognized from northward by the high Islands of Pulau Pura and Reta and from southward by Pulau Treweg. The best channel appears to be between the islands in the north part of the strait and the coast of Alor and on either side of Pulau Treweg. Anchorages off the Pantar shore are not to be recommended; Teluk Kalabaki affords the only and best anchorage.

TIDAL CURRENTS.—The tidal currents through Selat Pantar sometimes display sharp irregularities, stronger than those in the more western straits. It may be stated that the tidal currents are of a semidiurnal character.

During the east monsoon, the south current is predominant in strength more than duration. Sometimes, especially from about 2 to 3 days after the quarters when the north current should be running, a condition called Ajer gundah (uncertain waters) occurs, because the north current is unable to overcome the south current. The maximum rate of the north current during the east monsoon, from about 2 to 3 days after full moon and new moon, does not appear to exceed 3 knots. The maximum rate of the south current during this monsoon is from 6 to 7 knots, and sometimes even 9 knots. It may be expected from about 2 to 3 days after full moon and new moon. From about 2 to 3 days after the quarters, the maximum rate of the south current is 4 knots, and because of the Ajer gundah the north current is frequently not experienced.

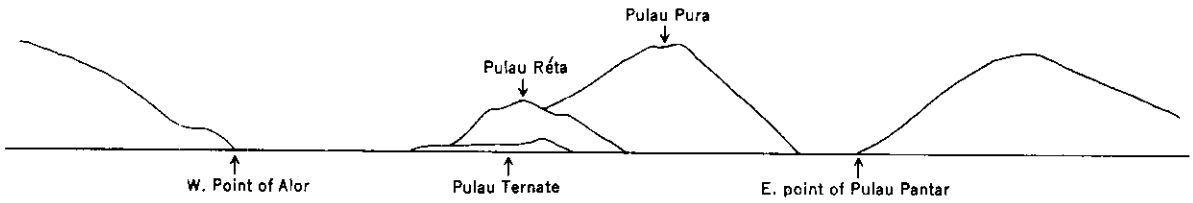
During the west monsoon, which appears to have little influence on the currents, the rate of the current was observed not to exceed 4 knots in either direction.

Rips occur especially during periods of strong currents in the section east of the south point of Pulau Pura and in front of the entrance of Teluk Kalabahi.

ISLANDS IN SELAT PANTAR.—Ternate, in the north entrance of the strait, is small and low, rising 344 feet at the southwest end. Reta, south of Ternate, rises to a cone 1,489 feet high, and has a village on the northeast side.

Pulau Pura is in the shape of a volcano rising to a double peak, 3,330 feet high.

Pulau Treweg, in the south entrance of the strait, is 1,306 feet high; there is a sandy beach



SELAT PANTAR, NORTH ENTRANCE

with large detached rocks on the south side of the island.

WEST SIDE OF SELAT PANTAR.—THE EAST COAST OF PULAU PANTAR is steep throughout with occasional rocky points which are spurs from the mountains. Tandjung Muna, the northwest entrance point of the strait, is low with a beach, with rocks, on its south side. At Tandjung Bota Amin, the southwest entrance point of the strait, the coast is steep and rocky.

EAST SIDE OF SELAT PANTAR.—THE WEST COAST OF ALOR between Tandjung Matari, the northeast entrance point of the strait, and Tandjung Kumba, the north entrance of Teluk Kalabahi, is high to Bota village, and thence low and covered with mangroves. Between Bota, which is not visible from seaward, but is marked by a group of coconut palms, and Kokar is a wooded point with a conspicuous isolated group of trees on the coastal reef. Alor Besar, another village, is recognized by a mosque. The coast south of Teluk Kalabahi to Tandjung Margeta, the southeast entrance point of the strait, is steep-to.

TELUK KALABAHI is deep and clear, having a steep shore at the sea end, gradually decreasing in height toward the upper part of the bay. Here it is actually low and forms a valley which connects the northwest peninsula of Alor with the rest of the island. Kumba, an island 230 feet high, is located close off Tandjung Kumba.

On the north side of the bay are the villages of Alor Kechil and Dulolong, off which there is ANCHORAGE. Anchorage can be taken south of Dulolong in 18 fathoms about 200 yards offshore. KALABAHI, the residence of a government official, is located on the northeast shore of the bay. There is a customs bureau at the village and the village is connected with the general telegraph system by radio. The ANCHORAGE off the village is good at all times and can be taken in 11 fathoms, sand, about 440 yards offshore. There is a landing pier for boats, which can be best approached during the midday hours. Vessels visit the bay regularly.

