



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 9 — CHART INFORMATION

SECTOR 9

ISLANDS NORTH AND NORTHEAST OF EAST CAPE—NORTH COAST OF NEW GUINEA FROM EAST CAPE TO THE EAST BOUNDARY OF IRIAN JAYA

Plan.—This sector first describes the islands N of the Louisiades, and N and NE of East Cape, the E extremity of New Guinea. The islands are described, from E to W, in the following order: Laughlan Islands, Woodlark Island, Trobriand Islands, Lusancay Islands and Reefs, then D'Entrecasteaux Islands. Then the N coast of Papua New Guinea, from East Cape to the E boundary of Irian Jaya, at the 141st meridian, is described. The arrangement of the latter part is from E to W.

General Remarks

9.1 Tides—Currents.—A W current with a velocity of 2 knots has been observed between Rossel Island and Laughlan Islands, and thence a NNW current with a velocity of 1.25 knots to a position about 170 miles NNW of Laughlan Islands, decreasing in velocity to 0.25 knot, but setting in the same direction, thence W towards Finsch Harbor.

The current between Kiriwina Island and Kitava Island sets NNW with a maximum velocity of 2 knots during the SE trade.

In Huon Gulf, a strong current, setting SE towards Burnung Point, is apparently caused by the discharge of the Markham River.

From Vitiaz Strait to Isumrud Strait, the currents are variable. From May to September, W sets of the South Equatorial Current predominate, with rates up to about 2 knots in the open ocean, and up to 3 knots through Isumrud Strait. From November to February, the NW monsoon reverses the trend.

From about March to November the predominant direction of the current is WNW near the coast of New Guinea, but is W farther seaward; average velocities vary from 1 knot to 1.75 knots. In the NW monsoon, the flow near the coast is reversed and sets SE.

Laughlan Islands

9.2 Laughlan Islands (Nada Islands) (9°17'S., 153°40'E.) consist of eight low islets, lying on a horseshoe-shaped reef, open W. The greatest diameter of the lagoon is about 3 miles. The islets, none of which are more than 2.7m high, with coconut palms about 24m high, are composed of sand and coral. There are several villages, some of the inhabitants of which speak a little English and are very friendly.

Laughlan Islands were reported to give a good radar return from a distance of 16 miles.

The best entrance is N of a small sandbank with some bushes on it. The water in the lagoon is clear, rendering the numerous coral patches easy to distinguish.

Anchorage.—Good anchorage has been taken by a 1,400 ton vessel in 18.3 to 22m, in the S part of Wabomat Lagoon. Local knowledge is required. Small vessels can anchor in 9.1m about 0.2 mile off the village on Budelun Island.

Caution.—Laughlan Islands should be given a wide berth at night due to the currents in their vicinity.

Cannac Islet (9°17'S., 153°28'E.), a bare rock, 35m high, lies about 9 miles W of the N islet of the Laughlan Islands. Foul ground extends about 4 miles S of Cannac Islet, and a depth of 7.3m was reported about 4 miles ENE of the islet.

Cannac Islet was reported to give good radar returns from distances up to 25 miles.

An extensive coral bank, with depths of 18.3 to 37m, and a width of about 10 miles, extends about 15 miles W of Cannac Islet. There is a 11m shoal 18.5 miles W of Cannac Islet.

Anchorage may be obtained outside the lagoon in a depth of about 7m, about 0.2 mile W of Cannac Islet.

Woodlark Island

9.3 Woodlark Island (Muyuwa Island) (9°07'S., 152°50'E.), about 29 miles W of Cannac Islet, is high in its W half, and low in its E half. The island is about 33 miles in length in an E-W direction, and about 16 miles in breadth. Suloga Point is the SW point of the island and the SW entrance point of Suloga Harbor. Suloga Peak, 410m high, lies about 1.5 miles N of Suloga Point, and is prominent from S. **Mount Kabati** (9°04'S., 152°49'E.) lies near the middle of the N side of the island.

The coast of the island is generally high, and densely wooded to the water's edge, in some parts consisting of vertical limestone cliffs. The NE side of the island is relatively steep-to, while the S and SW sides are encumbered with islets and detached reefs to a distance of 17 miles.

Woodlark Island has been reported to be a good radar target at a distance of 23 miles.

Caution.—The N side of the island is unsurveyed and should not be approached within 2 miles. It has also been reported that the NE part of the island lies 2 miles SW of its charted position.

9.4 Islands and dangers SWt and W of Woodlark Island.—**Ginetu Island** (9°27'S., 152°38'E.), about 16 miles SSW of Suloga Point, is wooded and about 18.3m high to the tops of the trees, and is bordered by extensive reefs. An islet, 13.7m high to the tops of the trees, lies near the extremity of a reef extending about 1 mile E of Ginetu Island. Detached reefs and shoal patches lie about 2 miles W and 6.5 miles NW of Ginetu Island.

From a position about 8 miles NW of Ginetu Island, a broken barrier reef, on which there are several islands, extends about 8 miles NW, then about 15 miles N to the S extremity of Madau Island.

Madau Island (9°00'S., 152°28'E.), with a width not exceeding 1.5 miles, extends about 7 miles N, then 3 miles NE, then 5 miles ESE, and is almost connected at its SE end to the

NW corner of Woodlark Island. A very shallow lagoon, full of reefs and shoals, occupies the NW part of this area bordered by the barrier reef, Madau Island, and the W end of Woodlark Island. Farther SE, many reefs and coral heads lie in an unsurveyed area W of a line between Ginetu Island and Suloga Point; there is an entrance through the barrier reef in the latter part, but it is only accessible to vessels with local knowledge.

Madau Island was reported to lie 2 miles W of its charted position.

Kwaiapon Bay (Kwarapan Bay) (9°05'S., 152°43'E.), with its entrance about 9 miles NW of Suloga Point, should not be approached by vessels with a draft of more than 3.7m; local knowledge is necessary. Kalumadau, the only settlement on Woodlark Island, lies about 2 miles inland from the head of Kwaiapon Bay, and is unhealthy.

Beacons, with radar conspicuous metal framework towers surmounted by conical topmarks, are located on the SW side, 17.5 miles W and 9.25 miles NW of Suloga Point.

Alcester Islands (9°28'S., 152°28'E.), about 12 miles WSW of Ginetu Island, consist of a flattopped, densely wooded island, 55m high, to the tops of the trees, at its E end; an islet of the same character, 30.5m high, lies close E. The island is steep-to on its NW side, where the cliffs rise perpendicularly from the water. A cove and a village lie on the N side of the island.

The island has no fringing reef on its S side, and is generally steep-to, but a reef fringes its N side in places, and there is reef extending 0.35 mile SW from the W end of the island. Alcester Island was reported to lie approximately 4 miles E of its charted position.

Anchorage may be taken off the village in a cove on the N side of the island near the middle during the SE trade.

Suloga Harbor (9°13'S., 152°46'E.)

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9.5 Suloga Harbor, at the entrance of a spacious inlet, is entered between Suloga Point, the SW point of Woodlark Island, and Whasela Point, about 2.25 miles NE. Mapas Island, close NE of Suloga Point, to which it is connected by coral reef, shelters the harbor. There are general depths of 12.8 to 20m in the harbor.

A depth of 11m lies about 7 miles SE of Suloga Point, in the approach to the harbor.

The approach to the harbor lies between Mapas Island and the reef fringing Woodlark Island, which is partly awash, 0.8 mile E; the channel is 0.65 mile wide, with fairway depths of 24m. The passage into the harbor lies between Whasela Point and a detached reef which extends 0.5 mile E of Oquana Point, the N extremity of Mapas Island; this passage is 0.25 mile wide.

Mapas Island (9°12'S., 152°48'E.), about 61m high, has most of its shores fringed with mangroves, and a salt water lagoon extends nearly its whole length. There is a village on the sandy beach on the SW side of the island. Reefs extend 0.25 mile N of Picnic Point, the NW end of the island, and there are two detached patches between the extremity of the reefs and Oquana Point.

Whasela Point is formed by two wooded islets with foul ground between them and the coast. Steep Point, close W, has some huts on it. Shoute Point, about 1.25 miles WNW of Whasela Point, is the E entrance point of the N part of the inlet.

A detached reef lies in the center of Suloga Harbor, about 0.5 mile N of Picnic Point.

An area of discolored water, presumably shallow, was reported to lie 0.35 mile S of Mapas Island.

Directions.—From S, Suloga Peak is conspicuous, and on approaching the harbor, Mapas Island can be made out. Vessels approaching Suloga Harbor should steer a course of 021° through the middle of the channel between the reefs extending from the E side of Mapas Island and the reef E. The edges of the reefs are clearly defined, but the detached reef E of Oquana Point is not easily made out.

When Oquana Point, the N point of Mapas Island, bears 280°, alter course gradually W, and anchor in about 20m when Shoute Point bears 333°, distant about 0.5 mile. The anchorage lies 0.22 mile E of the detached reef in the center of the harbor. Small vessels may obtain anchorage SE of the reef, with Oquana Point bearing 100°, distant 0.3 mile.

9.6 Guasopa Harbor (9°14'S., 152°56'E.) lies in a bight between Main Point, the SE extremity of Woodlark Island, and a point on the coast about 4 miles W. A barrier reef, extending about 9 miles WSW from Main Point, protects the harbor. Reu, Vaviai, and Aiun, 39.6, 36.6 and 37m high, respectively, to the tops of the trees, are thickly wooded islets, which lie on the barrier reef, about 1.25 and 3.5 miles W, and 8 miles WSW, respectively, of Main Point.

A 7.3m unexamined patch (9°19'S., 152°57'E.) lies about 4.5 miles SSW of Main Point.

The main entrance to the harbor rounds the W extremity of Vaviai Reef, between the reef extending about 0.5 mile SW of Vaviai and an unexamined depth of 5.5m, about 1 mile SSW of Vaviai, on which the sea breaks. This patch is the E of a series of patches on the barrier reef to the W. There are depths of 20 to 26m in the passage, and from 14.6 to 22m in the fairway inside, with not less than 9.1m nearly to Guasopa, a village about 3.5 miles NE of Vaviai. A 3m shoal lies in the fairway about 1 mile NE of Vaviai, and an 8.5m patch lies about 0.5 mile farther NE. Iris Patch, in a depth of 4.6m, lies on the W side of the fairway of Guasopa Harbor, 0.85 mile WNW of the W end of Vaviai. There are depths of 3m extending 0.5 mile off the N coast of Vaviai.

The E entrance lies E of the reef between Vaviai and Reu islets, and is reported to be intricate and patchy.

There is a landing stage, available for small craft, in the NE part of the harbor.

There are some reefs off Aiun and E of it. A vessel steering a course of 098° from abreast Aiun to Nubara, an islet about 17 miles ENE, crossed some sunken patches of reef, over one of which there was a depth of 6.4m, about 3 miles off the coastal reef.

Anchorage.—Anchorage has been taken in 16.5 to 18.3m, in Guasopa Harbor, with the E extremity of Vaviai bearing 189°, distant about 0.4 mile.

Directions.—The E peak of the continuous high land of Woodlark Island, bearing 314°, is reported to lead up to the W entrance. When the W entrance has been identified, a vessel

should steer to pass between the spit extending from the SW end of the reef on which Vaviai lies, and an unexamined shoal, in a depth 5.5m, about 0.6 mile SSW of it, passing about 0.1 mile from the reef and rounding the NW angle at the same distance, avoiding Iris Patch.

Caution is necessary in entering the harbor, and only vessels with local knowledge should attempt it.

Kamarau Bay (9°10'S., 152°58'E.) is entered between a rounded point, about 1.25 miles NNE of Main Point, and a point about 2.5 miles farther NNE. The bay extends about 3.5 miles NW, and rivers discharge into the bay at its head. The bay has not been surveyed, but appears to be shoal for a considerable distance from its head.

It is reported that small craft can anchor near the S shore of the bay but it is open to swell in strong SE winds.

Direction Point (9°09'S., 153°03'E.), the E extremity of Woodlark Island, lies about 3.75 miles NE of the N entrance point of Kamarau Bay. The unsurveyed coast between is fronted by a reef which appears to extend more than a mile offshore.

Nubara Islet (9°13'S., 153°07'E.) lies about 1 mile W of the end of a reef extending about 7 miles ESE of Direction Point. The islet was reported to be about 30.5m high to the tops of the trees, and to give a good radar echo at 23 miles. Two small islets lie on the reef, about 2.5 miles S of Direction Point. A reef extends about 3 miles SW of Nubara Islet; the area about 5 miles farther SW is unsurveyed.

An above-water reef lies about 5 miles NE of Nubara Islet; a reef extends about 3 miles S of the above-water reef, and the area in the vicinity is unsurveyed.

An 11m shoal lies about 6 miles ESE of Nubara Islet.

Buyuasi Bay (Richards Bay) (9°06'S., 152°58'E.) lies on the NE side of Woodlark Island, about 4.5 miles NW of Direction Point; a village lies in the W corner of the bay. The bay affords anchorage for small vessels with local knowledge, in 18.3m coral, about 55m offshore, but it is exposed and unsafe in the NW monsoon. Perpendicular cliffs, about 18m high, border the bay and there is no landing place.

At the N extremity of Woodlark Island a shoal, in a depth of 1.8m, extends from 0.75 mile to 1.25 miles offshore; the sea seldom breaks on it, but it is usually marked by heavy tide rips.

Egum Atoll

9.7 Egum Atoll (9°25'S., 151°57'E.), nearly circular and about 16 miles in diameter, lies about 22 miles WNW of Alcester Islands. A large part of the reef is in depths of 7.3 to 13m, but it rises about a meter above-water on the N side, where some 14 islands and islets are located.

Yanaba Island, the largest of the islands and islets, lies at the NW end of the reef. It is 65m high, to the tops of the trees, in its N part, and 47m high at its E end. There are some villages in a sandy bay on the S side of Yanaba Island. Tabunagora Island, 22m high, to the tops of the trees, lies about 6 miles SE of Yanaba Island.

Yanaba Island is reported to be a good radar target at a distance of 15 miles.

A small islet, 31m high to the tops of the trees, lies about 4 miles N of Yanaba Island.

Egum Islet and Nasakori Islet, about 3 miles SE, lie in the middle of the lagoon. There are many isolated reefs and coral heads in the atoll.

The NW and NE entrances into the lagoon appear to be the best. The NW entrance, SW of Yanaba Island, has a depth of approximately 5.5m. The NE entrance is about 0.4 mile wide, but appears shoal, and its use is not recommended.

Anchorage.—There is reported to be anchorage, exposed to SE winds, in 11m, off the villages on the S side of Yanaba Island. There is reported to be sheltered anchorage in the vicinity of Egum Islet.

Caution.—A dangerous submerged rock has been reported (1993) to lie in position 9°26.6'S, 151°50.3'E about 6 miles SW of Egum Islet.

Marshall Bennett Islands

9.8 Gawa Island (8°58'S., 151°59'E.), the E island of the Marshall Bennett Islands, is a former atoll elevated above the sea. The coral wall rises to an elevation of 173m to the tops of the trees. The plateau is 30.5m below the circumferential rim. Coconut palms mark each village. Gawa Island was reported to lie at least 2 miles E of its charted position.

Anchorage can be obtained practically anywhere about 0.1 mile or so offshore around Gawa Island. The water is clear and any uncharted dangers should be seen. Anchorage has been taken in 57m with the N extremity of the island bearing 093° and the NW extremity bearing 204°.

Kwaiawata Island (8°55'S., 151°55'E.), about 3 miles NW of Gawa Island, is an elevated atoll 181m high to the tops of the trees. A reef extends from the SE and NW sides of the island, but in other places it is steep-to. The cliffs at the E and W extremities of the island are perpendicular, with numerous caves all along these parts of the coast.

The center of the raised lagoon lies at an altitude of 99m; villages and extensive gardens border the lagoon.

Anchorage.—A belt of anchoring ground, sand, gradually shoals toward the fringing reef.

Dugumenu Island, about 6 miles N of Kwaiawata Island, is 59m high to the tops of the trees. It is composed of coral, and is covered with coconut palms. Anchorage by large vessels can be obtained outside the coastal reef of the island.

Iwa Island (8°42'S., 151°41'E.), about 18 miles NW of Kwaiawata Island, is the NW of the Marshall Bennett Islands. It is 142m high, thickly wooded, and consists of a series of irregular coral terraces and precipices. The coast is bordered by steep cliffs. There is a village at the W point of a small sandy beach, but no anchorage.

Iwa Island has been reported to be a good radar target at a distance of 24 miles. Iwa Island was reported to lie 2 miles WNW of its charted position.

Trobriand Islands

9.9 Kiriwina Island (8°35'S., 151°08'E.), the largest island of the Trobriand Islands, is densely wooded, and of almost uniform height, with an elevation of 45.7m to the tops of the trees. The other islands of the group are of a similar

character. **Bomatu Point** (8°24'S., 151°07'E.), the NE extremity of Kiriwina Island, is marked by a light.

The N and E sides of the island are fringed by a reef, which extends from 0.1 to 0.3 mile offshore, in places, and there is practically no anchorage off these two sides. An extensive bay, on the W side of the island, is entered between Boli Point, about 2 miles SE of **Kadalawa Point** (8°32'S., 150°59'E.), the W extremity of the island, and Kabanikau Point, about 11 miles S. This bay is encumbered by a reef and coral heads which extend nearly to the line joining the entrance points.

Omarakana, a village in which there is a church, lies about 4 miles S of Bomatu Point, and 1.5 miles inland.

Muiau Bay, on the E side of the island is fringed by a nearby drying reef, extending about 73m offshore at its N end.

Vakuta Island (8°51'S., 151°11'E.) is separated from the S extremity of Kiriwina Island by a pass, available only for boats. Vakuta Island has been reported to give a good radar return at a distance of 14 miles.

Kitava Island (8°37'S., 151°20'E.), about 10 miles E of Kiriwina Island, is 142m high, and appears to be an elevated knoll. From E, it appears as a densely wooded ridge slightly lower at each end, falling steeply into the sea. The central plateau of the island is surrounded by a wooded coral wall, the top of which is from 15.2 to 30.5m above the level of the plateau; several villages are in the depressed plateau. The E coast of the island is steep-to, and fringed by sand. Uratu Islet lies on a reef fringing the W side of the island and extending about 0.5 mile offshore.

A rock, over which the depth is unknown, has been reported to lie about 1.25 miles SW of Uratu Islet.

A light is shown from the SE side of Kitava Island.

Kaileuna Island (8°31'S., 150°57'E.), 46m high to the tops of the trees, lies about 1.25 miles W of the W extremity of Kiriwina Island.

Anchorage.—Good, sheltered anchorage can be obtained off the W side of Kiriwina Island, in about 9.1 to 13m, about 1 mile SW of Boli Point, avoiding the detached coral patches which are reported to exist there. Anchorage can also be taken in the lee of Mu-ua Island, about 10 miles farther S, when SE weather renders the anchorage off Boli Point untenable. There is a green beacon over depths of 3.7m 1.25 miles W of Mu-ua Island.

A boat channel, marked by poles and beacons, leads from the anchorage of Boli Point to a jetty at Losuia, about 3 miles E of Boli Point; a least depth of 0.9m was reported over the bar S of Boli Point.

Sheltered anchorage, in SE weather, can be obtained in 39 to 55m, SW of Sia Islet, 9.1m high, close off the NW side of Kiriwina Island, about 2.5 miles W of Bomatu Point.

Anchorage can be obtained anywhere off Kitava Island. The berth during the SE trade is in a depth of 18.3m, 0.15 mile N of Uratu Islet.

9.10 Dangers S of Trobriand Islands.—The area between the S end of Kiriwina Island and Fergusson and Goodenough Islands, located about 42 miles SSW and 55 miles WSW, respectively, is studded with reefs. The eye is the only guide for navigation among the reefs, but the water is so clear that there is no difficulty in seeing them from aloft. The reefs are not steep-to as is usual off the coast of New Guinea, and anchorage

can be obtained anywhere in their vicinity. It should be noted, as stated on the charts, shoaler water than charted may exist in these areas due to incomplete information.

Recommended tracks.—A channel leads from a position 2 miles NNE of MacGee Patch (9°10'S., 150°50'E.), then separates about 6.5 miles NNE into two channels passing about 1.5 and 6 miles E, respectively, of **Wadana Islet** (8°56'S., 150°50'E.), then unites again nearly 2 miles S of **Iaga Islet** (8°44'S., 150°58'E.). The channel then extends NNE, then N through the deep channel W of Kiriwina Island.

The W channel is the recommended channel as the buoys which previously marked the channels have been removed. The channels are very narrow in places, and should only be used with local knowledge, using local charts.

Lusancay Islands and Reefs

9.11 Lusancay Islands and Reefs extend from about 12 to 60 miles W of the N end of Kiriwina Island; between them and Cape Ward Hunt, about 115 miles W, many reefs are charted. This area should be avoided. The tops of the trees on the islands attain an elevation of 30.5 to 61m.

Nauria Island (8°34'S., 150°17'E.), 61m high and bare, is the S island of the group. Rothwell Bank, a sandbank with low trees on it, lies about 20 miles SW of Nauria Island.

It was reported that radar echoes were obtained of the Lusancay Islands at a distance of 21 miles.

Passages in the vicinity should not be attempted except in the finest weather and with the sun in a favorable position. Many of the reefs are very long and narrow, running in a NW-SE direction, and it is difficult to find a passage through them.

Deep water exists on the N side of Lusancay Islands, close N of the fringing reefs, which afford protection for small craft during the SE season.

D'Entrecasteaux Islands

9.12 D'Entrecasteaux Islands, S of Lusancay Islands and Reefs and Trobriand Islands, lie in close proximity to the E end of New Guinea. It consists of three principal islands, Normanby, Fergusson, and Goodenough, and numerous islets.

Normanby Island (10°00'S., 151°00'E.), the SE island of the group is wooded, except for a mountain near the middle, which is bare, high and rocky. The island has a narrow mountain range, attaining an altitude of 1,027m at the NW end of the island, with deeply furrowed sides and wide valleys. The island has very little fringing reef.

The S coast of Normanby Island, which forms the N side of Goschen Strait, has been described in paragraph 7.28.

9.13 Southwest coast of Normanby Island.—Lebudowa Bay is entered about 3 miles N of **Cape Prevost** (10°06'S., 150°57'E.), the SW extremity of Normanby Island. This bay has not been fully examined, and is much encumbered by coral patches. The coastal range of hills dips considerably near the center of the bay, rising again towards Double Peak, 823m high, about 12 miles N. **Bwaeiona Point** (10°02'S., 150°57'E.), the N entrance point of the bay, lies about 4.5 miles N of Cape Prevost; a shoal, with a least depth of 2.7m, lies about 0.3 mile S of the point.

Outer Rocks, about 1 mile WSW of Bwaeiona Point, consists of two rocks, 1.2 and 0.6m high, lying on a reef of submerged rocks. The reef extends about 180m NW and 135m SE of the highest rock, and is steep-to. A 2.1m shoal, with a 9.7m patch close SW, lies about 0.75 mile WNW of Outer Rocks.

Cape Chesterfield (10°00'S., 150°54'E.) lies about 7 miles NNW of Cape Prevost. Two tree-covered islets lie on a drying reef about 0.75 mile S of the cape, and reefs, terminating in a 3.7m shoal, extend about 2.5 miles S of the cape.

Entrance Islet, 26m high, lies in the approach to Sewa Bay, nearly 0.5 mile N of Bwaeiona Point, on a submerged reef extending about 92m N and SSW of it.

Sewa Bay

9.14 The entrance to Sewa Bay, about 5 miles N of Cape Prevost, is almost closed by **Pwasiai Island** (10°01'S., 150°57'E.). The island is 96m high, and fringed on its S and E sides by foul ground extending up to 92m offshore. The passage N of Pwasiai Island is a boat entrance over a reef of sunken rocks. The S passage, about 90m wide, with depths of 50m in the fairway, lies between the W point of Pwasiai Island and the peninsula E, which terminates NW in **Buiqueta Point** (10°01'S., 150°57'E.).

The bay is a landlocked harbor, backed, except at its NW end, by densely wooded hills. **Adelaide Peak** (9°59'S., 150°57'E.) attains an elevation of 271m about 1.25 miles N of Buiqueta Point. The bay has three arms; the entrance opens into the short W arm; Bwaguda Bay occupies the S arm while the N and largest arm terminates in Martin Treacy Harbor.

A bank, with depths of less than 5.5m, extends about 135m N of Buiqueta Point; West Islet, 11.6m high, lies on this bank. A reef extends about 0.3 mile S from the N shore of the W arm. A deep channel, 0.15 mile wide, leads into the bay, between the above bank and reef.

On the S side of the W arm, Ellen Isle lies 0.35 mile E of Buiqueta Point. Una Rock, which dries 1.2m, and Henby Shoal, with depths of less than 5.5m, extend about 0.2 mile offshore, nearly 0.75 mile and 1 mile respectively, ENE of the same point.

9.15 Geboia Point (10°01'S., 150°59'E.), about 1.25 miles E of Buiqueta Point, is the NE extremity of a hilly peninsula which separates W arm from Bwaguda Bay; Galogalo Islet, 10.4m high, lies near the outer end of a reef of sunken rocks extending about 0.2 mile NE of Geboia Point.

Whittle Reefs lies with its SE end about 0.4 mile N of Galogalo Islet; foul ground, with drying patches, extend about 0.35 mile WNW of its SE end.

There are general depths of 37 to 50m in the central part of Sewa Bay, W of Whittle Reefs.

Bwaguda Bay, entered between Galogalo Islet and the shore E, has general depths of 33m in the entrance, shoaling gradually to 20m near its head, with comparatively steep-to shores. Powles Rock, in a depth of 3.7m, lies in the entrance to the bay, 0.13 mile E of Galogalo Islet; Nusa Rock, in a depth of 3.7m, and sunken rocks on its NW side, lies 0.25 mile ESE of the same islet. Patrick Patch, in a depth of 9.1m, and a 5.5m

patch lie 0.35 mile and 0.5 mile, respectively, SSE of Galogalo Islet; the latter patch lies about 135m offshore.

The N arm has no known dangers more than 0.2 mile offshore W of the meridian of Whipple Reefs. It shoals gradually to about 9.1m 0.25 mile from the head of Martin Treacy Harbor. About 0.3 mile E of Powles Rock, near the N entrance to Bwaguda Bay, there is a small wharf with a depth of 5.5m alongside. It was reported to be in a poor state of repair.

Anchorage can be taken in Sewa Bay as convenient, in depths of 11 to 47.5m, mostly on mud.

The coast between Cape Chesterfield and the entrance to Maiobari Bay, about 4 miles NNW, is indented by several small coves, and the coastal range is densely wooded.

Maiobari Bay (9°56'S., 150°53'E.) affords anchorage for small vessels with local knowledge, in 40m, mud; the anchorage is restricted by shoals extending from its shores. The shores of the bay are densely wooded and bordered by mangroves. It is advisable to anchor farther out during the strong NW winds.

9.16 Duchess Islet (9°57'S., 150°51'E.), about 2 miles W of the S entrance point of Maiobari Bay, is about 61m high, with a saddle-shaped summit, and thickly wooded. Julian Reefs, on the S of which the sea breaks, extend about 2.5 miles SSW and 4 miles S of the islet. A rock awash, dangerous to navigation, is located 3.5 miles S of Duchess Island.

Perry Bay lies between the N entrance point of Maiobari Bay and **Perry Islet** (9°49'S., 150°49'E.), about 8.5 miles NNW; the latter is a low flat islet lying on a reef extending about 1 mile WSW from the coast.

The main ridge of Normanby Island, after dipping considerably and becoming somewhat level in Lebudowa Bay, rises again abreast the middle of Perry Bay to conspicuous **Double Peak** (9°51'S., 150°53'E.), 823m high.

Sunken coral patches extend from 2 to 5 miles offshore between Duchess Islet and Cape Deedes (9°48'S., 150°45'E.), a dark, densely wooded point, about 10.5 miles NNW. The charted positions of these patches must be considered as approximate only, and it is probable that other dangers are farther W.

Caution.—It is therefore recommended not to approach the SW coast of Normanby Island within 8 miles.

Between Cape Deedes and **Paipainina Point** (9°43'S., 150°44'E.), about 4.5 miles N, densely wooded hills descend steeply to the sea. Observation Islet, close NW of Paipainina Point, is 30.5m high, steep, rocky and densely wooded. Foul ground extends about 0.5 mile S of the islet. A reef, which breaks in a moderate sea at LW, position approximate, lies about 1.5 miles SW of the islet, with another reef midway between. Another reef was reported to lie 3 miles SW of Observation Island.

Cape Dawson (9°42'S., 150°45'E.), the NW extremity of Normanby Island, is a well-marked bluff with considerable depths within 1 mile of the shore. It is also the S entrance point of Dawson Strait, which separates Normanby Island from Fergusson Island. Two reefs lie 0.75 and 1.25 miles WSW of Cape Dawson. A shoal patch is charted about 2.75 miles WNW of Cape Dawson.

Solomania (9°45'S., 150°48'E.), the N mountain of Normanby Island, lies about 3.5 miles SSE of Cape Dawson, rising as a blunt cone, with a small double-notched summit, 1,027m high; it is similar to Double Peak, about 8 miles SE, both rising from the main ridge of the island, with a considerable dip between them.

Fergusson Island

9.17 Fergusson Island (9°30'S., 150°40'E.), the largest of the D'Entrecasteaux Islands, has three great mountain masses rising from it as follows: Mount Kilkerran, a sharp cone, 2,072m high, on the NE side; Mount Maybole, 1,272m high, and Kubioia Range, from 914 to 1219m high, about 5.5 miles farther S, on the W side; and on the S side, Edagwaba Range, 1,219 to 1,821m high, extending E from Cape Mourilyan, the SW extremity of the island. The SE part of the island is of irregular outline, with several low hills and deep bays.

Seymour Bay, on the W coast, has saline lakes and several small hills emitting sulphur fumes, at its head, and there are also several boiling springs.

The island is well populated. The lower slopes of the hills are cultivated, while the upper parts are thickly wooded.

9.18 South side of Fergusson Island.—Cape Mourilyan (9°38'S., 150°26'E.), the SW extremity of Fergusson Island, is bold, well defined, and fringed by a narrow strip of coral; a village lies on its S side. The coast between Cape Mourilyan and **Amplett Point** (9°39'S., 150°37'E.), about 11 miles E, forms a bight, thickly wooded, with a sandy beach and villages in places.

Dawson Strait

9.19 Dawson Strait (9°41'S., 150°48'E.) has not been closely examined, and it was reported that navigation through the strait would be dangerous and intricate from the appearance of the reefs seen off Dobu and other islets near its SE end.

Saramo Point (9°40'S., 150°47'E.), steep and rocky, about 10 miles E of Amplett Point, is the SE termination of the slopes of the Edagwaba Range; there are many villages between the points.

Ebeoa Point (9°43'S., 150°50'E.), about 4.5 miles SE of Saramo Point, is reef-fringed and the S extremity of a peninsula. A double-topped hill, about 366m high, lies about 5.5 miles NNE of Ebeoa Point, and rises to a height of 539m, about 2 miles farther N, on the edge of a crater.

Dobu Island (9°45'S., 150°52'E.), on which there are some boiling springs, is of volcanic origin, and lies in the E entrance of Dawson Strait; an extinct crater, at an elevation of 274m, lies in the center of the island. The flat land and low hills on the S side of the island are densely populated and covered with coconut palms.

Nekumara Island and Kwaiupe Island lie on the same reef within 2.5 miles NE of Dobu Island; the former islet is thickly populated.

Kawai Point (9°41'S., 150°54'E.) lies about 1.5 miles N of Kwaiupe Islet, on the SE end of Fergusson Island. A drying

reef and a 5.5m spit extend about 0.75 mile S of the point. There is a 7.3m patch 1 mile S of Kawai Point.

Sanaroa Island (Welle Island) (9°36'S., 151°00'E.) lies about 3 miles NE of Cape Kwaia (Cape Doubtful), the E extremity of Fergusson Island; the channel between them is about 155m wide, with a least depth of 22m, and is marked by a red buoy on either side. In the absence of the buoys, a vessel should steer with Mebuli-buli Point ahead, bearing 335°, which leads through, but very close to the reefs.

Sanaroa Island is 212m high, and probably of volcanic origin. Extensive reefs lie SE of the island. A shoal, on which the sea breaks, lies about 2.25 miles SW of the S extremity of the island and a 5.5m patch was reported to lie 3.75 miles WSW of this point on the island.

Directions.—Vessels entering Dawson Strait from W should approach with Saramo Point, in range 062°, with the S edge of the double-topped hill about 6 miles ENE, until the summit of Dobu Island bears 117° and vessels should steer for it on that bearing. When the N extremity of Kwaiupe Islet bears 070°, it should be steered for on that bearing. On approaching Nekumara Islet alter course slightly N until the S extremity of Sanaroa Island bears 070°, when it should be steered for on that bearing, passing between a 7.3m patch and the reef fringing the N side of Kwaiupe Island.

A good passage into Dawson Strait lies between Dobu Island and Nekumara Island. The passage may be approached from E with the S point of Dobu Island bearing 270°. A vessel should keep to the Nekumara Island side, steering with the S base of the mountain, about 2 miles N of Ebeoa Point, bearing 322° ahead. (See Amphlett Group, paragraph 9.15, for continuation of directions N.)

9.20 Northeast and E coasts of Normanby Island.—Little is known about the NE and E coasts of Normanby Island.

There is a government station at Esa-ala, about 4 miles SE of Cape Dawson. There is a small wharf, with a depth of 2.7m alongside. Anchorage can be taken by coastal vessels in 33m, 0.15 mile NE of the wharf. There is considerable volcanic activity in the area, and a seismological station is located on a hill about 1 mile W of the wharf.

Awaiara Bay, entered between **Granawe Point** (9°57'S., 151°04'E.) and Bwaruada Point, about 8 miles E, provides shelter for small vessels about 183m offshore. Local knowledge is required.

The E coast of Normanby Island, between Cape Pierson and Cape Ventenat, about 17 miles S, is indented by a number of small bays, and backed by a range of mountains.

Amphlett Group

9.21 The Amphlett Group (9°15'S., 150°50'E.) consists of many islands and islets, lying N of **Cape Vinall** (9°24'S., 150°46'E.), the NE extremity of Fergusson Island.

Wamea Island (9°14'S., 150°54'E.), 415m high, lies about 11 miles NE of the cape, and is the E of the group. Pigeon Rock, 48m high, lies about 0.75 mile W of the W side of the island; two shoal patches lie between the rock and the island. The village of Dromo Dromo stands on a narrow rocky saddle on Wamea Island, at an elevation of 152 to 183m. Uras Island, 311m high, lies about 1.5 miles NW of Wamea Island.

Wamea Island was reported to be a good radar target at a distance of 29 miles.

Wright Patch (9°11'S., 150°54'E.) and **Crook Patch** (9°07'S., 150°54'E.), each with a depth of less than 1.8m, lie about 2.25 and 6.5 miles, respectively N of the N extremity of Wamea Island. A patch, which breaks, and **MacGee Patch** (9°10'S., 150°50'E.), with less than 1.8m, lie about 3 miles NE, and 4.25 miles NW, respectively of the same extremity. A shoal of about 5.5m was reported to lie 3.5 miles S from the E tip of Yabwaia Island; the same shoal extends to about 1 mile NNE from the NW tip of Urasi island.

Watota Island (9°18'S., 150°42'E.), 184m high, lies about 10 miles WSW of Urasi Island. A shoal, with a depth of 1.8m, was reported about 3.25 miles NNW of Watota Island.

It was reported that small craft can anchor, in a depth of 7.6m, sand and coral, between Yabwaia and Wawiwa Islands. Although sheltered from SE seas, it is frequented by gusts of wind from the surrounding high land.

Directions—After passing through Dawson Strait, a vessel should steer for Sanaroa Hill, the summit of Sanaroa Island, bearing 023°. When Scrub Islet, the SW of a group off the SW extremity of Sanaroa Island, bears 131°, and the leading marks on **Benalla Point** (9°35'S., 150°53'E.) are in range bearing 311°, alter course left, keeping the leading marks in range ahead, passing through a narrow channel through the scattered reefs extending from Fergusson Island to Sanaroa Island. An alternative range is with Mebuli-buli Point, bearing 335°, in line with the W hummock of Yabwaia Island, passing very close to the reefs. When the NW end of Sanaroa Island bears 035°, alter course to 353°, and pass about 0.4 mile W of the reef, which is easily distinguished, extending NW of Urewala Island, which is located about 8.5 miles N of the NW end of Sanaroa Island. Then steer for the E extremity of Urasi Island, bearing 353°, just open E of Pigeon Rock, which leads E of the reef extending E from Wata Island, located about 8.5 miles NNW of Urewala Island. On nearing Pigeon Rock, alter course to pass W of it, and then steer to pass between Urasi and Wamea Islands. When the E extremity of Wamea Island bears 145°, alter course left, keeping it on that bearing astern, passing SW of Wright Patch and NE of MacGee Patch.

(See Trobriand Islands, paragraph 9.7, for recommended tracks N of MacGee Patch.)

9.22 West and N coasts of Fergusson Island.—**Seymour Bay** (9°32'S., 150°29'E.), N of Cape Mourilyan, is encumbered with coral patches. Tumagabuna Islet lies close S of the N entrance point.

Waluwea Point (9°25'S., 150°26'E.) lies about 4.5 miles NNW of the N entrance point of Seymour Bay. **Cape Labillardiere** (9°20'S., 150°29'E.), the N extremity of Fergusson Island lies about 6 miles farther NE.

The N coast, between Cape Labillardiere and the entrance to Hughes Bay, about 10 miles ESE, appears steep, bold, bare, and without anchorages.

Sunday Islet (9°16'S., 150°30'E.) lies about 3.5 miles NNE of Cape Labillardiere; a sand cay, about 1 mile E, lies on a reef with sunken rocks.

A 2.7m patch lies about 2 miles ENE of Cape Labillardiere, with a 3.7m patch and some reefs close W of it. A chain of

shoals extends N of these patches, too, and N of Sunday Islet. Little is known of the area.

Sunday Islet was reported to be a good radar target at a distance of 25 miles.

Tides—Currents.—A strong NW current has been experienced along the N coast of Fergusson Island during the month of November.

Anchorage.—Sheltered anchorage for small vessels can be obtained at the head of Seymour Bay. There are numerous coral patches in the approach, especially from S; the best approach is along the N shore.

Good anchorage may be obtained by vessels up to 45m in length, sheltered during the SE weather, in a small bay on the E side of Waluwea Point. The bay is reported to be free of dangers, with general depths of 37m in the anchorage. There is a small jetty at the head of the bay, with a village and plantation nearby.

Goodenough Island

9.23 Goodenough Island (9°20'S., 150°15'E.), the NW of the D'Entrecasteaux Islands, has a mountain range traversing its whole length. Vineuo, 2,545m high, the W of three peaks, is located towards the N edge of the range.

Acultivated plain, with a maximum width of about 3 miles, lies between the mountain range and the NE coast. The slopes and contiguous plains are cultivated in flats and terraces; some of the projecting points are purely volcanic. There is a small crater, probably not long extinct, on Cape Watts, the SE extremity of the island. The island is well populated.

Northeast Side of Goodenough Island.—Two wharves are located about 1 mile NW of Watutu Point (9°23'S., 150°23'E.), the E extremity of Goodenough Island; the SE wharf is 91m long, with a depth of 9.1m alongside, the NW wharf is 85m long, with a depth of 8.8m alongside. White buoys are moored NW and SE of the wharves. Vessels berthing at the SE wharf should approach on a course of 240° and berth port side to, taking care to avoid coral patches lying SSE of the head of this wharf. Talafatama Jetty, suitable only for boats, is located about 0.6 mile NW of the NW wharf.

Malauna Bay (9°14'S., 150°18'E.), entered between Malauana Point, about 10 miles NNW of Watutu Point, and Knight Point, about 2 miles farther NW, is encumbered with reefs, but affords good anchorage to vessels with local knowledge, in depths of 12.8 to 20m, mud. It is well sheltered from SE winds, and the off-lying reefs afford some protection from N and NW winds. The shores of the bay are low and fringed with reefs and mud flats. Sheltered anchorage can be taken in 18.3m, mud, with Malauna Point bearing 096°, distant about 0.25 mile. Anchorage may also be obtained in a depth of 16m with Malauna Point bearing 100° and Knight Point bearing 315°.