A LIGHT is shown on the pier at Kalabahi.

ALOR

7A–10 THE NORTH COAST OF ALOR, east of Tandjung Matari to near Tandjung Sika, is high and rocky; a point about 1 mile east of Tandjung Matari is conspicuous because of its white color. Pulau Nuhabeng (Sika), a low, small island, covered with shrubs, lies on the coastal reef extending from Tandjung Sika. A few trees stand on the coastal reef about 2 miles west of Tandjung Sika. Teluk Benlelang, east of Tandjung Sika, is foul on its west side. The coast east of Teluk Benlelang is high and steep; Tandjung Likiewatang, the east entrance point of Teluk Benlelang, can be recognized by the village on the point. Tandjung Kolowale and Tandjung Babi are high and rocky, and Tandjung Manamoni, the northeast point of Alor, is hilly.

Temporary ANCHORAGE can be taken about 2¼ miles west of Tandjung Kolowale in 27 fathoms, sand.

THE EAST COAST OF ALOR, between Tandjung Manamoni and Tandjung Lisomu (Laisumbu), is steep and can be approached closely. The mouth of a river, about 1½ miles north of Tandjung Lisomu can be recognized by a small group of trees. ANCHORAGE can be taken about 300 yards off the mouth of this river in 27 fathoms, sand, with the small group of trees bearing 270°.

THE SOUTH COAST OF ALOR east of Tandjung Margeta is mostly high and steep for about 18 miles, then it consists of low spurs from the mountains to Tandjung Lisomu. This coast is steep-to. These spurs form more or less plateaus, covered with alang alang. ANCHORAGE can be taken off all the villages along this coast in 22 to 28 fathoms and from

330 to 550 yards offshore. Kui is the residence of the ruler of the district and can be recognized by two white tombs on a rocky projection near the village. Pureman village, 11 miles east of Tandjung Lisomu, is the residence of the ruler of another district.

PART B. KEPULAUAN SAWU, PULAU ROTI, TIMOR, AND WETAR—OMBAI AND WETAR STRAITS

7B–1 PULAU SAWU (10°35′ S., 121°50′ E.) is the largest and highest island of the Kepulauan Sawu. The most important part of the islands is the northwest coast of Pulau Sawu and the roadstead of Seba. Hundreds of lights are often seen along the coasts of the island; these lights are torches used by the people of the island engaged in fishing.

GENERAL REMARKS

7B–2 The Kepulauan Sawu, Pulau Sawu, Pulau Raidjua, and Dana, are comparatively low with few landmarks. The highest part of Pulau Sawu is Rai Piga, 1,122 feet; of Pulau Raidjua, 558 feet; and of Dana, 118 feet. The higher parts are mostly bare, the lower are wooded, cultivated, and intersected by many roads; palm trees grow in large numbers on the two larger islands.

Pulau Roti, at the southwest end of Timor, is a hilly island with only a few conspicuous peaks. The flat-topped hill, 630 feet high, southwest of Baa, is recognizable at a great distance north-northeast. Gunung Lelebe, 879 feet high, south of Teluk Korobafo, is a fairly conspicuous hill covered with round-topped trees, but it disappears when close inshore. Some small islands lie off the west and southwest side of Pulau Roti.

Timor, the largest and easternmost of the Lesser Sunda Islands, is mountainous throughout, but the ranges seldom rise higher than 6,000 or 7,000 feet. Monte Tata Mailau, the highest peak of Ramelau, a mountain range in the middle of the island, attains an elevation of 9,580 feet. These high peaks in the middle of the island are often covered with clouds.

The southeast coast of Timor is high and rugged in the east part; mountain ranges approach very near the coast, with a bold and rocky shore jagged and worn by the violence of the sea in the onshore monsoon. Westward of this, the land is of moderate elevation, terminating in low and sandy shores.

The north coast of Timor has numerous peaks which provide landmarks, but they are generally only useful during the Southeast Monsoon. The east end of Timor is a high, flat ridge terminating in a perpendicular bluff near Ponta Sevivara. Along this coast Kuri, 4,521 feet high, about 19 miles east of Dili, is conspicuous, and Fatu Masin, 4,649 feet high, and Guguleu, 3,806 feet, at the east entrance of Ombai Strait and eastward of Ponta Parimbala are also conspicuous.