Cape Lahaye (9°11'S., 150°12'E.), the N extremity of the island, is low and wooded; a low coastal ridge and off-lying reefs lie between it and Watutu Point. Between Cape Layah and Cape Rawlinson, the W extremity of the island, the spurs from the main ridge approach the coast which has a bold aspect, and is generally rocky and cliffy.

Nuama Islet, covered with grass and scrub, with a double summit, 61m high, and Siata Islet, wooded and 24.4m high, lie about 1 mile and 3 miles, respectively, NW of Cape Layaha.

An extensive and intricate mass of reefs fronts the NW coast of Goodenough Island.

The SW coast of Goodenough Island is described with WardHunt Strait in paragraph 9.23.

Moresby Strait

9.24 Moresby Strait (9°30'S., 150°25'E.), separating Fergusson and Goodenough Islands, has not been thoroughly examined. There are considerable depths in the strait, but there are several steep-to coral patches.

The S entrance, between Cape Mourilyan and Cape Watts, is about 8.5 miles wide, but is reduced in width considerably by the reefs extending N of Cape Mourilyan. Waqipa Island, with its SW extremity about 1.5 miles NE of Cape Watts, is an extinct volcano, 165m high and grass-covered; small detached reefs lie about 0.5 mile SE of its SE end. The island is inhabited, and its NW side is connected with Goodenough Island by a reef with some islets on it.

An unexamined patch, with a depth of 12.8m, was reported to lie about 1.25 miles NE of Waqipa Island.

The N entrance, about 2.5 miles wide, is obstructed by the Barrier Islands, with a narrow channel on either side of them. The E channel is dangerous, but Warrego Passage, the W channel, has been swept and is believed clear of dangers.

Anchorage.—Mud Bay, entered between **Coconut Point** (9°28'S., 150°22'E.) and the coast 1.5 miles NW, provides well sheltered anchorage in the bights on either side of Wailagi Point, in the S side of the bay. Large vessels find the most suitable anchorage in 46m at the head of the bay, about 0.4 mile, 322° from Wailagi Point and about 0.25 mile offshore.

Anchorage for deep draft vessels can be obtained in about 51m, about 2 miles NW of Watutu Point; small vessels can anchor in less depth closer inshore.

Directions.—Vessels proceeding to the anchorage in Mud Bay from S should round Cape Mourilyan at a distance of about 0.75 mile, and then steer for the E extremity of Ilamu Island, the W of the Barrier Islands, bearing 354°. When **Tumagabuna Islet** (9°29'S., 150°28'E.) bears 113°, in range with Bray Hill, about 1 mile inland, alter course left keeping the islet astern on that bearing. When the summit of Waqipa Island bears 176° alter course to 245° and steer this course until the E extremity of Coconut Point bears 130°, when course can be steered for the anchorage.

Vessels proceeding through Moresby Strait, to the anchorage NW of Watutu Point, after rounding Cape Mourilyan should steer for the E extremity of Ilamu Island, bearing 354°, until the center of Warrego Passage bears 307°, when a mid-channel course should be steered through the passage. The passage is about 0.2 mile wide, and was reported to have a depth of 51m.

Vessels proceeding from Moresby Strait to the Amphlett Group require local knowledge and should use the swept channel which passes NW of the group. After passing through Warrego Passage bring Talafamata Jetty bearing 242° astern, and keep it on that bearing until Cape Labillardiere bears 180°, distant about 1.25 miles, when a course of 100° should be steered, passing S of the 3.7m and 2.7m patches N of the cape.

A distinctive green patch, about 2 miles E of Cape Labillardiere, is located on the lower slope of the hill behind the cape. When this green patch bears 244.5° alter course to keep it astern on that bearing. When **Tuboa Island** (9°12'S., 150°49'E.) bears 209° course should be altered to keep it in line with the E end of Wawiwa Island astern on that bearing, and Gumatabu Islet ahead, bearing 029°; this course leads close W of McGee Patch.

See Trobriand Islands, paragraph 9.7, for recommended tracks N.

North Coast of Papua New Guinea—East Cape to Germania Hook

9.25 This part of the sector describes the N coast of Papua New Guinea, from East Cape to Germania Hook. **East Cape** (10°13'S., 150°53'E.) was previously described in paragraph 7.20.

The N coast of the peninsula which forms the extreme E end of Papua New Guinea, from East Cape to Basilisk Point, about 10.5 miles W, is rocky and steep; it comprises several small bays, which are deep, but afford no anchorage. Mount Killerton rises to 491m about 1.25 miles S of Basilisk Point.

Bentley Bay, entered between Basilisk Point, and Cape Ducie, about 6.5 miles WNW, affords indifferent anchorage. The land rises steeply in a series of densely wooded hills, separated from each other by deep gorges and narrow valleys, opening out into small plains here and there as they approach the coast.

Cape Ducie, low, rocky, and thickly wooded, has the appearance of an island from E. It is steep-to on its N side, but a sunken reef extends nearly 1 mile E, with a small cay, which dries 1.2m, on it. The reef also extends S, joining Catherine Island to the cape. The latter island is low, covered with mangroves, and appears bordered with mangrove swamps. Annie Inlet, entered close S of Catherine Island, was not examined, but numerous reefs and discolored water were observed; it is only suitable for boats.

Anchorage.—The shores of Bentley Bay are steep-to, but anchorage can be taken in 28m, sand, about 1 mile offshore, near the coral reef fronting the W shore; this anchorage is insecure with N winds.

Excellent Point (10°13'S., 150°33'E.) lies about 3 miles W of Cape Ducie, which it resembles. The bay, between the points, has shores lined with mangroves.

Awaiama Bay is entered between Excellent Point and Puni Puni Point, a prominent cliff, about 5 miles W. Two finger peaks of the Stirling Range, 741m high, about 2 miles S of Puni Puni Point, are conspicuous from E. There are several villages on the shore of the bay, and the E shore is fringed by a reef in places. There is good anchorage at the head of the bay during the SE trade.

The coast between Excellent Point and Cape Frere, about 23 miles WNW, appears to be free of dangers. The aspect changes W of Excellent Point; the slopes facing the sea are covered with grass, the summits are thickly wooded, and at the base a broad belt of cultivated land extends to the coast. The Stirling Range, backing the coast, continues to increase in altitude W, and attains an altitude of 1,149m in a round summit, about 2.75 miles inland at Cape Frere.

9.26 Cape Frere (10°05'S., 150°11'E.) is a bold, steep bluff, which is steep-to, with no fringing coral reef. The sides of the headland are covered with grass, and intersected with numerous ravines running nearly parallel with each other. As the cape is approached, numerous cascades and watercourses may be seen on the mountain sides.

Goodenough Bay entered between Cape Frere and **Sibiribiri Point** (9°43'S., 150°03'E.), about 22 miles NNW, is generally deep and affords no anchorage except in Rawdon Bay and Menapi Bay. The SW shore of the bay, and most of the N shore are steep-to. The water at the head of the bay is discolored.

Five peculiar pinnacle peaks, about 26 miles WNW of Cape Frere, lie grouped together, near the coast, and are prominent from E. At the head of the bay the lofty grass land ceases and the ridge of high mountains continues NW. The coastal range on the N side of the bay consists of densely wooded hills, 91.4 to 122m high.

Many small villages are scattered on the shores of the bay, on the belt of alluvial land which extends along the foot of the mountains.

Bartle Bay (10°06'S., 150°08'E.), entered between Cape Frere and Daru Point, about 5 miles W, is backed by a succession of table lands, from 61 to 457m high, rising in terraces, covered with long rich grass. There is no anchorage in the bay except for small craft very close inshore. Dogura, a large settlement, about 5 miles W of Cape Frere, is prominent from seaward. A jetty, which can accommodate vessels up to 37m in length and 3.4m draft, is located at the village of Wedau, close W of Daru Point.

Rawdon Bay (9°46'S., 149°53'E.) (World Port Index No. 53200) lies about 10 miles WSW of Sibiribiri Point. Mosquito Islands, two low, flat, wooded islands, of coral formation, lie in the entrance of the bay. The village of Abuara stands on the shore of the bay.

On Baniara Island, the NW and larger island, there is a government station and jetty; vessels up to 100 tons and 3.7m draft can berth alongside the jetty.

A wide passage lies on the W side of Baniara Island, between the reefs extending from the mainland abreast the island, and those extending from the W end of the island. Entrance can be made E of Baniara Island, but it is less direct.

Anchorage.—Good anchorage can be taken in 29m, stiff mud, about 0.5 mile S of Baniara Island. Sheltered anchorage can be obtained in 22m between the NW side of Baniara Island and the mainland.

A small shoal was reported to lie about 0.5 mile offshore, about 5 miles W of Baniara Island.

Menapi Bay (9°46'S., 149°56'E.), about 3 miles E of Baniara Island, and where there is a mission station, affords anchorage for one vessel of up to 300 tons, in 9.1m. A detached reef, in a depth of 1.8m, lies in the middle of the entrance to the bay, but there is a passage on either side of it; the E passage is recommended. The anchorage is sheltered from NW, and moderately sheltered from SE weather; there is a beach at the head of the bay.

Glen Islet (9°44'S., 150°03'E.), 10.7m high, with a few trees, lies on the S end of a coral reef fringing Sibiribiri Point, the SE extremity of Cape Vogel Peninsula, to a distance of about 0.4

mile. A drying sandbank lies on the outer edge of the fringing reef, and a detached patch lies about 0.5 mile S of the islet.

Ward Hunt Strait

9.27 Ward Hunt Strait is about 16 miles wide between **Cape Vogel** (9°41'S., 150°03'E.) and Goodenough Island to the NE.

Dart Reefs (9°34'S., 150°13'E.), detached patches, with a depth of 1.8m, extend about 14 miles WSW from the SE extremity of Goodenough Island. A clear and deep channel, 1.5 miles wide, lies between the NE patch and Goodenough Island.

Keast Reef, about 4.5 miles NE of **Kibirisi Point** (9°38'S., 150°01'E.), in a depth of 1.8m, and breaks in a moderate swell. A clear and deep channel, about 3.5 miles wide lies between the reef and Ipoteto Islet.

Aspect.—The shores of the strait present a great contrast. Goodenough Island, on the N side, rises to an elevation of 2,545m; its thickly wooded mountain sides are visible at a great distance, although the summit is usually covered with clouds. The coast on the S side is grassy and undulating, and of greater variety; the hills do not exceed 183 or 213m in height, and the coast is generally low, indented, and fronted by small sand islets fringed by coral.

Approaching the strait from SE, a conical hill, N of the Mosquito Islands, is first seen appearing as an island, and not until a vessel is within a distance of about 18 miles does the land on the S side of the strait appear to be continuous.

Caution.—Vessels proceeding through Ward Hunt Strait and across the entrance to Collingwood Bay should follow the track indicated on the chart, passing about 1 mile NE of Ipoteto Islet. The area away from the track should be used with extreme caution due to the incomplete nature of the information in the area. It was reported that vessels are always set N when passing through the strait.

9.28 Sibiribiri Islet (9°41'S., 150°03'E.), 12.2m high, and covered with mangrove, lies on the coastal reef, about 3 miles N of Glen Islet, and about 0.1 mile offshore. A shoal patch lies about 1 mile NW of the islet, 0.35 mile offshore. There is a conspicuous wreck on the reef off of Cape Vogel, about 2.25 miles N of Glen Islet.

Anchorage.—A bay lies between Sibiribiri Islet and Kibirisi Point, about 3.5 miles NW; Tara Kwaruru, a salt water creek, lies at the head of the bay, at the W end of the anchorage. The anchorage is sheltered from the prevailing SE winds by Karaiga Islet and the reef on which it stands. The latter islet, about 4.7m high, with bushes on it, usually shows distinctly from E. The village of Irowowono lies on the mainland S of Karaiga Islet. The village of Inageta lies about 0.4 mile farther W; a creek, fringed by mangroves, lies close W of the latter village.

Target Patch, coral, in a depth of 1.8m, lies about 0.6 mile WNW of Karaiga Islet, with a passage, about 0.4 mile wide and clear of dangers, between them.

Anchorage may be obtained in 33m, mud, with the N extremity of Karaiga Islet bearing 085°, and the village of Inageta bearing 209°, open SE of the mangrove promontory NE of it. This position gives less than 0.1 mile swinging room, but the SE wind being steady, a vessel would seldom swing

towards either reef. A vessel approaching from E, after rounding the N end of Karaiga Islet reef, may steer for the anchorage.

Kibirisi Point (9°38'S., 150°01'E.) is a black rocky point, 6.1m high. Ipoteto Islet, close E of the point, is 18.3m to the tops of the trees. The islet is fringed by a narrow ridge, and connected to the point by a shallow ridge. A light is shown from the islet.

Dog's Hill, 67m high, lies about 1.5 miles W of Kibirisi Point. The coast from Dog's Hill for about 3.5 miles WSW, consists of cliffs about 30.5m high. Then a coastal range of hills extends to Dark Hill 107m high, close S of **Dark Hill Point** (9°36'S., 149°39'E.), about 20 miles W of Dog's Hill. Saddle Hill, 334m high, and Cone Peak, 337m high, lie on the coastal range, about 8 miles WSW and 12 miles W, respectively, of Dog's Hill.

The coastal range near Dark Hill gives place to a thickly wooded plain, extending 4 to 10 miles inland, with here and there a small dark hill rising from the surrounding level.

The coast is fringed with mangrove, and fronted by reefs in places; in many of the mangrove bights are coral islets that cannot be distinguished at a distance of 2 or 3 miles.

9.29 Cape Watts (9°31'S., 150°21'E.), the SE extremity of Goodenough Island, is rocky and fringed with coral reef. The wooded land rises to an elevation of 674m about 2 miles N of the cape. A somewhat remarkable square-topped summit, 555m high, lies about 1.5 miles WNW of the cape.

There are numerous uncharted shoals between Cape Watts and **Taleba Bay** (9°28'S., 150°14'E.), about 7 miles WNW. This area should only be navigated in favorable light and with a good masthead lookout.

Cape Varieta (9°24'S., 150°08'E.), 14 miles NW of Cape Watts, is a cliff, 49m high, rising about 1.25 miles N to a peak, 536m high. Anchorage can be taken in 47m, sand and coral, 0.35 mile SSE of Cape Varieta, and about 0.25 mile offshore.

Cape Womobu (9°22'S., 150°06'E.), about 2.75 miles NW of Cape Varieta, is a 46m high promontory; foul ground extends 1 mile W and SW of it. A shoal lies 2.25 miles NNW of the cape and about 1.25 miles offshore. There are possibly other off-lying patches, as the vicinity has not been closely examined.

Collingwood Bay

9.30 Collingwood Bay (9°25'S., 149°30'E.) is entered between the N side of Cape Vogel and **Hardy Point** (9°09'S., 149°19'E.), about 50 miles NW. The bay is encumbered with many shoal patches, the positions of which are approximate, and consequently little reliance can be placed on the chart.

Caution.—The bay should be navigated only in the most favorable weather, with a lookout aloft.

The S shore of the bay W of Dark Hill and the S part of the W shore are low and flat, but the N part of the W shore is bold, rocky, and steep. **Mount Trafalgar** (9°10'S., 152°46'E.), 1,725m high, and **Mount Victory** (9°12'S., 149°04'E.), an active volcano, 1,884m high, located about 11 miles SSW and 16 miles SW, respectively, of **Cape Nelson** (9°00'S.,

149°15'E.), each have the appearance of a large island from a distance.

Jabbering Islands (9°37'S., 149°54'E.), about 6 miles W of Kibirisi Point, consisted of islets over 9.1m high and covered with bush. They were reported to be washed away, leaving only reefs, some of which dry at LW, in the area. Caution should be exercised in approaching the area as the surrounding reefs are very steep-to.

Sidney Islets (9°35'S., 149°49'E.), about 5.5 miles WNW of Jabbering Islands, have been reduced to sand and coral reefs, awash or below water. An area of shoal water lies between 0.75 mile NE and 0.5 mile N of the Sidney Islets.

Black Rocks (9°35'S., 149°34'E.), which dry 0.6m and can usually be identified, lie about 5 miles W of Dark Hill Point, and extend to about 1.5 miles offshore. Button Island stands on a drying reef, about 1.5 miles WSW of the outer end of Black Rocks.

Jarrad Island (9°35'S., 149°29'E.) lies about 5 miles W of Black Rocks. The village of Baiawa, about 2 miles S of the island, is backed by a dark hill, with a flat summit, 76.2m high.

Fir Tree Point (9°33'S., 149°24'E.) is a low and sandy point, with Rakua River discharging close SE; a spit, in a depth of 3m, extends 0.35 mile NE of the point. Anchorage can be obtained in 18.3m, mud, about 0.5 mile SE of Fir Tree Point, and also in a least depth of 9.1m, N of the point. Local knowledge is required for both these anchorages.

Foul ground extends up to 1 mile offshore NW of Fir Tree Point, between 0.5 mile and 2.5 miles westward of the point. Virau, a reef, lies about 0.25 offshore, about 3 miles NW of the point.

A point, about 4 miles WNW of Fir Tree Point, forms the S entrance point of the bight forming the head of Collingwood Bay. The inner part of the bight is relatively free from dangers to within 3.5 miles of Keppel Point, about 15 miles farther NW. However, isolated drying reefs lie about 4.75 and 7 miles WNW of the S entrance point, and two 1.5m patches lie 4 miles WNW and 7 miles NW of the same point.

Anchorage.—Anchorage can be taken in about 18.3m, about 0.5 mile NW of the S entrance point of the above-mentioned bight.

Vessels up to 2,000 tons can anchor 0.5 mile off the black sandy beach at **Wanigela** (9°21'S., 149°10'E.). The anchorage is sheltered from NW, but small vessels would find it exposed in SE weather. A good all-weather anchorage is reported inside the large offshore reef NE of Wanigela. A channel through the reefs from **Hardy Point** (9°09'S., 149°19'E.) to Wanigela is marked by beacons. The general direction of the buoyage is from NE to SW, with even numbers on the SE and odd numbers on the NW side of the channel. This channel is reported to be very tortuous.

Directions.—The following recommended route for the passage from Ipoteto Island to Wanigela involves navigation through poorly charted waters which contain many shoals. Some of the reefs close to the recommended track may be marked by beacons or drum buoys, but these are unreliable, and not to be relied upon, and the directions should be adhered to closely.

From a position about 0.5 mile N of Ipoteto Island steer a course of 279° which leads 0.5 mile N of the N reef of Jabbering Islands. This reef dries at LW and is usually easy to

distinguish. Alter course to 290°, about 0.75 mile past the latter reef, to pass about 0.5 mile N of the reef in the Sidney Islets group, which lies about 2 miles ENE of **Posa Posa Harbor** entrance (9°36'S., 149°47'E.); this reef also dries at LW and can be distinguished. In the vicinity of the Sidney Islets the vessel passes between dangerous reefs, distant from 0.25 to 0.5 mile on either side. When the latter reef is abeam alter course to 270° and steer that course until Dark Hill Point bears 244°, when it should be steered for on that bearing for about 1 mile. When the point at the entrance to Posa Posa Harbor bears 101°, alter course to 281° to keep the point astern on that bearing. The latter course leads 0.5 mile N of Virau, and 0.45 mile off the nearest point of land, the S entrance point of the bight at the head of Collingwood Bay. When 2.5 miles past Virau, alter course to 319°, which leads to Wanigela Reef, a fairly large breaking reef, which can be passed on either side to an anchorage off the beach fronting Wanigela. That part of the track, W of Black Rocks, has a least depth of 20.1m.

9.31 Western side of Collingwood Bay.—Keppel Point (9°19'S., 149°13'E.), a low point, has foul ground extending 4 miles E from it to join the numerous reefs and shoals, many of which are unexamined, which occupy the central part of the bay between Black Headed Rocks and **Veale Reef** (9°12'S., 149°28'E.).

The coast between Keppel Point and Hardy Point, about 12 miles N, is fronted by numerous detached dangers.

Sinipara, an islet which dries 0.9m, lies about 1 mile S of Hardy Point.

Tufi Harbor and Approaches

9.32 Tufi Harbor (9°05'S., 149°18'E.), entered about 3.5 miles N of Hardy Point, is a government station, with a resident magistrates house and other buildings, located on the N side of the harbor. A wharf with a depth of about 2.7m alongside is situated on the N side of the harbor in the village of Tufi.

There are depths of over 55m in the harbor.

Lights, in range 308.5°, lead through the dangers in the SE approach to the harbor; the front range light is shown from the S entrance point of the harbor.

There are numerous dangers in the SE approach to Tufi Harbor. The following dangers lie in the vicinity of the range line.

Veale Reef (9°12'S., 149°28'E.), marked by a light, lies on the NE side of the range line, about 9.75 miles ESE of Hardy Point. Greaves Reef, marked by a light, lies about 2 miles farther NW.

Black Headed Rocks (9°14'S., 149°25'E.), which dry 0.9m, lie on the SW side of the range line, about 8 miles SE of Hardy Point.

Ham Reef (9°12'S., 149°26'E.), marked by a light and with a sunken rock about 1 mile SW of it, lies on the SW side of the range line, about 1.75 mile W of Veale Reef. Sunken rocks lie about 2 and 3 miles, respectively, WNW of Ham Reef.

Stewart Reefs (9°08'S., 149°23'E.), marked by a light, lie on the NE side of the range line, about 4.25 miles ENE of Hardy Point.

A shoal, in a depth of 3.4m, lies about 1 mile ESE of the S entrance point of Tufi Harbor. A rock, 2.7m high, lies on the reef extending about 0.45 mile from the N entrance point.

Directions.—Approaching from SE, a vessel should bring the approach range in line, bearing 308.5°, from a position about 4 miles SE of Veale Reefs, and keep on this range until past Stewart Reefs when the recommended track indicated on the chart should be followed. If proceeding to Tufi Harbor, continue on the 308.5° range line until the 2.7m high rock bears 325°. Then steer for it on that bearing until two small range marks, with triangular topmarks, located fairly high up on a steep, grassy bluff at the W end of the harbor, are in range, bearing 270°, which leads through the harbor entrance. The marks are small and may be difficult to identify in the afternoon light.

Collingwood Bay to Cape Nelson

9.33 Drying reefs extend up to 0.6 mile off Hardy Point and Cape Nelson, about 10 miles NNW, and from most of the points between.

Maclaren Harbor (9°04'S., 149°18'E.), entered about 2 miles N of Tufi Harbor, has depth of about 64m throughout, except for the narrow W arm at its head.

Cape Nelson (9°00'S., 149°15'E.) is the N extremity of a peninsula, topped by Mount Victory. The land within the cape consists of grassy slopes rising to the spurs of the mountains from 122 to 152m high. The coast in the vicinity of the cape is broken by narrow inlets resembling fjords. Cape Nelson is steep-to outside the narrow fringing reef, but there are numerous off-lying reefs.

A light is shown from **Hall Point** (9°03'S., 149°18'E.), about 4.5 miles SE of Cape Nelson.

Caution.—Navigation off the coast of Papua New Guinea, between Cape Nelson and Cape Ward Hunt, about 87 miles NW, appears to be of the most dangerous character, due to the unsurveyed areas and the numerous coral patches and shoals. The coral patches are steep-to and the sea seldom breaks on them. The weather is often thick with passing squalls of rain, and anchorages are rare close to land. Between coral patches only a few miles apart, a sounding of several hundred meters may be obtained.

Vessels should proceed with utmost caution, and follow the recommended track indicated on the chart. Vessels should be careful not to get E or N of the line indicated on the chart off Cape Nelson.

Dyke Acland Bay

9.34 Dyke Acland Bay is entered between Cape Nelson and **Cape Endaiadere** (8°41'S., 148°26'E.), about 52 miles WNW. The low, thickly wooded shores of the bay are backed by a plain extending many miles inland. The whole coast has no marked features, and the trees with which the plain is covered appear in the distance to be of the same height and color.

The foothills of Hydrographer's Range back the head of **Ketakerua Bay** (9°05'S., 148°37'E.), which lies about 38 miles

W of Cape Nelson. The range rises to an elevation of 1,646m about 17 miles WNW of the head of Ketakerua Bay.

There are several deep inlets between Cape Nelson and the W entrance point of Anasari Harbor, about 6.5 miles W. The spurs of Mount Trafalgar to this part of the coast have a gradual slope, and are covered with grass and scattered trees. A reef fringes the coast and extends up to 0.5 mile offshore.

A shoal, with 7.6m, lies about 4.5 miles NE of Cape Nelson.

Anasari Harbor (9°01'S., 149°09'E.) provides anchorage in about 29m, about 0.6 mile from its head.

Port Hennessy, close E of Anasari Harbor, is reported to afford good anchorage.

Spear Island (8°59'S., 149°08'E.) lies about 0.2 mile N of the NW entrance point of Anasari Harbor. Spear Island Light is shown from the NW entrance point of the harbor.

Kanimeno Point (9°01'S., 149°06'E.), about 2.25 miles WSW of Spear Island, has a drying reef extending about 0.5 mile offshore, and a rock, with 1.8m, lies about 1 mile NNW of the point. A shoal with 12.8m, lies about 1.5 N of Kanimeno Point.

An unexamined shoal, in a depth of 12.8m, lies about 5.5 miles NW of Spear Island. Tancred Reef, in a depth less than 1.8m, lies about 10.5 miles WNW of the same island.

Porlock Bay (9°02'S., 149°00'E.) is entered between Kanimeno Point and Musa Point, about 12 miles WSW. The greater part of the shore is a network of lagoons, and the head of the bay is fringed by reef extending more than 0.5 mile offshore.

Curtis Reef (9°02'S., 149°01'E.), awash at LW, lies about 5 miles WSW of Kanimeno Point, and about 1.75 miles offshore.

Porlock Harbor (9°03'S., 149°04'E.) is entered between Okeia Point, about 2 miles SE of Kanimeno Point, and Tamina Point, about 1.5 miles farther SE. The shores of the harbor are fringed with mangroves backed by hills, which rise to 229m on the E side, and 204m on the W side. Drying coral reefs extend a short distance off the E shore and up to 135m off the W shore.

Jones Reef, which dries, lies in the fairway of the entrance, nearly 1 mile N of Tamina Point; foul ground extends about 90m N of the reef.

Stella Islet, about 1 mile S of Okeia Point, lies on a coral reef, 0.15 mile offshore.

The inner harbor is entered between Stella Islet and Polaris Point, about 0.6 mile SW. Its E side is steep-to to about 92m offshore, and the W side to about 135m offshore. A 2.7m shoal lies off the W shore, about 0.2 mile SE of Polaris Point. Shoal water extends about 0.4 mile from the head of the inner harbor where a small river discharges. There is a jetty on the E side nearly 1 mile SE of Polaris Point.

A cove, between Tamina Point and Polaris Point, 0.67 mile ESE, has steep-to shores up to the edge of the fringing coral reef. Foul ground extends about 0.1 mile N of Polaris Point, and depths of 5.5m or less, extend up to 0.1 mile offshore for a distance of about 0.5 mile SE of the point.

Anchorage can be taken in depths of 16 to 22m, in Porlock Harbor.

Musa River (9°05'S., 148°54'E.) flows out by two mouths at Musa Point. The delta is low swampy land, as is also the coast for some distance E. The E mouth is less than 95m wide, with a depth of 4.3m, and the W mouth is 0.15 mile wide, with a

depth of 0.9m on the bar; both of these depths are possibly subject to change during freshets. At times the water is discolored for some distance off the mouths. The river has been ascended many miles by boat.

Anchorage can be taken in depths of 12.8 to 18.3m off the mouths of the Musa River.

9.35 Port Harvey (8°54'S., 148°31'E.) (World Port Index No. 53203), on the W side of Dyke Acland Bay, affords anchorage, in 18.3m, in the middle of the port. Rocky Point, at the head of the port, extends NE, forming a creek on either side of it; the point is fringed by a reef extending about 135m NE of it, with a 1.5m shoal close outside of it.

A drying reef extends 0.17 mile NE of the SE entrance point of the port. Two reefs which dry, on the N of which there are two mangrove islets, extend about 0.3 mile and 0.2 mile offshore, respectively, about 0.5 and 0.8 mile N of Rocky Point.

A shoal lies about 0.5 mile E of Cape Sinclair, close N of Port Harvey.

Oro Bay (8°53'S., 148°29'E.) (World Port Index No. 53206) is entered between Cape Sinclair and a point about 1.25 miles NW; the village of Beamu stands at its head. Drying reefs extend about 90m from the shore of the bay, except at its head which is sandy.

Aspect.—On the S side of the bay there is an T-headed pier; the head is 60m long, width 12.1m, with a depth of 11.4m alongside. The pier is of steel and concrete structure in good condition and fendered adequately. The inner side of the T-head has depths of 10.5m and are used by coastal vessels. A ramp projects from the shore W of the pier and it is used by barges. Three mooring dolphins are situated in the vicinity of the main wharf. Containers can be handled at the main wharf and ro-ro's are frequent callers at the port. In 1990, 49 vessels were reported to use the port.

Berthing may be delayed from December to March during NW winds. Berthing is best carried out in the early morning when there is usually no wind.

A new dolphin and extended mooring and a new extension berth in the E end is now underway. Overall length of berth will then be 95m.

A directional light leads into the bay.

Pilotage.—Pilotage is not compulsory. Pilots are available from Port Moresby with 48 hours notice. The pilot boards 1 mile NE of the pier. Radio "Oro Bay Port Control", on VHF channels 16, 12 and 6.

Anchorage.—Anchorage can be taken in 12.8 to 16.5m in the middle of the bay, but is restricted in the approaches to the pier and in the turning basin.

9.36 Oro Bay to Cape Endaiadere.—A shoal, with a depth of less than 1.8m, lies nearly 3 miles N of Cape Sinclair. Between this shoal and **Cape Sudest** (8°44'S., 148°28'E.), several shoals, with depths of 2.1 to 5.5m, lie within 4.5 miles of the coast. A rock, with a depth of less than 1.8m, lies 7.5 miles SE of Cape Sudest. Rocks, with depths of less than 1.8m over them, extend up to 3 miles E of Cape Sudest.

Between Cape Sudest and **Cape Endaiadere** (8°41'S., 148°26'E.), on which there is a coconut plantation, several

detached shoals, with depths of 3 to 12m, lie within 4.5 miles of the coast.

Dyke Acland Bay to Cape Ward Hunt

9.37 Buna (8°40'S., 148°24'E.) (World Port Index No. 53208) lies about 2.5 miles WNW of Cape Endaiadere. Buna Roads, NE of Buna, is encumbered with shoals. There is a government station at Buna, with two disused wharves close W of it.

There are numerous dangers in the approach to Buna. The outermost danger is a shoal, with a depth of 2.1m about 3 miles NNE of Cape Endaiadere, with a 10m shoal about 0.5 mile farther NNW. Shoals, with depths of 4 to 4.6m extend about 2 miles S and SW of the 2.1m shoal. Shoals extend about 2 miles NE of Cape Endaiadere.

Holnicote Bay is entered between **Cape Killerton** (8°37'S., 148°20'E.), about 6.5 miles NW of Cape Endaiadere, and **Kumusi Point** (8°28'S., 148°12'E.), about 11.5 miles farther NW. Cape Killerton is low, wooded, and fringed by a reef. Kumusi Point has large casuarinas growing on it. Mangrove Islands, three in number, lie about 1 mile WNW of Cape Killerton.

A 5.2m patch, a 1.8m patch, and a 7.6m patch, lie about 3.5 miles N, 3.25 miles NNE, and 4 miles NE, respectively, of Cape Killerton, at the seaward limit of an area fouled by reefs and rocks. At the W end of the area, a shoal, in a depth of 0.6m, lies about 2.25 miles NW of Cape Killerton. A dangerous wreck lies close SW of the above shoal.

Range beacons, in range 168.5°, and consisting of tubular metal tripods surmounted by white triangular daymarks, stand on Cape Killerton.

A beacon stands on the fringing reef, about 0.12 mile E of the cape; another beacon stands on a reef about 0.15 mile farther E.

Cape Killerton may be closed, clear of dangers, to a distance of 1.5 miles, but caution is necessary. Shoal water is difficult to see in the area.

Anchorage.—Vessels may anchor as convenient off Cape Killerton, or in about 16.5m, about 2 miles NNW of the cape.

Vessels may also go alongside a wharf, about 0.25 mile SSE of the cape, with 4.6m alongside. To reach the wharf, round the cape at a distance of about 0.25 mile, then pass between the two beacons E of the cape before shaping course for the wharf. The swell can make the alongside berth uncomfortable. The wharf was reported to be in ruins.

Cape Killerton is the closest anchorage to Popondetta, about 11 miles inland.

A 2.4m patch lies about 4.25 miles NW of Cape Killerton, and nearly 2.5 miles offshore.

Kumusi River, discharging at the NW entrance point of Holnicote Bay, has an islet in its mouth. The approach to the river is unsurveyed and the water is discolored. An unexamined shoal lies about 4.5 miles ESE of Kumusi Point.

9.38 Gumboro Hill (8°19'S., 148°11'E.), 207m high, is conspicuous nearly 9 miles NNW of the Kumusi River.

Opi River, with its entrance about 1 mile ENE of Gumboro Hill, is sluggish, about 47m wide, with a depth of 3.7m.

Caution Point (8°16'S., 148°12'E.), about 3 miles N of Gumboro Hill, is bold, with some coconut palms on it, and terminates in a bluff on its S side. Anchorage may be obtained in 27m, sand, 0.75 mile SE of Caution Point.

The coast between Caution Point and Black Rocky Point (Black Rock Point), about 6 miles NNW, is foul. Black Rocks extend about 0.5 mile NNE of Black Rocky Point.

Robinson Bay (8°09'S., 148°08'E.), entered about 2 miles NNW of Black Rocky Point, has depths of 18.3 to 24m, mud. Foul ground extends from the S entrance point of the bay. The coast in this vicinity is backed by a range of hills, 396m high.

Douglas Harbor (8°05'S., 148°08'E.), entered about 4 miles N of Robinson Bay, is about 0.35 mile wide at its entrance, where there is a depth of 24m, shoaling to 5.5m at its head. The harbor provides good shelter in all weathers, but is not recommended in the SE season.

9.39 Cape Ward Hunt (8°03'S., 148°08'E.), about 0.75 mile NNE of Douglas Harbor, is a well wooded, bold and prominent point, about 45.7m high, rising to an elevation of 180m inland. A disused metal framework light-tower, 62m in elevation, stands on the point. Craigs Pillar is a conspicuous rock at the E extremity of the cape.

Mitre Rock, 12.2m high, which lies about 0.67 mile N of Cape Ward Hunt, appears composed of gray stone, and is probably steep-to; it was reported difficult to identify from a distance.

Caution.—There are numerous shoals off-lying the coast between Cape Endaiadere and Cape Ward Hunt; only those in the vicinity of the recommended track are described.

Eve Shoal (8°31'S., 148°25'E.), in a depth of 6.4m, lies on the SW side of the track, nearly 8 miles NE of Cape Killerton. Margaret Shoal, with a depth of 4.6m, lies about 0.75 mile S of Eve Shoal. An unexamined shoal, with a depth of 12m, lies about 1 mile farther S. A lighted beacon is located about 1 mile NE of Eve shoal. This light is sectored.

Claire Shoal (8°26'S., 148°23'E.), with a depth of 6.4m, lies on the E side of the track, about 11.75 miles NNE of Cape Killerton. Shoals, and many rocks, with depths of less than 1.8m, lie between 1.25 and 4 miles E of Claire Shoal.

A shoal, with a least depth of 11m lies on the W side of the track, about 5 miles W of Claire Shoal. A shoal, with a depth of 5.5m, lies about 1.25 miles farther NNW, and Eleanor Shoal, with a least depth of 4.9m, lies about 1.5 miles N of the latter shoal. A 7.6m shoal patch lies about 5.5 miles NNE of Eleanor Shoal.

Raymonde Shoal (8°14'S., 148°16'E.), with a depth of 8.2m, lies on the E side of the track, about 5 miles ENE of Caution Point. Raymonde Shoal is marked by a lighted buoy; a light beacon marks a shoal lying 1.5 miles NE. Raymonde Shoal and the light beacon were reported to lie 0.6 mile E of their charted position.

A shoal, in a depth of 3.7m, was reported about 7.75 miles ESE of Cape Ward Hunt.

Cape Ward Hunt to Huon Gulf

9.40 Ambush Point (8°03'S., 148°03'E.), at the E branch of Mambare River, lies about 5 miles W of Cape Ward Hunt. A

spit, with a depth of 4m over its outer end, extends about 1 mile N of the point. The water is discolored in the vicinity.

Mambare Bay (8°02'S., 148°00'E.) is entered between Ambush Point and Warsong Point, about 6 miles NW. The delta of Mambare River forms the E side of the bay, which is low and flat. A shoal, with a depth of 5.5m, lies 1 mile W of Dead Mangrove Point, situated 2 miles W of Ambush Point. Between this shoal and the coast S, there are several patches, with depths of 2.4 to 3.7m. Farther NW, a bank, with depths of 3 to 8.8m, extends nearly 1 mile from the W shore of the bay. Anchorage may be taken in 9.1m, about 1 mile SW of Dead Mangrove Point clear of the shoals lying in the SW part of the bay.

Gira River (8°00'S., 147°57'E.) discharges close to Warsong Point, where it is nearly 73m wide. The bar fronting the river can only be crossed during a SE wind by shallow draft vessels.

The coast between Warsong Point and **Alligator Point** (7°56'S., 147°51'E.), about 7 miles WNW, is low and wooded.

Caution.—**Lila Rose Shoal** (7°58'S., 148°09'E.), with a depth of 7.3m, lies about 4.75 miles NNE of Mitre Rock.

Mambare Patches (7°56'S., 148°03'E.), with depths of 4 to 7m, extend about 4 miles in a NW-SE direction, and are centered about 6.75 miles NE of Warsong Point.

An obstruction was reported about 5 miles NNE of Warsong Point.

A depth of 6.4m lies about 3.25 miles NNE of Warsong Point, at the outer end of Song Shoals.

Starkey Patches (7°56'S., 147°56'E.), with a least depth of 4.9m, lie about 4.5 miles ENE of Alligator Point. A shoal, with a depth of 7.3m, lies nearly 1 mile W of the NW extremity of Starkey Patches.

Hercules Bay is entered between Alligator Point (7°56'S., 146°51'E.) and Cape Waria, about 14 miles NW.

A shoal, with a least depth of 5.8m, lies about 6.75 miles NNW of Alligator Point. A 7.6m shoal lies about 2 miles farther NW.

Waria Patches (7°44'S., 147°48'E.), with a least depth of 4m at their N end, lie about 8.5 miles ENE of Cape Waria. A depth of 10.6m lies about 10 miles E of the cape.

Bau Islet (7°53'S., 147°43'E.), 22m high, and **Tauwara Islet**, 12.2m high, both wooded, lie about 6 and 9 miles, respectively, SSE of Cape Waria.

A shoal, with a depth of 11m, lies about 3.5 miles E of Bau Islet. A depth of 3m, and a reef which dries 1.8m, lie about 1.5 miles ENE and 1 mile SE, respectively, of Tauwara Islet.

9.41 Waria River (7°50'S., 147°41'E.), discharging about 2 miles SSE of Cape Waria, has depths of 4.6m and 10.6m, about 0.5 mile and 1.5 miles, respectively, E of its mouth.

Anchorage can be taken in 31 to 37m, mud, nearly 2 miles E of Tauwara Islet. Anchorage may also be obtained in 11 to 14.6m, about 2.75 miles N of Bau Islet, 1.25 miles offshore.

Morobe Harbor is entered between **Stations Point** (7°45'S., 147°36'E.), about 4.5 miles WNW of Cape Waria and **Moa Point**, about 0.75 mile SW. Stations Point is the N extremity of the peninsula forming the E side of the harbor, which is sheltered from all except N winds. Morobe Point lies about 0.75 mile NW of Stations Point, N of the harbor entrance. The harbor has general depths of 20 to 26m. The settlement of

Morobe lies on the E side of the harbor, close S of Stations Point; a small timber wharf, at the settlement, has a depth of 4.6m alongside, providing good shelter at all times.

Luard Islands, in the NE approach to Morobe Harbor, are a group of wooded islands, about 30 to 76m high, and fringed by reefs. Mindrugutu Island is the NE island of the group. **Una Reef**, with a least depth of 3m, lies with its outer edge about 0.75 mile SE of the E end of Mindrugutu Island; a patch, in a depth of 10m, lies about 0.2 mile farther S.