The northwest coast of Timor, between Ponta Parimbala and Tandjung Gunuk, is mountainous, occasionally broken by lower parts of hilly land. There are several conspicuous summits along this stretch of coast. Atabai, 3,251 feet high and south of Ponta Parimbala, has a conspicuous round-topped tree on its summit. Lakaan, 5,318 feet high, 20 miles farther south-southwest is isolated and conical shaped. Fatu Makeh, west of Lakaan, is the northernmost peak of a ridge running north and south; Fatu Kadua about 5 miles northward has a conspicuous cleft at 1,407 feet and can be recognized from the west and north-northwest. Fatu Nisa, 3,507 feet high, has a cleft in the summit when seen from the northeast by north. Fatu Nu Aaf, 3,956 feet high, is conspicuous from all sides.

The west coast of Timor, south of Tandjung Gunuk, is mountainous, gradually decreasing in height toward the southwest end, so that southward of Teluk Kupang the land is merely hilly. Timau, 5,738 feet high, is the most con-

spicuous mountain on the west coast; it can be seen at a distance of 40 miles.

Ombai Strait offers a wide, clear, and very deep passage from the Indian Ocean and Sawu Sea on one side and the Banda Sea and Wetar Strait on the other.

Wetar Strait, lying between Timor and Wetar, is wide and clear. It is used regularly by the international traffic on the routes, Java—Australia and Singapore—Australia on which route the parallel of 8° S., is followed as far as Alor, running northward of the Lesser Sunda Islands, through the Java Sea, Flores Sea, and Banda Sea.

Ilha de Ataúro (Kambing), at the northwest entrance of Wetar Strait, rises steeply out of the sea on all sides to an elevation of 3,376 feet in the south part. Pulau Liran, at the northeast entrance of Wetar Strait, rises to an elevation of 1,411 feet.

Wetar is an irregularly shaped, mountainous mass with high, steep coasts. Pulau Reong, off the northwest point of Wetar and Pulau Liran are good landmarks when approaching Wetar Strait from the west. Two summits on the southeast coast of Wetar, 3,917 feet and 4,080 feet, offer good recognition points in approaching Wetar Strait from the southeast.

Pulau Kisar, at the east end of Wetar Strait, consists of a number of rocky hills, the highest of which is 787 feet.

DEPTHS—DANGERS

7B–3 The 100-fathom curve lies, for the most part, close off all the islands discussed in this part and will be described in detail with the coastal features and landmarks. This includes Sumatra Reef in Wetar Strait. The Sahul Bank, about 70 miles southeast of Timor, and the dangers to the east and west of it should be avoided because it has not been thoroughly surveyed. This bank and dangers are discussed in H.O. Pub. No. 74.

WINDS—WEATHER

7B–4 For a description of the climate in the Flores Sea see section 5–3.

On Timor during the Southeast Monsoon there is very seldom any rain, the land is barren and scorched and the rivers are dry. The nights are cool at the beginning of this monsoon, but near the end the nights have the same high temperature as the day because the wind has diminished. The Northwest Monsoon, which is accompanied by heavy showers and driving rain, changes the appearance of the island within a short time. The mountain slopes become green, the temperature drops, and the rivers become turbulent streams. These mountain streams create light green discoloration, which resembles reefs, far out to sea.

Tropical storms occur in some years in an area within the Flores Sea, and the seas around Timor during the spring time, but the frequency of destructive storms does not exceed one in about 10 years at any point.

TIDES—TIDAL CURRENTS

7B–5 See section 6–3.

KEPULAUAN SAWU

7B–6 THE NORTHWEST COAST OF PULAU SAWU from Tandjung Mesara, the rocky west extremity of the island, is mostly sandy with a few rocky parts to Seba. North of Seba the Kali Menia empties into the sea about 2¾ miles west-southwest of Tandjung Aimau, the north point of the island. A sandy beach at the mouth of the river affords a good landing place.

A LIGHT is shown close east of the mouth of the Kali Menia.

SEBA, the residence of a rajah, is not easily recognized from the sea, but there is a conspicuous small rocky plateau about ¾ mile southwest of Seba. When approaching Seba during the day one usually sees, before sighting the light structure, a 30-foot high white stone pyramid which stands southwest of the light struc-