9.42 Matebinagutu Islet (7°44'S., 147°38'E.) 34m high, and surrounded by a reef to a distance of about 0.15 mile, lies about 2 miles ENE of Stations Point. A shoal with a least depth of 5.8m, lies 0.5 mile SE. **Manila Reef**, with a least depth of 2.4m, lies about 1.25 miles ESE of Stations Point.

The principal landmarks in the approach to Morobe Harbor are **Mount Adolf**, 344m high and cone-shaped, about 2.5 miles W of Stations Point, and **Grasberg**, 145m high, with two white houses on its summit, about 0.65 mile S of Stations Point.

Anchorage.—Anchorage can be taken in 27.4m, with Stations Point bearing 109°, and Morobe Point bearing 010°. Anchorage can also be taken in 22m in Morobe Harbor, in midchannel, on a line joining Grasberg and Moa Point, or farther S.

Directions.—Vessels approaching Morobe Harbor from SE should steer for Stations Point, bearing 274°, which leads about 0.3 mile S of a 5.8m shoal SE of Matebinagutu Island. When the E extremities of Matebinagutu Islet and Mindrugutu Island are in range, bearing 023°, steer for the S extremity of Morobe Point, bearing 286°, which leads 0.35 mile N of Manila Reef. When Mount Adolph bears 260°, steer for it on that bearing until Morobe Harbor opens, when course may be steered for the anchorage.

Caution.—A shoal extends about 0.2 mile offshore close S of the settlement of Morobe.

Approaching from N the only conspicuous mark near the coast is **Jabill Hill** (See Mort Harbor), about 12 miles NW. **Hosken Islands** are also useful. Vessels from N, after passing NE of Mindrugutu and the reefs extending E and SE of it, should steer for **Cormorant Point** (7°47'S., 147°38'E.), about 2 miles WNW of Cape Waria, bearing about 210° until Stations Point bears 274°, when the directions given above should be followed.

9.43 Royle Channel is the inside route from Morobe to Burnung Point, about 54 miles NW, and lies between Stragglings, Fly, and Longuerue Islands and the mainland.

Hosken Islands (7°38'S., 147°32'E.), about 7 miles NW of Mindrugutu Island, consists of four islands connected by a reef. **Kayamagudu**, the largest is 91.4m high and wooded; foul ground and a shoal, with a depth of 4.6m, extends about 0.5 mile N of the island. A submerged rock, position approximate, lies about 1.5 miles SSE of Kayamagudu Island.

Jusabegud Islets, about 3 miles NW of Kayamagudu Island, consist of two low islets on the same reef. A drying reef extends to about 0.3 mile W of the W and larger islet. A patch, in a depth of 5.2m, lies about 0.15 mile ESE of the smaller islet.

Mageri Point (7°36'S., 147°28'E.) is the S entrance point of a bay W of Jusabegud Islets. Jabi Hill, 323m high, about 1.25 miles NNW of Mageri Point, lies close within the N entrance point; from E and NE, it appears as an isolated peak, rising steeply from the sea. A shoal, with a depth of 7.3m, lies about 0.65 mile N of Mageri Point. The bay has general depths of 36 to 64m.

At the SW end of the bay, a channel, about 0.1 mile wide, leads into Mort Harbor. The harbor, backed by steep, wooded hills, is sheltered from all winds; it has general depths of 26 to 40m and is clear of dangers, except for a narrow fringing reef in places. A narrow inlet extends about 1.25 miles N from its W end.

The N entrance point of Mort Harbor is steep-to and easily distinguished from seaward; a reef, on which the sea breaks, lies about 0.15 mile N of the N entrance point, and extends about 0.15 mile E, with a depth of 5.5m at its outer end. The S entrance point of the harbor is a wooded sandspit.

The N entrance point of Mort Harbor, bearing 256°, leads into the bay, between the reef W of Jusabegud Islets and the 7.3m shoal N of Mageri Point.

Anchorage can be taken anywhere in Mort Harbor. The best berth is in 40m, mud, about 0.2 mile SSW of the S entrance point. Small vessels may obtain good anchorage in 11 to 16.5m, S of the sandspit.

Bienen Islets (7°34'S., 147°26'E.) about 51.8m and 55m high, lie about 2.25 miles NW of Jabi Hill, on a reef close offshore. A shoal, with less than 1.8m, lies about 1.25 miles NE of the N islet.

Weibu Islet (7°33'S., 147°24'E.), 76m high, lies close offshore, about 2 miles NW of Bienen Islets. Shoal water extends nearly 0.5 mile NW of the islet.

Natter Bay (7°31'S., 147°22'E.) is entered between a point about 2.5 miles NW of Weibu Island and Cape Kubumi, about 1 mile farther NW. The bay is clear of dangers and has depths of 22 to 88m.

The S entrance of the bay is low, sandy, and wooded, and the S shore of the bay is flat and wooded, except for a hill, 104m high, close S of which is a lagoon. The lagoon discharges into the bay, and causes the water to be discolored during the rainy season. The W shore is low and swampy, and the N shore is bordered by several cliffs, 15.2 to 18.3m high. A reef extends about 0.12 mile E of Cape Kubumi.

Anchorage can be obtained in 45m, about 0.17 mile offshore, in the SW part of the bay.

Stragglings Islands (7°31'S., 147°24'E.) are a group of rocky and wooded islands, with Kakare Island, 88m high, the highest and largest, lying about 2.5 miles E of Cape Kubumi. Utbe Island, 76m high, and Abaru Island, 58m high, lie about 1.5 miles E, and 1 mile N, respectively, of Kakare Island. Foul ground and depths of less than 5.5m extend nearly 1 mile N of Aburu Island.

Huon Gulf

9.44 Huon Gulf is entered between **Cape Kubumi** (7°30'S., 147°22'E.) and Cape Cretin, about 58 miles NW. The SW side of the bay has several bays and sheltered harbors, and is backed by the Kuper Range and the Herzog Mountains, separated from each other by the valley of the Francisco River.

On the N side of the bay is the Spart of the Rawlinson Range, 890 to 1,707m high.

The land at the head of the gulf, and for nearly 2 miles inland, is low, and near Burnung Point, about 35 miles NW of Cape Kubumi, the coastal range is broken by a deep valley. South of the valley, bold, stony and wooded ranges border the coast, descending steeply to the water's edge.

The depths near the shores of the bay are great, and the gulf in general appears to be clear of dangers, but there are a number of shoals in the vicinity of the islands off the SW side of the gulf. Between Cape Kubumi and Cape Dinga, about 18 miles NW, regular depths of about 110m, ooze, have been obtained at a distance of about 1 mile offshore, and somewhat nearer to the projecting points.

The rivers at the head of the gulf are shallow, with a rapid current, and only navigable by boats.

The rise and fall of the tide has been reported to be small.

9.45 Southwest shore of Huon Gulf.—Fly Islands consist of three islands, fringed by extensive reefs; the SE island (7°28'S., 147°22'E.), 114.6m high, and the W island, 58m high, lie about 2 miles N, and 4.5 miles NNW, respectively, of Cape Kubumi. Several shoals, with depths of 3.7 to 10m, lie within 3 miles NNW of the N and largest of the Fly Islands. A patch, in a depth of 5.5m, lies nearly 1 mile S of the same island. Depths of 2.7m extend 1 mile SE of the largest of the Fly Islands.

Gorue Islet (7°31'S., 147°20'E.) lies close offshore, about 1.25 miles W of Cape Kubumi; an islet, 127m high, lies about 1 mile farther WNW.

A sand cay, 0.6m high, lies on the N end of a shoal, about 2.25 miles NNW of the 127m islet; foul ground and a shoal, with less than 1.8m, extends about 1 mile S of the sand cay. A reef, which dries 0.3m, lies about 1.5 miles WNW of the sand cay.

Brunswick Harbor (7°29'S., 147°16'E.), entered about 4.5 miles WNW of Cape Kubumi, is backed by hills, well sheltered, and has depths of 24 to 42m, mud. Reefs extend N from both entrance points. Anchorage can be taken by vessels with local knowledge, in about 36m, mud, off the village of Seيامa at the SW end of the harbor.

Small craft can anchor close to the shore in depths of from 11 to 13m.

Bnoto Point, about 2 miles NW of the N entrance point of Brunswick Harbor, is steep backed by a hill, 232m high, and fringed by a reef.

Lasanga Island (7°25'S., 147°15'E.), the largest island of the Longuerue Islands group, lies about 7.5 miles NW of Cape Kubumi. It has a saddle-shaped summit, with the peaks in an E-W direction, and attaining an elevation of 488m in the W part. A bay, on the S side of the island, provides well sheltered anchorage to vessels with local knowledge. An islet, with a reef about 0.15 mile S of it, lies on the E side of the entrance to the bay.

The remaining islands of the group are small, high, wooded and rocky, and similar in appearance. Surgurd Islet lies about 1.75 miles ESE of the SE end of Lasanga Island; a shoal with 3.7m, lies about 0.67 mile NW of the islet.

Batteru Islet, 166m high, and Jawani Islet, 143m high, both densely wooded, lie at the NW end of the Longuerue Islands; the latter islet lies about 3.75 miles NNW of Lasanga Island.

Shoals, with depths of 5.5m, lie within 1.25 miles N of Jawani Islet. An 8.2m shoal lies about 1 mile E of Batteru Islet, and a 2.4m depth lies about 1.25 miles SW of the same islet.

Wurttemberg Bay is entered between **Cape Goeben** (7°28'S., 147°13'E.) and Bnoto Point, about 2.5 miles E. Boyen Islet lies about 0.5 mile E of Cape Goeben, with a reef between. A reef, in a depth of 2.1m, lies about 0.5 mile NE of the islet. A depth of 48m was obtained about 90m from the head of the bay.

9.46 Baden Bay (7°28'S., 147°11'E.), entered about 1.5 miles W of Cape Goeben, is sheltered by Lasanga Island. A reef extends about 1 mile NNE of Sumboa Point, the NW entrance point. The village of Kia lies at the head of the bay. Good anchorage can be taken in Baden Bay, in 27m by vessels with local knowledge.

Hessen Bay (7°23'S., 147°09'E.) is entered between Bamaba Point, about 2.75 miles NW of Sumboa Point, and **Cape Room** (7°21'S., 147°09'E.), about 2.75 miles farther NNW. The bay is divided into two parts by a flat point, near which the Sela River discharges. A reef, with a 3.7m depth near its outer end, extends about 0.5 mile E of Bamaba Point. Cape Room is fringed by a reef extending about 0.2 mile off its SE side; a 3.7m patch lies about 0.5 mile ESE of the cape, and a 4.9m patch lies about 0.2 mile farther ESE.

Anchorage has been taken in a depth of 31m, about 0.1 mile offshore, on the S side of the mouth of the Sela River, with Bamaba Point bearing 129° and Cape Room bearing 016°.

Sachsen Bay (7°20'S., 147°08'E.) is entered between Cape Room and Cape Dinga, about 2 miles N. There is a sandy beach in the N part of the bay, and trees grow close to the water's edge in the S part of the bay. A 5.5m shoal and a 6.7m shoal lie nearly 1 mile ENE and about 0.75 mile ESE, respectively, of Cape Dinga. In the S part of the bay no bottom was obtained at a depth of 20m. Anchorage can be obtained in the N part of the bay, about 0.15 mile from the head by vessels with local knowledge.

Nassau Bay (7°18'S., 147°08'E.) is entered between Cape Dinga and Gossler Point, about 3.5 miles N. It was reported that anchorage can be obtained in 7.3m about 0.4 mile off the N shore of the bay, but it is exposed; an alternative for small craft is in 13 to 18m, about 92 mile offshore, in the SW corner of the bay.

Simolala Islet (7°15'S., 147°09'E.), 88m high, conical and wooded, lies 1 mile E of Gossler Point. The islet is apparently connected to the point by a submerged reef, on which is a rock which almost dries.

A bank, with depths of 4.6 to 18.3m, extends about 3 miles N of Simolala Islet, and up to 1.5 miles from the coast. A rock, with a depth of 0.3m, lies on the bank, about 0.5 mile N of the islet.

A scar on the coast is conspicuous about 4.5 miles NNW of Gossler Point.

9.47 Dot Islet (7°07'S., 147°05'E.), 31m high and wooded, lies about 4 miles farther NNW, and is connected to Tusin Point, about 0.5 mile NNW, by a reef. Two bare rocks lie close off the SW end of the islet. A 4.6m shoal lies about 1.5 miles E of Dot Islet, and a reef, in a depth of 3.7m, was reported about 2 miles SE of the islet.

Dot Inlet, entered W of Dot Islet, provides sheltered anchorage for small vessels, in 46m about 91m offshore. The shore reef varies in width from 10 to 360m, being widest off the village of Kelkel, in the SW corner of the bay.

Laupui Point (7°05'S., 147°04'E.), about 2.5 miles N of Dot Islet, is the N spur of the Kuper Range. Francisco River discharges into the SE side of Bayern Bay, about 1.5 miles WSW of the point, through a picturesque valley. The mountain ranges in this district S of Laupui Point have a different character to those to the N; S they consist of short ridges running nearly parallel to the coast, while N the spurs are directed towards the coast.

Shepparton Shoal (7°05'S., 147°07'E.), with a depth of 4.6m, lies about 2.5 miles E of Laupui Point.

Salamaua Peninsula, with **Burnung Point** (7°01'S., 147°04'E.) at its NW extremity, rises to an elevation of 249.3m, and is joined to the mainland at its SW end by a low isthmus. Reefs extend about 0.2 mile N and NW of the N end of the peninsula. A rock, in a depth of 1.5m, and a shoal, with a depth of 6.4m, lie about 0.5 mile NE and 0.75 mile ESE, respectively, of Burnung Point.

Benalla Banks (9°35'S., 150°53'E.) lies with its least depth of 16.5m about 4.5 miles NE of Burnung Point.

Rotherys Reef (6°58'S., 147°00'E.), with a least depth of 1.5m, lies about 4.5 miles NW of Burnung Point. O'Deas Reef, with a depth of 4.3m, lies about 0.5 mile farther S.

Salamaua Harbor (7°02'S., 147°03'E.), on the W side of Salamaua Peninsula, offers good and sheltered anchorage in any depth required. Centre Reef, marked at its outer end by a beacon, extends about 0.2 mile offshore from the W side of the peninsula, about 1.75 miles SW of Burnung Point. Kela Point, about 1 mile farther SW, has a reef extending about 0.2 mile NE of it.

A shoal, with a depth of 1.5m, lies about 3.5 miles W of Burnung Point. A reef, with less than 1.8m, and which breaks at LW, lies between the shoal and the coast SW. There is a wreck, dangerous to navigation, 0.5 mile N of Kela Point.

The S part of Salamaua Harbor is shoal, with depths of less than 5.5m, and large vessels should not proceed SW of a line extending ESE of Kela Point to the peninsula. Northward of the shoal area, the depths deepen rapidly to 37m, increasing to depths of about 92m W of Centre Reef.

9.48 Sugarloaf (6°51'S., 146°56'E.), a hill, 387m high, and 0.5 mile inland, is conspicuous about 13 miles NW of Burnung Point; it is the N spur of the Herzog Mountains to approach the coast. Between Sugarloaf and the entrance to Markham River, nearly 7 miles N, the country between the foothills and the coast is low and swampy. Herzog Lakes form an extensive shallow lagoon S of the entrance to Markham River. Mount Herzog, 1,880m high, is located about 10 miles SW of the entrance to Markham River.

The coast for about 8 miles S of Sugarloaf is fronted by a shorebank, with depths of less than 5.5m, extending up to 0.5 mile offshore in places.

An extensive mudbank, centered about 3 miles NNE of Sugarloaf, provides anchorage for vessels with local knowledge, in depths of 16.5 to 37m, exposed to winds from E

to SE, but the holding ground is good. This is also the quarantine anchorage for the port of Lae.

Labu Point (6°45'S., 146°58'E.) lies about 0.5 mile SW of the S entrance point of Markham River. Shoal water, with depths of less than 5.5m extends about 0.4 mile E of Labu Point, then for about 1 mile farther SE. A pinnacle, with a depth of 9.8m, lies about 2 miles SSE of Labu Point.

Labu Bay, close N of Labu Point, affords anchorage in 24 to 37m for small vessels with local knowledge.

9.49 North shore of Huon Gulf.—Markham River (6°45'S., 146°58'E.) is closed at times by a bar; there are considerable depths outside its entrance, but inside, the river is shallow and the depths are continually changing. Numerous island and shoals, constantly changing in shape, size and position, render navigation impracticable; a rapid current adds to the difficulties. The water is discolored for several miles seaward, when the river is in flood.

Lae (6°44'S., 147°00'E.)

World Port Index No. 53230

9.50 The settlement of Lae lies about 2 miles E of the mouth of the Markham River. It is a first point of entry for foreign vessels. An airfield lies close W of the settlement, and Voco Point lies about 1.65 mile E of the settlement.

Winds—Weather.—There is a swell in strong SE winds. The SE breeze usually comes up in the afternoon and dies away in the evening. Rain showers are frequent, usually during night and early morning.

Aspect.—The main wharf, which consists of three berths, lies about 1.5 miles W of Voco Point. Berths 1 and 2, on the W side of the wharf, are each 123m long with an alongside depth of 11m. Berth 3, on the E end of the wharf, is the tanker berth; it is 184m long with an alongside depth of 13.2m, although it has been reported (1994) that a depth of only 11m alongside was available.

To the E of Berth 3 is a T-headed tanker jetty; the head of the jetty is 580m long with a depth alongside of 14.2m. Further E is another T-headed jetty; the head of the jetty is 400m long and serves the cement works and storage silos.

Close W of the main wharf are two coastal wharves. Berth 4 is 54m long, width 14m, with an alongside depth of 4.9m. Berth 5 is 35m long with an alongside depth of 2.7m.

Coastal vessels, up to 40m long with a draft of 3m, can also berth at one of two privately owned wharves close N of Voco Point.

Mount Lunamen, 96m high, with a radio tower, marked by red fixed obstruction lights, on its summit, is very prominent 0.35 mile N of Voco Point.

In 1990, 349 vessels with a total dwt of 3.9 million used the port.

Proposals have been put forth to create a new oil berth, with a dolphin type mooring arrangement, off No. 3 berth. A container terminal will add to the redevelopment of the old section of the main wharf.

Pilotage.—Pilotage is compulsory and is available 24 hours. Call "Lae Port Control" on VHF channels 16, 12, 8, and 6. The pilot boards about 1 mile SW of Voco Point.

The vessel's ETA should be sent 12 hours in advance, with confirmation not more than 5 hours and not less than 4 hours before arrival.

Anchorage.—The anchorage off Lae is an open roadstead. The quarantine anchorage about 4.5 miles SW of Lae has been previously described in paragraph 9.40. In good weather, in the season of SE winds, anchorage with limited swinging room can be obtained in Milford Haven, about 0.2 mile W of the W end of the main wharf, in 61m, silt.

Large vessels may obtain anchorage in 82m, with Mount Lunamen bearing 018°, and the first and second points E of Voco Point in range. Vessels should not anchor outside this position as many anchors have been lost here.

Small vessels may obtain anchorage in 16.5 to 28m, W of the wrecks which are marked by a green can buoy about a 0.5 mile WSW of Voco Point. There is limited swinging room in this anchorage.

Frequent squalls rise from seaward and the holding ground is bad. These anchorages are not recommended.

Vessels with a masthead height exceeding 18.3m are prohibited from entering an area about 0.1 mile wide, extending about 0.5 mile SE from the seaward end of the airfield.

The coast between Lae and Cape Arkona, about 22 miles E, consists of a densely populated plain, several miles wide, with lagoons, lying below spurs of the Rawlinson Range. The vegetation, with the exception of a few stretches, consists of mangroves, and many of the water courses in the plain have the appearance of small creeks.

Along this coast, about 0.5 mile W of the entrance to Busu River, a shoal, with a depth of 9.1m, extends over 0.5 mile offshore.

Cape Arkona (6°44'S., 147°22'E.) is a conspicuous bluff, and within the cape are the houses of Hopoi Mission Station, standing on a conspicuous hill, the first hill on the coast E of Lae. A conspicuous hill, 282m high, lies near the coast about 8 miles E of Cape Arkona. Eastward of the cape, the spurs of the mountains approach close to the coast.

A shoal bank extends about 0.5 mile offshore for a distance of about 2.25 miles W of Cape Arkona; a shoal, in a depth of 4.9m, lies about 0.75 mile S of the cape.

Anchorage can be taken on this shoal, in 5.5m, about 0.3 mile offshore, 0.5 mile W of Cape Arkona.

A rock, position doubtful, and which almost dries, lies about 5 miles ESE of Cape Arkona, and about 1.5 miles offshore.

9.51 Cape Gerhards (6°45'S., 147°34'E.), marked by a light, lies about 12 miles E of Cape Arkona; the cape is fringed by reef extending 0.15 mile seaward.

Hanisch Harbor (6°44'S., 147°36'E.), entered between Cape Gerhards and Tgedu Point, about 4.5 miles ENE, is apparently free from dangers. The shores of the harbor are thickly populated, and a river and several rivulets discharge into the harbor. A mission station lies 1.25 miles NW of Cape Gerhards. Anchorage can be taken in 44m in the NE part of the harbor by vessels with local knowledge. A better anchorage for small vessels is in 4m, in the SW part of the harbor, about 1 mile NNW of Cape Gerhards.

Schollenbruch Point (6°43'S., 147°45'E.) lies about 6 miles E of Tgedu Point. **Kaingana Islet** (6°43'S., 147°47'E.), low and wooded, lies on a reef close offshore, about 3 miles farther E. A point, about 1 mile ENE of the islet, is distinctive from W due to the crested appearance of the trees on it.

The coast between Schollenbruch Point and Cape Cretin, about 7.5 miles ENE, should be approached with caution as unknown reefs may exist, and there is usually a heavy sea. An extensive bank extends from 0.5 mile to 1.5 miles offshore between the points. Between Cape Cretin and Megim Islet, 9.1m high, about 1.25 miles SW, there is a group of coral reefs in which there are narrow boat passages.

Cape Cretin (6°40'S., 147°51'E.) is a bold headland; **Mount Lugaueng** (6°37'S., 147°50'E.), a flat, wooded ridge, from 350 to 396m high, with grassy slopes on its S side, lies about 3.5 miles NNW of the cape.

Nussing Islet, 21m high, and marked on its E side by a light, lies about 0.75 mile E of Cape Cretin.

Tami Islands (6°45'S., 147°54'E.), about 6.5 miles SSE of Cape Cretin, are a group of four wooded islets, 37m high, and two rocks, surrounded by extensive reefs. A shoal, nearly awash, lies in a NE-SW direction, with its S end about 1.5 miles N of Kalal Islet, the NW and largest of the Tami Islands. There are rocks, dangerous to navigation, 1 mile N and 1.75 miles NNW of Kalal Islet. A reef, with a depth of 3.7m, not easily discerned except in a good light, was reported to lie about 1.75 miles SE of Wonam Islet, the SE islet of the group.

It was reported that the Tami Islands make a good radar target at 19 miles.

Dreger Harbor and Schneider Harbor

9.52 Gingala Islands (6°39'S., 147°52'E.), low and wooded, front the coast N of Cape Cretin for a distance of about 2.25 miles. Reefs and foul ground extend between them and join the N island to the mainland. Nababangdu Point, about 1.5 miles NNE of Cape Cretin, divides the area between the mainland and the islands into two harbors.

Dreger Harbor (6°38'S., 147°52'E.) (World Port Index No. 53240), the S harbor, lies inshore of Matura Island. It is entered between the promontory, about 0.5 mile NE of Cape Cretin, and Nussing Island, about 0.3 mile SSE. There is a light on Nussing Island. A 3m coral patch lies about 135m W of the SW end of Nussing Island, and a 4.6m patch lies about 92m SE of the W entrance point. Then a deep channel leads NNE through two passages, each about 0.1 mile wide; one leads between Kumbam Island, 0.35 mile NNE of Nussing Island, and Simboa Island, 0.15 mile W; the other leads between the S end of Matura Island and a drying reef, about 0.1 mile W, which extends about 0.1 mile from the mainland. The NE end of the reef is normally marked by a beacon.

The land near the harbor is low, of coral formation, and rises gradually to the Lugaueng Plateau. Wharves in ruins stand on the W side of the harbor. There is a 4.6m patch about 0.2 mile SSW of Nababangdu Point; a shoal, with a depth of 9.1m, lies 0.15 mile farther S, near the middle of the harbor.

Anchorage.—Dreger Harbor is well sheltered and affords good anchorage in depths of 24 to 40m. The usual anchorage is in the middle of the harbor.

Schneider Harbor (6°38'S., 147°52'E.), the N harbor, sheltered E by the Sagiang Islands (Sagiang Saun and Sagiang Kapuing), is well protected and secure, with depths of 12.8 to 20.1m, but as the entrance is narrow, it is only available for small craft. The entrance, which joins the harbor to Dreger Harbor, is bordered E by reefs, which break heavily in strong SE weather, making entry difficult even for small craft.

Langemak Bay (6°35'S., 147°51'E.), entered between Gagidu Point, about 4 miles N of Cape Cretin, and a point about 1 mile N, is open E and deep throughout. The bay is not easily identified due to the uniformly wooded appearance of its coasts, and the absence of any break in the mountains. Mape River flows into the head of the bay, and after heavy rain discolors the water for several miles seaward. Wharves and jetties, all in ruins, stand on both sides of Langemak Bay.

Anchorage may be obtained in 46 to 64m, in the SW corner of the bay, S of the mouth of the Mape River, and about 0.2 mile offshore. The anchorage is sheltered from all winds except those between E and NE. An anchorage suitable for vessels up to 30m long, is available in depths from 11 to 16.5m off the S shore, SW of Kalinguang Point, 1 mile W of Gadigu Point.

9.53 Finsch Harbor (6°33'S., 147°51'E.) (World Port Index No. 53246) is formed by Nugidu Peninsula, which extends about 1.75 miles N of the N entrance point of Langemak Bay. The harbor is entered W of Cape Bredow (Cape Bredbow) (6°33'S., 147°51'E.), the N extremity of the peninsula. The harbor is divided into three basins, separated by narrow shallow channels. The roadstead inside the entrance is suitable for only one large vessel. Bumi River discharges on the W side of the entrance to the harbor. Wharves stand on either side of the channel, about 0.5 mile SSW of Cape Bredow; those on the E side were in ruins. The shores of the harbor are densely wooded.

Nugidu Peninsula, which is low, merges into the mainland when seen from seaward, making the harbor difficult to identify from more than 4 miles offshore. Sattleberg, 975m high, lies about 6.5 miles NW of Cape Bredow; another landmark is afforded by a saddled-shaped indentation in the mountain range on the NE side of Sattleberg extending to the coast.

Madan Islet (6°34'S., 147°51'E.), 0.35 mile SSW of Cape Bredow, forms the E side of the N basin, which is suitable only for small vessels. A reef, in a depth of 1.8m, lies about 0.1 mile E of the N end of Madan Islet; it can be passed on either side in a least depth of 10m on its E side, and 16.5m on the W side. It should be passed on the E side; the bank extending from the W side of Nugidu Peninsula abreast the reef is steep-to.

Flaggen Peninsula (6°34'S., 147°51'E.) is a projection of land on the E side of the harbor, with its N end about 0.1 mile SSE of Madan Islet. The middle basin has depths of 3 to 6.7m, with a depth of 4.6m in the channel leading to it. The S basin is only suitable for boats.

Anchorage may be obtained in 29 to 40m sand and mud, with Cape Bredow bearing 051°, distant about 0.2 mile, and with the N extremity of Flaggen Peninsula bearing 186°. A vessel in the roadstead, where a swell is felt, is exposed to winds from NNW, through N, to ENE, but they do not blow

with sufficient strength to endanger a vessel with good ground tackle. The holding ground is bad.

Approaching Finsch Harbor from N the coast may be followed at a distance of 2.5 miles until the entrance to the harbor has been identified. Local knowledge is necessary to enter the basins.

Finsch Harbor to Vitiaz Strait

9.54 The coast from Finsch Harbor to Cape King William, about 33 miles NW, is backed by mountain ranges, which gradually become higher as Kitimula Point, about 13 miles N of Cape Bredow, is reached, and then become steeper, and attain their greatest elevation at Cape King William. As far as Kitimula Point, the coast and mountain ranges are wooded, but the hills in the foreground and others in the vicinity are covered with grass, and vessels coming from E can discern these grassy slopes from a considerable distance. A terrace formation is also a peculiar feature of this stretch of coast. There are a number of villages along the coast and many more in the hills.

Arndt Point (6°30'S., 147°51'E.) lies about 3.5 miles N of Cape Bredow. Song River, closed by a bar, discharges N of the point, at the N end of Scarlet Beach, a small bay. Anchorage, sheltered from SE, can be taken by small vessels at the S end of Scarlet Beach.

Station Point (6°26'S., 147°51'E.), a round, coral, chalk cape, and Kamlagidu Point, 7.6m high and wooded, lie about 3.5 and 5 miles, respectively, N of Arndt Point. A coastal lagoon, with an entrance for small boats, lies close S of Kamlagidu Point.

Kitimula Point (6°20'S., 147°49'E.) rises steeply from the sea, and is dominated by a hill with terraces, appearing like fortifications. It should not be mistaken for a similar projection some miles farther NW. The white patches on the S slopes of the hills at Kitimula Point are distinctive, and it may also be distinguished by wide grassy flats with some trees, while the cape NW is of brown color.

A light is shown from Kitimula Point.

No bottom at a depth of 110m could be obtained 3 miles SE of Kitimula Point, and the coast appeared to be steep-to. The coast between Kitimula Point and Cape King William appears bold.

Between Kitimula Point and **Blucher Point** (6°14'S., 147°42'E.), about 10 miles NW, steep, rugged and bare spurs descend from the mountains, but at Blucher Point the land is partly wooded and partly covered with grass. A drying reef extends about 0.5 mile E of a point located about 2.5 miles SSE of Blucher Point, and there is a detached reef about 0.5 mile SE of it.

Hardenburg Point (6°07'S., 147°37'E.) lies about 7 miles NW of Blucher Point. Kesseroa Lagoon, between Hardenburg Point and Cape King William, is formed by the fringing reef and numerous islets and rocks lying offshore. There is an entrance to it, with a depth of 4.9m, SE of Sialum Island, the large island at the N end. Two of the larger islands are inhabited. The lagoon has not been surveyed, but there is sheltered anchorage for small craft of up to 60 tons between Sialum Island and the mainland.

Cape King William (6°04'S., 147°35'E.) is not a well defined headland, the coast rounding and preserving its steepness. A village lies close NW of the cape. At the E end of the Cromwell Mountains, and about 16.5 miles SW of Cape King William, stands the highest summit, about 2,935m high.

Vitiaz Strait

9.55 Vitiaz Strait (5°50'S., 146°45'E.) is the fairway off the coast between Cape King William and Cape Tiwalib or Rigny, the S entrance point of Astrolabe Bay, about 100 miles WNW. **Umboi Island** (5°40'S., 147°57'E.), and the other islands NW, form the N side of the strait, which is, in effect, more or less open sea. The least width of the strait is about 20 miles between Cape King William and the islands and reef S of Umboi Island.

Winds—Weather.—During the period from July to September, the SE trade sometimes blows with a force from 6 to 7, raising a short, choppy sea between New Guinea and Umboi Island. As the New Guinea coast is approached the squalls increase in violence.

Abnormal atmospheric conditions, rain and poor visibility are likely in all seasons in Vitiaz Strait, E of **Teliata Point** (5°56'S., 147°20'E.).

Some shelter can be obtained off the W coast of Umboi Island. A few miles from Cape King, the NW point of the island, it may be blowing hard and raising a choppy sea, but as the island is approached the wind will be less violent.

Tides—Currents.—The currents in Vitiaz Strait are variable and greatly influenced by the wind. From May to September the W set of the South Equatorial Current predominates with velocities up to 1.5 knots through the strait. However, from November through February the NW monsoon reverses these trends and creates a SE set up to 2 knots. The tidal currents are weak in April and May.

It was reported that a vessel in transit through the strait experienced a NW set of 1.5 knots. The normal direction of the current during January is SE at 2 knots.

Caution.—During abnormally strong SE conditions, currents between Umboi Island and Cape King William may run at about 6 knots. During the NW monsoon there is a SE set of up to 4 knots.

Vitiaz Strait can be unpleasant for small vessels during the SE season, and it is inadvisable to plan on ever making a good speed if proceeding S through this strait in the months from March to November. If proceeding from Manus S during these months, small vessels are recommended to proceed S from **Tolokiwa Island** (5°19'S., 147°37'E.) to the New Guinea coast, and then follow the coast at a distance of about 0.5 mile, or less if prudent, off the coastal reefs. Following the coastline into bays can be advantageous if the NW set is strong. Southward of Kitimula Point both the sea and set generally abate.

Southern Shore of Vitiaz Strait

9.56 The Finisterre Range, S of the coastal hills, extend nearly parallel to the coast, on the S side of Vitiaz Strait. The peaks of the range are usually obscured by clouds, but in the early morning, before sunrise, they are sometimes visible. Toward the W end of the strait, Mount Disraeli, a sharp cone,

3,719m high, and Mount Gladstone, 4,115m high, also conical but not as pointed, lie about 20 miles SSE and 23 miles SSW, respectively, of **Helmholtz Point** (5°36'S., 146°27'E.).

Kelanoa Harbor (6°02'S., 147°31'E.) is protected from E and N by a coral reef with Chissi Islet, 1.5m high, at its N end. The entrance, between the islet and the coast W, is about 47m wide, with depths of 6.4 to 7.6m. A river discharges at the entrance.

Anchorage can be obtained by vessels with local knowledge, in 8.5 to 10m, S of Chissi Islet. The harbor is narrowed here by a reef extending about 0.1 mile offshore, and a vessel should secure a hawser to one of the trees to prevent it from swinging.

Scharnhorst Point (5°58'S., 147°27'E.), about 4.5 miles NW of Chissi Islet, is 73m high. A narrow strip, covered with bushes, borders the steep coast.

Teliata Point (5°56'S., 147°20'E.), about 7 miles WNW of Scharnhorst Point, is bordered by a fringing reef, extending 0.75 mile seaward. Sio Island lies on the fringing reef. There is a Lutheran mission station and a grove of coconut palms at the village of Sio on the mainland. Anchorage can be taken in 35m, sheltered from S and E winds, N of the small bay close W of Teliata Point.

Vincke Point (5°55'S., 147°16'E.), about 4.5 miles W of Teliata Point, is low and covered with grass. A large river enters the sea close E of the point, and the yellow water from the river flows E, leading to the supposition that an E counter current is in the vicinity.

The coast, extending about 3.5 miles SW of Vincke Point, has depths of 14.6 to 20.1m about 0.25 mile offshore. Several rivulets enter the sea here, and a high waterfall is visible in the range behind.

Wasu Anchorage (5°58'S., 147°13'E.) and village lie about 4 miles SW of Vincke Point. Beacons, in range 222° lead to the SE side of wharf, with 3m alongside, and a length of 60m. Small vessels can anchor on the range line, in 18.3m of water, and about 0.1 mile from the shore reefs; the reefs are not steep-to and caution should be exercised in the approach.

The wharf is exposed to winds from WNW to ENE, through N, and should not be used during the NW Monsoon.

9.57 Schlangen Harbor (5°58'S., 147°10'E.), formed between a reef and the coast, is entered about 7.5 miles WSW of Vincke Point. The entrance, between a small bush-covered islet and **Peschel Point** (5°57'S., 147°09'E.), about 8 miles WSW of Vincke Point, is very narrow, deep, and not easily recognized; the course for entering is close to the reef, on which the sea breaks, and the islet on the E side must not be approached too closely due to a projecting reef.

There are other openings with depths of 4.9 to 5.8m. There are other islets, covered with bush, on the E and W extremities of the reef. Abreast the E islet, there is a village on the coast, and between them an entrance suitable for small vessels appears to lead into Schlangen Harbor.

Anchorage may be obtained by vessels with local knowledge, in depths of 29 to 39m, just inside the entrance to Schlangen Harbor, with Peschel Point bearing 278°, distant from 0.25 to 0.5 mile.

Reiss Point (5°55'S., 147°03'E.), about 6 miles WNW of Peschel Point, is fringed by a reef extending about 0.1 mile offshore, and on each side of the point is a village. A massive

grassy hill, 400m high, descends steeply to the sea about 5 miles W of Reiss Point. Off the coast between the point and the hill no bottom was obtained at a depth of 50m at a distance of 0.1 mile from the breakers.

Lepsius Point (5°51'S., 146°52'E.), about 12 miles WNW of Reiss Point, is the N extremity of an alluvial plain, covered with trees and grass, and is higher than other points in the vicinity.

An unexamined shoal, with a depth of 12.8m, over which there is discolored water, lies about 1.25 miles NW of Lepsius Point.

Sareuak Bay (5°51'S., 146°45'E.), a wide bight, fringed with coral, lies with its head about 4 miles WSW of Lepsius Point.

9.58 Weber Point (5°46'S., 146°42'E.), about 10.5 miles WNW of Lepsius Point, has reefs in its vicinity extending about 0.5 mile offshore. Gauss Point lies about 1.5 miles farther WNW.

Bunsen Point (5°41'S., 146°35'E.) lies about 7.5 miles NW of Gauss Point; midway between the points is a river with a double mouth, one of which is filled with sand and gravel. A partly drying reef extends about 1 mile offshore W of the point. Anchorage can be taken in depths of 20 to 29m, by vessels with local knowledge, off the W edge of this reef.

Helmholtz Point (5°36'S., 147°27'E.) lies about 10 miles NW of Bunsen Point, and a large river, with deep water off its mouth, flows out close to the point; a village lies on either side of the point, and they become more numerous farther W. Dekays Bay is SE of Suri Point, which is about 2 miles ESE of Helmholtz Point. A reef extends from the latter point to nearly the E end of the bay. There is a signal station at the head of the bay, about 2 miles SSE of Suri Point.

Anchorage.—Dekays Bay provides anchorage, sheltered from all winds except those between N and E, to vessels with local knowledge. Sheltered anchorage may be obtained off the village on the W side of Helmholtz Point, in 20 to 26m, about 135m offshore, to vessels with local knowledge.

Cape Iris (5°34'S., 146°21'E.), about 7 miles W of Helmholtz Point, is wooded and fringed by a reef, which dries in places, and extends about 1 mile offshore. The large village of Massai and two small rivers, which form small lagoons at the mouth, lie at the inner end of the bay SW of Cape Iris. Anchorage by vessels with local knowledge, can be obtained off the small rivers, in 35m, about 0.2 mile offshore, well protected from the SE trade; W of this anchorage is a reef, on the other side of which anchorage in 40m may be obtained near a small rivulet.

Kepler Point (5°34'S., 146°16'E.) lies about 4.5 miles W of Cape Iris; a river discharges at the point, and discolors the sea for a considerable distance offshore. Anchorage in 44 to 81m may be obtained by vessels with local knowledge, near Kepler Point, off a large village, from 0.1 to 0.2 mile offshore, between the reefs extending from the coast.

Herwarth Point (Hewarth Point) (5°32'S., 146°10'E.) lies about 7 miles WNW of Kepler Point. In the W part of the bay formed between them is a grassy hill, 100m high, thickly wooded, and situated close to the coast.

Pommern Bay (5°32'S., 146°09'E.), with wooded shores, lies about 1 mile SW of Herwarth Point. A wooded spur from the mountains, which are about 1,524m high, approaches close to the head of the bay, and near it is a wooded point extending E, with a rivulet at the point discoloring the sea for several miles offshore. Another spur from the mountains descends in the direction of Cape Tiwalib, about 12 miles WNW of Herwarth Point; on the ridge is Mount Sirui, 710m high, conical and conspicuous, and a wedge-shaped ridge, both of which are partially wooded.

Northern Side of Vitiaz Strait

9.59 Umboi Island (5°38'S., 147°55'E.) lies on the N side of Vitiaz Strait, with its S extremity about 29 miles NE of Cape King William. Siassi Islands form an extensive archipelago of low wooded islets S of Umboi Island.

Malai Island (5°53'S., 147°56'E.), 46m high, lies about 6 miles SW of the S end of Umboi Island, and Tuam Island, 61m high, the largest of the group, lies about 6 miles SE of Malai Islet.

Anchorage was reported available in a depth of 9m off a village on the NW side of Malai Island. The anchorage is approached from the W through a winding unmarked channel between the reefs.

See Pub. 126, *Sailing Directions (Enroute) for the Pacific Islands*, for the description of Umboi Island, the Siasi Islands, and Dampier Strait.

Long Island (5°20'S., 147°06'E.), about 34 miles W of Umboi Island, is of volcanic origin. Lake Wisdom, a large lake almost entirely surrounded by steep slopes, 305m high, occupies the center of the island; an active volcano is in the lake. Cerisy Peak, 1,136m high, lies near the S end of the island, and Reaumer, 1,304m high, lies near the N end of the island. Kiau Point, the N point of the island, is marked by a light, and has fringing reef for 2 miles on either side. The W and S coasts of the island are steep-to, except for a reef extending 2 miles offshore, about 7 miles WSW of Kiau Point, and a shoal, with a depth of 3.7m, reported about 1.5 miles offshore, about 9 miles WSW of the same point. A small reef extends about 0.5 mile from Cape Reaumur, the NE extremity of the island, and along the E coast of the island for a distance of about 6 miles, a reef extends 1 mile offshore. An islet, about 15.2m high, lies about 0.5 mile E of the SE end of the island.

There are rocks, dangerous to navigation, off the NW and W coasts of this island. These rocks are located 3.25, 4.5, 6.25 miles WSW, and 8 miles SW of Kiau Point. There is a shoal, about 0.75 mile long, 5.5 miles WSW of Kiau Point.

Long Island is reported to be a good radar target at a distance of 22 miles.

Crown Island (5°06'S., 146°57'E.), about 9 miles WNW of Kiau Point, has a fairly level summit, 566m high, and is fringed by a reef, which extends from 0.5 to 1 mile offshore, and through which there are numerous channels. Breakers have been reported off its NE side, and several rocks, which break in a heavy sea, extend one mile offshore from the SW, S and SE coasts of the island.

An ATLAS (Autonomous Temperature Line Acquisition System) buoy is moored 6.5 miles NNE of Crown Island.

Hankow Reef (4°54'S., 146°45'E.), about 17 miles NW of Crown Island, has a least depth of 2.7m, and consists of four patches, extending in a NW-SE direction for a distance of 2 miles; the sea breaks heavily on the reef. A drying rock lies about 3 miles WSW of Hankow Reef.

Caution.—It was reported that Long Island and Crown Island lie 1.5 to 2.5 miles W of their charted positions.

ATLAS buoys are in the process of being laid down by the U. S. National Oceanic and Atmospheric Administration extending along the equatorial latitudes from the Galapagos to New Guinea (1992).

The buoys are toroidal with orange and white bands. Mariners are advised to keep 5 miles clear of these buoys.

Astrolabe Bay

9.60 Astrolabe Bay, entered between Cape Tiwalib and Cape Kusserow, about 18 miles NW, has considerable depths. The S shore of the bay is mountainous. **Mount Nasen** (5°30'S., 145°37'E.), 1,252m high, of the Ortzen Range, rises about 22 miles W of Cape Tiwalib. A vast plain, through which the Gogol River flows, backs the W shore. The water is deep close to the shore in most parts of the bay.

9.61 South shore of Astrolabe Bay.—Cape Tiwalib (5°28'S., 145°59'E.) is wooded and higher than the points of land E of it. A mission station stands on the cape, and a small bay lies E of it.

Kabenau River (5°28'S., 145°55'E.), the mouth of which is closed at times, discharges into the bay about 7.75 miles W of Cape Tiwalib.

Konstantin Harbor (5°29'S., 145°50'E.) is entered between Garagassi Point, about 1.75 miles W of the mouth of Kabenau River, and a point about 0.32 mile SSW. A factory chimney lies about 0.32 mile ESE of Garagassi Point, and a flagstaff lies close E of the S entrance point of the harbor. There are general depths of 12.8 to 73m in the harbor. Good anchorage, sheltered from the prevailing winds, can be taken in about 40m, with the factory chimney bearing about 071° distant about 0.25 mile. Small vessels can anchor in less than 37m nearer to the shallows fringing the head of the harbor.

9.62 West shore of Astrolabe Bay.—The village of **Bogadyim** (5°27'S., 145°45'E.) lies about 5 miles WSW of Garagassi Point. Landing can usually be made at the jetty, and also at the N end of the town in fine weather, but the breakers are sometimes so heavy that landing is impossible. Two yellow beacons, surmounted by triangular topmarks, in range, indicate the approach to the anchorage; they are difficult to distinguish.

Anchorage.—Good anchorage may be obtained in 20m, with the beacons in range bearing 241°, and the boat shed bearing 286°.

Gogol River (5°19'S., 145°45'E.) discharges about 7.5 miles N of Bogadyim. A bank, with depths of less than 5.5m, extends from 0.3 to 0.5 mile offshore between the mouth of the river and Maraga Hook, nearly 3 miles S; there are several patches,

with depths of 6.7m and 8.5m, which are steep-to on their seaward side, close outside the bank.

Bili Bili (5°18'S., 145°47'E.), an islet, 37m high, and steep-to, lies about 2 miles NE of the mouth of the Gogol River. A reef, with a depth of about 1.2m, lies about 0.6 mile WNW of the N end of the Bili Bili. Anchorage in depths of 35 to 40m may be obtained off the NW side of the islet.

Urembo, Jabob, and Jomba are wooded, coral islets, lying 2, 2.5 and 3 miles, respectively, N of Bili Bili, and from 0.6 to 0.15 mile offshore. The coastal bank extends to the two S islets. A radio tower is conspicuous, close inland, about 0.6 mile W of Jabob.

Submarine cables run ESE and SE from the shore W of Jabob.

Planet Rock, in a depth of 1.8m, lies nearly 2 miles E of Jabob, and is difficult to distinguish.

Anchorage.—Sheltered anchorage for small craft may be obtained in 14.6 to 16.5m between Jomba and the mainland. The coast here is sandy beach with palm trees.

Madang Harbor (5°13'S., 145°49'E.)

World Port Index No. 53250

9.63 The harbor and city of Madang lie on the NW side of Schering Peninsula, in the S part of a lagoon extending about 9 miles along the New Guinea coast. It is a well sheltered anchorage and port for large vessels. Beliau Island lies on the N side of the harbor. Binnen Harbor, W of Madang, extends about 0.67 mile S of Bode Point, the NW extremity of Schering Peninsula.

Dallman Passage, the entrance to the harbor, lies between the NE side of Schering Peninsula and the S end of Kranket Island, close NE. It is the S of several passages in the barrier reef which extends N and parallel with the coast for about 8.5 miles to abreast **Cape Barschtsch** (5°04'S., 145°49'E.). It is recommended for vessels approaching Madang from S.

The principal islands on the barrier reef N of Kranket Island, from S to N, are Paeowai, Tab, and Sek Islands; the islands are densely wooded on their seaward side, but are cultivated on their inner side. There are several other islands and many shoal patches within the barrier reef.

Winds—Weather.—There is little wind in the port, and during the rainy season the nearby marshes make the atmosphere unhealthy. Ships intending to remain for any period of time are advised to anchor between Kranket and Beliau Islands.

Tides—Currents.—The tidal rise at Madang is 1.2m at mean higher HW. The tidal currents are scarcely perceptible. The flood sets SW and the ebb NE, but they are much affected by the prevailing winds; the maximum velocity is about 0.75 knot.

The current usually sets N along the coast, and is reported to set continuously out of Dallman Pass; however, it was reported that the current was setting mainly into Dallman Pass.

Aspect.—Dallman Pass, about 0.2 mile wide, has depths 29 to 50m in the fairway; a 7.6m patch lies on the N side of the pass, nearly 90m off the S end of Kranket Island.

The West Wharf or No. 1 Berth is on the N side of Bode Point; it is 137m long, 12.8m wide, with a depth of 10.1m alongside. Berth No. 2, used by coastal vessels, lying about 135m S of No. 1 berth, has a length of 52m, 20m wide, with a depth of 5m alongside, although it has been reported (1994) to have a depth of only 2.3m alongside. Berth No. 3 is for small craft and lies about 125m ESE of No. 1 berth. It is 30m long, 4.5m wide with a 1.6m depth alongside.

There are no tugs or lighters available.

Dallman Pass has been reported difficult to identify until within a distance of from 3 to 4 miles, and the light structure on Kalibobo Point was reported visible about the same distance.

Mount Hansemann (5°10'S., 145°45'E.), 431m high, about 5 miles WNW of the entrance to Dallman Pass, is a good landmark.

Coast Watchers Light is shown from a steel framework tower, on **Kalibobo Point** (5°12'S., 145°50'E.), the NE extremity of Schering Peninsula.

An aviation light is shown about 1.67 miles W of Kalibobo Point.

Lights, in range bearing 300°, on the SE side of Beliau Island, lead through Dallman Pass.

Six beacons, each consisting of a white board, are located on the S side of Kranket Island. Similar beacons are located about 0.1 mile SW of the above-mentioned front range light, and on the E side of Nui Island, located 0.25 mile N of Bodie Point.

Pilotage.—Pilotage is available for anchoring, berthing, and unberthing and is compulsory. The pilot boards on the 300° range line about 1.5 miles from the entrance to Dallman Pass. Radio communication is possible on VHF channels 16, 12, 8, and 6, Madang Port Control.

ETA at the pilot station should be sent not less than 12 hours before arrival via Port Madang, Port Moresby Radio or Rabaul Radio, and should be confirmed not more than 5 hours and not less than 4 hours prior to arrival.

Anchorage.—The best anchorage is in the quarantine anchorage, in depths of about 44m, soft mud, good holding ground, between between Beliau and Kranket Islands, with Babob Malon, a rock situated 0.15 mile N of the N end of Beliau Island, bearing 321°, and the front structure of the 300° range on the SE side of Beliau Island, bearing 252°.

Vessels up to 91m in length can also anchor in Binnen Harbor, in depths of 12.8 to 16.5m.

An abandoned submarine cable crosses Madang Harbor between Bode Point and the S side of Beliau Island. Another submarine cable runs from Bode Point SW across the entrance to Binnen Harbor.

Anchoring is prohibited in an area extending across Madang Harbor, from the SE side of Beliau Island to the shore SSE.

Directions.—As Dallman Pass and Coast Watchers Light are difficult to distinguish, Mount Hansemann can be steered for bearing 302°, which leads to the harbor entrance. Then a vessel should steer a midchannel course to the harbor. The pass and fairway boundaries are marked on the chart.

Kranket and Tab Islands are more easily identified than Dallman Pass and the light structure. Bili Bili, about 5.5 miles SSW of the harbor entrance, forms a good landmark, being distinguishable at a distance of 10 miles.

Approaching from N, the houses of the settlement become visible soon after passing Sek Island.

Caution.—Many local fishing vessels may be encountered at night, from December to April, off the entrance to Dallman Pass.

Islands and Passes North of Madang

9.64 Tab Anchorage (5°10'S., 145°50'E.) provides anchorage in general depths of 20 to 40m. It extends from Panab Island, about 1.5 miles N of Beliau Island, to Tab Island, nearly 2 miles E, and from the NW end of Kranket Island to **Rasch Pass** (5°09'S., 145°51'E.). It is bordered E by the barrier reef, Tab, Massas and Paeowai Islands and the reefs joining them; on its SW side by the rocks and reefs lying between Kranket and Panab Islands; and on its NW side by the shoals and rocks extending from Panab Island to within 0.5 mile of the barrier reef close N of Rasch Pass.

Rasch Pass (5°09'S., 145°51'E.) is deep and steep-to. A white square beacon stands on Panab Island, and a 3.4m shoal, about 1 mile NE of the island, is marked on its SW side by a white triangular beacon with a red border. These beacons, in range 229.5°, lead through Rasch Pass.

A 4.6m shoal lies about 0.5 mile NE of Panab Island.

A reef, with rocks which break, lie about 0.5 mile NNW of the N end of Kranket Island.

A spit, with a least depth of 7.3m, extends about 0.17 mile SSW from the S side of Rasch Pass. A spit, with a least depth of 5.8m, extends 0.15 mile SW of the N side of the pass.

A channel leads from the S end of Tab Anchorage, passing E of Pana Tibun Islet and Beliau Island, to Madang Harbor, over patches with a least depth of 7.3m.

A deep channel leads NE of the 4.6m patch about 0.5 mile NE of Panab Island to Nagada Harbor (Friedrich Karl Harbor) (5°10'S., 145°48'E.). The latter harbor, close NW of Tab Anchorage, is a very narrow inlet, with depths of 14.6 to 28m.

9.65 Malamal Anchorage (5°07'S., 145°50'E.) provides anchorage in depths of 12.8 to 31m. The anchorage extends from **Wongat Island** (5°08'S., 145°51'E.) to the S end of Sek Island, about 1.75 miles N, and from the barrier reef to the entrance to Mililat Harbor. Islands and shoals separate Malamal Anchorage from Tab Anchorage. Wongat Island, about 1.25 miles NNW of Rasch Pass, is separated by a narrow channel from the barrier reef. A shoal, with a least depth of 4m, lies about 0.3 mile N of the N end of Wongat Island.

Tausch Island (5°06'S., 145°48'E.) lies on the N side of the entrance to Mililat Harbor, about 1.5 miles NW of Wongat Island. Patches, with a least depth of 2.7m extend about 0.4 mile E of Tausch Island. The area between Tausch Island, the S side of Sek Harbor, and Sek Island is encumbered with shoals; narrow and unmarked channels lead through the reefs E and NE of Tausch Island.

A narrow and deep break lies in the barrier reef, about 2 miles N of Rasch Pass.

9.66 Sek Harbor (5°05'S., 145°50'E.) (World Port Index No. 53260), with its main entrance, Otilien Pass, about 8 miles N of Madang, affords excellent anchorage in all weather, being well protected by Sek Island and Admosin Island, situated about 0.75 mile W of the N end of Sek Island.

St. Michael's, the headquarters for the Roman Catholic mission, stands on the point about 0.5 mile SE of Admosin Island.

A jetty at Alexishafen, close SW of the mission, has a berthing face of 31.7m, and mooring bollards on shore, NE and SW of the jetty ends; there is a depth of 9.1m alongside, and vessels of up to 12,000 tons have berthed at the jetty.

Otilien Pass (5°05'S., 145°49'E.), between the N end of Sek Island and the mainland NW, is deep and clear of dangers in the fairway, but a reef extends about 0.1 mile off the mainland.

Anchorage in depths of 22 to 29m, mud, may be obtained in the outer part of Sek Harbor, about 0.1 mile W of Sek Island.

Anchorage may also be obtained in 26m, in the cove SE of Admosin Island.

Bostrem Bay (5°05'S., 145°47'E.), the continuation of the harbor W, affords good anchorage, but the approach is too tortuous for large vessels to make use of it.

Sek Harbor to Isumrud Strait

9.67 The coast N of Sek Harbor consists of flat land, with mountain ranges 6 to 8 miles inland. A reef, on which there are several islets, fronts the coast from Cape Maylum, about 2.75 miles N of **Cape Barschtsch** (5°04'S., 145°49'E.), nearly to Cape Juno, about 3 miles farther N. The Matuka or Ama River discharges about 4 miles N of Cape Juno, and is accessible only by boats when not obstructed by a bar.

Cape Croisilles (4°51'S., 145°48'E.), about 4 miles farther NNE, is prominent as the coast here changes to a NW direction. A light is shown from a steel tower, 15m high, with a white hut at its foot, on Cape Croisilles.

Off-lying Islands and Banks

9.68 Bagabag Island (4°48'S., 146°14'E.), 600m high, wooded and volcanic, lies about 23 miles E of Cape Croisilles. The island, fringed with reefs, is also fringed by reefs lying from 1 mile to 1.75 miles offshore, with, apparently large gaps between them except on the N and NE sides. Bagabag Island was reported to lie 2 miles E or ENE of its charted position.

New Year Bay, on the SE side of the island, is about 0.75 mile wide, and extends in a NW direction. The bay has depths of 77m in the entrance, and a shelving sandy beach at its head.

The drying reef, shown on some charts, about 2 miles SE of the bay entrance, is reported not to exist, but there is a patch, with a depth of 9.1m, about 1 mile SSE of the entrance. A reef, on which the sea breaks, lies about 2 miles ENE of the entrance, and a reef extends 0.15 mile from the S entrance point.

Anchorage.—Good anchorage, in 28m, mud and sand, may be obtained near the head of New Year Bay, by vessels with local knowledge, sheltered from all winds except those between SE and E, near the head of the bay where there is a shelving sandy beach with offshore reefs.

Karkar Island (4°39'S., 145°58'E.) lies about 8 miles NE of Cape Croisilles, and about 10 miles NW of Bagabag Island. It is densely wooded, conical in shape, and volcanic.

The W side of the island is fringed by a reef, and another reef extends about 4 miles NE from the NE side of the island. Tuale

Islet, about 1.5 miles E of the N extremity of Karkar Island, and Mangamarike Rock, 9.1m high, about 1.75 miles farther ESE, lie on the latter reef. An islet, 18.3m high, lies about 2 miles SE of Mangamarike Rock.

Anchorage.—On the N side of Tuale Islet there is an opening in the reef, through which vessels with local knowledge may enter and obtain anchorage in about 35m, about 0.5 mile SE of the islet.

Kulili Harbor is entered on the opening in the reef W of Tuale Islet. Vessels with local knowledge can anchor in a depth of about 35m half a mile SE of the islet. From the anchorage a channel, marked by port and starboard beacons, leads to a jetty suitable for vessels drawing less than 3m, there is also a small boat jetty.

A shoal, position approximate, is charted 5 miles E of the S extremity of Karkar Island, and about 2 miles offshore.

Karkar Island is reported to be a good radar target at a distance of 19 miles.

Greig Bank (4°32'S., 146°14'E.), in a depth of 55m, was reported to lie about 12 miles E of Tuale Islet.

Isumrud Strait

9.69 Isumrud Strait (4°47'S., 145°51'E.), separating Bagabag and Karkar Islands from the mainland, is free from dangers. Many floating logs and large trees were reported in the strait.

Tides—Currents.—A tidal current of about 2 knots in a NW direction to about 2 knots in a SE direction was reported in Isumrud Strait.

It was reported that a 1.5 knot current setting W was encountered between Bagabag Island and **Manam Island** (4°06'S., 145°03'E.), and that a 2.5 knot current setting NW was very apparent between Bagabag Island and Sek Harbor.

Isumrud Strait to Hatzfeldt Harbor

9.70 Mugil Harbor (4°50'S., 145°47'E.), about 2.5 miles NW of Cape Croisilles, is fronted by Vidari Islet, which is almost joined to the NW entrance point by a reef.

Anchorage.—The best shelter during the NE monsoon is close E of the islet, in 24m. During the SE monsoon, the SE corner of the bay is only suitable for small craft with local knowledge due to the very narrow channel leading to it.

Megiar Harbor, narrow and lying parallel to the coast, lies about 1.5 miles farther NW, and is available to small vessels with local knowledge. It is protected at its E end by a peninsula and its reef, and at its W end by an island and its reef.

Sarang Harbor (4°46'S., 145°42'E.), entered about 8 miles NW of Cape Croisilles, is formed between the mainland and a chain of islets and reefs extending for about 2 miles parallel to the coast; the W islet is connected by a reef to the NW entrance point of the harbor. Anchorage in depths of 16.5 to 18.3m can be obtained in the harbor by small vessels with local knowledge. There is a berth with more swinging room, sheltered during the NW monsoon, off a plantation at the SE end of the chain of islets and reefs.

A bay, formed between the NW entrance point of Sarang Harbor and **Pallas Point** (4°44'S., 145°40'E.), about 2.5 miles

NW, has a grassy plain, covered with trees, on its S side. Two rivers discharge into the bay; the N river discolors the sea for a considerable distance seaward. The coast NW of Pallas Point is mostly wooded and hilly. Anchorage may be obtained in fine weather close offshore.

A reef, on which the sea breaks heavily at times, lies about 1.5 miles N of Pallas Point, and 1 mile offshore; it is reported to have a depth of 1.2m, and is difficult to distinguish due to the discolored water.

A shoal, with a depth of 8.2m, lies about 2.5 miles NNW of Pallas Point. Another shoal, on which there are two rocks, lies about 4 miles NNW of Pallas Point and 1.5 miles offshore.

Dove Point (4°35'S., 145°33'E.), about 10 miles NW of Pallas Point, is flat and wooded, with a grassy hill close within. Bunabun Harbor, close W of the point, provides reasonably sheltered anchorage in SW weather for vessels up to 700 tons.

Neptune Point (4°30'S., 145°27'E.) lies about 7.5 miles NW of Dove Point. Ulingen Harbor, entered about 2 miles W of Neptune Point, is a narrow inlet, indenting the coast for about 0.5 mile; it is enclosed by wooded hills on the S and E sides, and partly on the W. A reef extends about 0.2 mile from the E entrance point of the harbor. Anchorage may be obtained in 29 to 37m, N of the above reef, by vessels up to 1,000 tons, with local knowledge.

Ulingen Harbor was reported to give a good radar return at a distance of 10 miles.

Magnus Point (4°28'S., 145°24'E.), covered with pine trees, lies about 4 miles NW of Neptune Point.

9.71 Kronprinz Harbor (4°27'S., 145°22'E.), entered about 2 miles WNW of Magnus Point, has a coral reef extending from the N side of its entrance; inside the entrance there is a sandy beach with palm trees and several villages on both sides. Mount Prince Oscar, 1,250m high, about 10 miles W of Magnus Point, can be seen over the trees on the inner part of the harbor. A saddle-shaped mountain, half covered with trees, lies W of the harbor. Anchorage may be obtained by vessels with local knowledge, with the W entrance bearing 356°, and the E entrance 106°. The depths decrease gradually from 35m towards the head of the harbor.

Cape Gourdon (4°23'S., 145°19'E.), about 9 miles NW of Magnus Point, is a gradually rising grassy hill, then to the entrance of Hatzfeldt Harbor, about 7 miles W, the coast is generally flat and bordered by a forest. A light is shown on Cape Gourdon.

Samoa Point (4°23'S., 145°16'E.) lies about 3 miles W of Cape Gourdon; a plain, through which two rivulets discharge, lies E of the point.

Caution.—Between Asuramba, about 1.5 miles SSE of Cape Gourdon, and **Dalua Bay** (4°21'S., 145°09'E.), 12 miles W, there are many shoals lying 2 to 3 miles offshore; vessels are cautioned to keep a good lookout when navigating in these waters.

Hatzfeldt Harbor

9.72 Hatzfeldt Harbor (4°23'S., 145°14'E.) lies W of Pataki Island, which lies about 5 miles W of Samoa Point. The inner part of the harbor lies between East Point and West Point, located about 1 mile SW and 1.67 miles WSW of Pataki Island.

Both points are fringed by reef, that off West Point extending 0.12 mile N.

Pataki Island (4°22'S., 145°15'E.), wooded and reef-fringed, lies about 0.25 mile N of Tombenam Point; the island was connected to the point by a sandy spit, 213m wide, covered with coconut trees and scrub. A bank, with depths of 3.7 to 5.5m, extends about 0.75 mile W of Pataki Island. A patch, with a depth of 6.7m, lies about 0.75 mile W of the same island; it was reported to lie farther S.

Schimo Reef, with a least depth of 2.1m, lies about 0.75 mile N of West Point.

These reefs are reported to be easily distinguished.

Chirimosh Island, midway between East and West Points, is fringed N by Hedwigs Reef, extending about 0.2 mile N. Harbour Reef, which dries, lies 0.12 mile SSE of the S end of Chirimosh Island. The reef may be passed on either side, but the channels are narrow, with depths of 5.8 to 8.5m.

The settlement lies on the E side of the harbor, S of East Point.

Anchorage.—With NW winds the anchorage E of Chirimosh Island is recommended, but at other times the W part of the harbor is preferable. The anchorages are reported to be subject to the swell.

Anchorage can be taken in depths of about 20m E and W of Chirimosh Island.

A German naval vessel obtained anchorage with Chirimosh Island bearing 192° and East Point bearing 147°.

Directions.—The approach E of Chirimosh Island is reported to be the best. A vessel approached the harbor with Chirimosh Island bearing 179° until the Nend of Pataki Island bore 089°, when a course of 230° was steered, passing between Schimo Reef and the N end of Hedwigs Reef. Then a course of 162° was steered keeping in midchannel between West Point and Chirimosh Island.

Hatzfeldt Harbor to Cape Girgir

9.73 Dugumur Bay (Dogumur Bay) (4°23'S., 145°13'E.), on the W side of West Point, had depths of about 33m in the entrance. The E shore is comparatively steep-to, and depths of less than 11m extend about 0.25 mile off the SW shore.

Westward of Hatzfeldt Harbor, the coastal mountains become lower, forming a continuous chain of grassy hills, and near the coast are numerous palm trees. Farther W, these hills fall to gently undulating land, after which they rise again, becoming steeper and more wooded. The coast forms several bays, the headlands of which are fronted by reefs.

Vessels are recommended not to approach this coast within 6 miles.

Legoarant Islands (4°19'S., 145°01'E.), about 12 miles NW of Pataki Island, and about 2 miles offshore, are two reef-fringed islands, 0.5 mile apart in a NW-SE direction; there is apparently a clear passage between them. A reef extends 2 miles NW of the group, and there are several reefs in the bight SE of the islands, but they are generally visible from aloft.

Bogia Harbor (4°17'S., 144°59'E.), with its entrance about 1.25 miles W of Legoarant Islands, is fronted by the Neilsen Islets, consisting of two coral islets, Kolakola and Reamuna. The channel leading into the harbor lies between the islets and

the W shore, passing close W of a sunken reef lying W of Reamuna.

The S part of the bay consists of two bights, separated by a tongue of land, from which a reef extends. The settlement is located on the W side of the W bight. A coral reef extends about 0.1 mile E from abreast the settlement, and a small jetty lies close S of the reef.

Anchorage may be obtained by vessels with local knowledge, in 46m, in the channel between the islets and the W shore, or in 14.6 to 18.3m, about 0.1 mile E of the jetty.

Podbielsky Point (4°15'S., 144°58'E.) lies about 1.5 miles N of Kolakola Islet. A coral reef, in a depth of 4.9m, lies about 1.5 miles NNW of the point, and 0.35 mile offshore, with a deep passage between it and the mainland.

Monumbo Harbor (4°14'S., 144°57'E.), entered about 2.5 miles NW of Podbielsky Point, is exposed to the swell and not a good anchorage. Malangin Islet lies in the middle of the harbor, 0.12 mile offshore; a reef extends 0.12 mile N and 0.1 mile E of the islet.

9.74 Hansa Bay (4°10'S., 144°52'E.) lies between Hansa Point, about 5.5 miles NW of Podbielsky Point, and **Condor Point** (4°09'S., 144°52'E.), about 4.75 miles farther NW. A light is shown from Condor Point. Laing Islet, flat and densely wooded, lies 3 miles WNW of Hansa Point, and a spit extends from its S end to the shore.

A rock, with a depth of about 0.9m, lies about 0.6 mile NNE of Laing Islet. A patch, with a depth of 4.6m, lies 1 mile E of Condor Point.

Anchorage.—Good anchorage may be obtained in about 18.3m, with Laing Islet bearing 089°, sheltered from nearly all winds, by vessels with local knowledge; or in 19.2m, mud, with Condor Point bearing 061°, and the SW end of Laing Islet bearing 137°.

Manam Island (4°06'S., 145°03'E.), 1,300m high, lies with its SW extremity about 6.5 miles NE of Hansa Point, with Stephan Strait between. The island is conical, volcanic, and covered with vegetation, being wooded to an elevation of about 762m. In 1936, the volcano was in violent eruption. Several reports indicate that the island lies between 1.5 and 3 miles N to NE of its charted position. The island recently was reported to lie 2.2 miles E of its charted position.

Aris Island (3°59'S., 144°59'E.), about 3.5 miles N of the NW extremity of Manam Island, is 215m high, with a flat summit. The island has been reported to lie about 2 miles S and 1.5 miles SW, respectively of its charted position.

A local magnetic anomaly has been reported E of Manam Island.

Venus Point (4°01'S., 144°41'E.), about 13 miles NW of Condor Point, has a clump of high casuarina trees on it. Anchorage has been taken in 10m, 3 miles E of the point, and 2 miles offshore.

Ramu River, discharging W of Venus Point, has an entrance about 0.2 mile wide, and is not easily identified. It is fronted by a bar, with reported depths of 2.4m; inside the depths increase to 14.6 to 16.5m. Small vessels have ascended 17 miles, but there is a second bar, with a depth of 2.4m, about 6 miles within the entrance.

Broken Water Bay (3°57'S., 144°37'E.), entered between Venus Point and Cape Wabusi, about 10 miles NW, has irregular depths.

Cape Girgir (3°49'S., 144°34'E.) lies about 4 miles NNW of Cape Wabusi, and is marked by a light.

Sepik River

9.75 Sepik River discharges between Cape Girgir and **Cape Franseski** (3°51'S., 144°34'E.), about 1.5 miles SSE; it is the largest and most important river on the N coast of New Guinea. The river is navigable 60 miles by large vessels and 300 miles for vessels drawing 4m; the channel, which has a width of from 0.15 mile to 1 mile, is subject to continual change. For a distance of 40 miles up river from the entrance there are general depths of 12 to 20m and no sandbanks; beyond this there are places with depths of from 4 to 5.5m, and at 300 miles the river expands like a large lake with depths of about 2.7m. The maximum variation of the water level is 6.1m.

The flood season is in April, and the low season is in September. At Ambunti, 235 miles from the mouth, there is a difference of about 7.6m between flood and low levels.

The current runs at the rate of from 2.5 to 3 knots, and causes the water to be discolored as far seaward as Kadovar and Bam Islands, about 12 to 20 miles offshore.

Depths—Limitations.—The entrance to the river has sandbanks on either side. The river is best approached by deep draft vessels with the point on the S bank, about 0.75 mile SW of Cape Franseski, bearing 215° ahead. Then alter course to 224° when Cape Franseski is distant 0.35 mile and in range 152° with Cape Wabusi, about 2 miles SSE.

The bar will be crossed in depths of about 7.9m with the point on the SE bank abeam distant 0.15 mile.

Floating islands of grass, on which small trees grow, constitute a danger in the river; these islands, which reach 0.5 acre in size, may float down on a ship at anchor, causing her to drag, in which case they must be cut right through to clear the ship.

Two naval vessels, with a draft of 2.4m and a length of 32.5m, ascended the Sepik River as far as Ambunti, about 320 miles upstream.

It was found that the channel generally followed the outside of the bends, that high wooded banks were an indication of deeper water, and low grassy bends indicated shallows; whirlpools and eddies always indicated very deep water. At all narrow bends the water is deep at the outside of the bend, even if mudbanks show plainly on the inside. The major danger in navigating the river is from floating debris and embedded tree trunks.

The banks in the lower reaches are dense sago swamps, sometimes fronted by beds of reeds, but higher up, bread-fruit trees and sago palms abound. Crocodiles, herons, and pigeons are met with, and fish are plentiful, especially eels.

Mosquitoes, which are encountered in large numbers, and are at their worst in April, are exceptionally troublesome. The type of malaria experienced on the river is malignant.

There are villages, with connecting tracks, near the river banks. About 35 miles up, the banks become a little higher, and the ground less swampy, being replaced by stout timber. About 40 miles up is Marienberg mission station, situated on a small

hill. The inhabitants in this vicinity do not live near the river, but there are villages a few miles back. Angoram, 60 miles up, situated on a hill, is a government station. The country between Angoram and Malu is generally swampy and impassable. At Malu the first high land begins.

The inhabitants are becoming more civilized, as nearly all the region adjacent to the river for a distance of over 300 miles from its mouth has been brought under government control; they are generally friendly and eager to trade.

Schouten Islands

9.76 The Schouten Islands, lying from 13 to 28 miles off the New Guinea coast, extend from Bam Island, at the E end, to Vokeo Island, at the W end. The relative position of the islands is reported to be approximate. Several reports, confirming previous reports, indicate the Kadovar Island lies between 1 and 2 miles SE of its charted position, and the other islands between 1 and 2 miles SW of their charted positions.

Bam Island (3°35'S., 144°50'E.), about 21 miles NE of Cape Girgir, is an active volcano, 600m high. At the foot of the cone, the island is covered with trees, which, on the N side, reach almost to the summit. On the N side there is cultivation on the lower slopes, with many coconut groves and a large village, while the S side is burnt and reddish in color. The island is steep-to and there is no anchorage.

A bank, with a depth of 46m, lies 41 miles NE of Bam Island.

Kadovar Island (3°35'S., 144°36'E.), 300m high, lies 14 miles W of Bam Island. It has a steep, wooded crater, remarkable for several villages on its edge, and many large coconut plantations. The island affords no anchorage, and a reef, on which the sea breaks with any swell, extends 1.5 miles W from the island.

Blupblup Island (3°33'S., 144°37'E.), about 14 miles WNW of Bam Island, is a steep cone, about 412m high, but not so sharp as Bam Island. The N side of the island is fringed by reef. Motmot Islet, showing as two hummocks, about 61m high, and covered with brushwood and coconut palms, lies about 0.5 mile W of the island; it lies on the N side of a reef extending about 1 mile W of the SW end of Blupblup Island. Boluga Islet, about 0.5 mile N of Motmot Islet, lies on a reef extending nearly 1 mile SSW from the NW end of Blupblup Island.

Anchorage.—Small vessels can find exposed anchorage in 5 to 8m, about 0.5 mile NW of Motmot Islet, and 0.35 mile W of Boluga Islet.

Small craft up to 30 tons can enter a boat passage close N of Motmot Islet and find sheltered anchorage inside the reef in a depth of 4m. Local knowledge is required as the boat passage is tortuous.

Viai Island (3°23'S., 144°26'E.), about 12 miles NW of Blupblup Island, is about 160m high, conical, wooded, and uninhabited.

A depth of 148m is reported to lie about 4 miles W of the island.

Koil Island (3°20'S., 144°14'E.) lies about 12 miles W of Viai Island. A reef extends about 0.2 mile S from the SE end of

the island, and a detached reef extends 0.25 mile W from the extremity of this reef. Anchorage for small vessels may be obtained in 13 to 27m between the detached reef and the shore.

Voceo Island (3°27'S., 144°07'E.), about 7.5 miles NW of Koil Island, is about 610m high, densely wooded, steep, and cliffy. The island presents a saddle-shaped appearance from NW, having two peaks with a slight depression between them. There are several villages on the island.

Voceo Island was reported to be a good radar target at a distance of 24 miles.

Anchorage.—Anchorage can usually be obtained by small craft up to 60 tons in the bights of the reef, off the several villages around the island, according to the prevailing wind.

Caution.—An extensive reef lies SW of a line joining Koil and Voceo Islands.

Cape Girgir to Cape Pus

9.77 The coast from **Cape Girgir** (3°49'S., 144°34'E.) to Cape Terebu, about 44 miles WNW, is flat, rising inland to a chain of hills, 427 to 549m high, about 35 miles W of Cape Girgir.

Cape Terebu (3°37'S., 143°51'E.) is a steep, thickly wooded hill, about 140m high, which, from a distance, appears as an island. Westward of the cape the coastline is hilly as far as Humbolt Bay, a distance of about 190 miles.

The shore for about 5 miles E of Cape Terebu is dark sandy beach. Krauel Bay is entered about 10 miles E of the cape.

Cape Moem (3°33'S., 143°42'E.), about 9 miles WNW of Cape Terebu, is the extremity of a narrow peninsula projecting 2 miles N from the coast. A light is shown from the N end of Cape Moem. Depths of less than 5.5m extend about 0.2 mile N of the cape.

The stretch of coast between Cape Moem and Cape Girgir is named the Hansemann Coast. This coast was reported to lie about 2 miles S of its charted position.

Boram Bay, with general depths of 7.3 to 16.5m, is entered between Cape Moem and Cape Boram, about 2.5 miles WSW.

Sixdiv Shoal, with a depth of 4.6m, lies about 2 miles NNW of Cape Moem. Byrne Shoal, with a depth of 4m, lies about 1 mile NNE of Cape Boram.

Wewak Harbor (3°34'S., 143°38'E.)

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9.78 Wewak Harbor is entered between Cape Boram and Wewak Point, the E extremity of Wewak Peninsula, nearly 2 miles WNW. A reef, marked at its seaward end by a lighted beacon, extends 0.55 mile NNE of Mission Point, located nearly 1 mile WSW of Cape Boram. A drying reef extends about 0.25 mile W of Cape Boram. A wreck, in a depth of 6.4m, lies about 0.5 mile NW of Cape Boram. There are general depths of 7.3 to 16.5m in Wewak Harbor, on either side of the reef extending NNE of Mission Point.

Aspect.—A wharf lies at the end of a pier extending about 0.3 mile NE from Mission Point. The wharf is 73m long on its E side, with a depth of 6.7m alongside (1993), and can accommodate vessels up to 5,000 grt.. There is a mooring buoy

off the SE corner of this pier and there is a dolphin off the NE end. Berthing may become hazardous during the Monsoon season.

A conspicuous building stands on the shore 1 mile W of Cape Boram. A radio mast stands at the base of Wewak Peninsula 0.5 mile SW of Wewak Point.

Pilotage.—Pilotage is not compulsory but a pilot is available from Madang with 48 hours notice. Pilots board about 2 miles NE of Wewak Point.

ETA should be sent not less than 12 hours before arrival via Port Moresby Radio or Rabaul Radio, and confirmed not more than 5 hours and not less than 4 hours prior to arrival.

Anchorage.—Large vessels normally anchor in 14.6 to 16.5m about 1.25 miles WNW of Cape Boram. Smaller vessels can anchor closer to Wewak Peninsula. Care must be taken to avoid two foul areas situated 0.5 mile SSW and 0.7 mile S of Wewak point. In bad SE weather these anchorages can become exposed and uncomfortable, and better anchorage can be found 0.5 mile SW of Cape Boram.

Directions.—Approaching from E, steer for the highest tree on Raboin Islet, bearing 282°, until Cape Moem bears 207°. Thence steer for the S shoulder of the cliff on the S side of Wewak Point, bearing 254°, which will lead about 0.6 mile N of Byrne Shoal.

West Harbor (3°33'S., 143°37'E.) is entered between the NW point of Wewak Peninsula and **Cape Wom** (3°31'S., 143°36'E.), about 2.25 miles NW. A drying reef extends about 0.17 mile off the W side of Wewak Peninsula. A shoal, with a depth of 7m, lies 0.65 mile WNW of the NW point of Wewak Peninsula, and an unexamined patch, with a depth of 6.1m, lies about 0.75 mile farther WNW. A 5.5m patch lies 0.35 mile E of Cape Wom.

Raboin Islet (3°30'S., 143°36'E.) lies nearly 0.75 mile NE of Wom Peninsula; there are depths of 15.8 to 20m in the passage between the islet and the peninsula. The islet is fringed by reef extending about 0.2 mile from its N and NE sides.

Dallman Harbor (3°30'S., 143°34'E.), entered between the NW side of Cape Wom and Cape Pus, about 3.25 miles NW, is sheltered SE by Wom Peninsula, E by Raboin Islet, and N by Muschu Island. The harbor has comparatively steep-to shores, with general depths of 11 to 26m; depths of less than 9.1m extend nearly 0.5 mile NNW of the SE entrance point of the bay. Sheltered anchorage may be obtained by vessels with local knowledge in Dallman Harbor, except during NW winds.

Cape Pus resembles Cape Girgir, being flat and wooded with casuarina; the cape is backed by a lagoon.

Off-lying Islands and Dangers

9.79 Muschu Island (3°25'S., 143°35'E.) is separated from the mainland NW of Cape Pus, by Muschu Strait, which is deep and nearly 1.5 miles wide. The island is over 61m high, fertile, and well populated.

Cape Samein (3°26'S., 143°33'E.), the SW extremity of the island, is marked by a light; a shoal, with a depth of 4.5m at its outer end, extends about 0.25 mile W of the cape. Cape Barabar, the E extremity of the island, lies 5.5 miles ENE of Cape Samein. A shoal, with a least depth of 5.2m, lies between 0.7 mile and 1.25 miles ESE of Cape Barabar. A 4.6m patch

lies near the 200m curve, about 3.25 miles ESE of the same cape.

Kairiru Island, close N of Muschu Island, is conical shaped and wooded; from N, it appears to rise gradually to flat-topped summit, 760m high, near its center. Kairiru Island was reported to give a good radar return from a distance of 25 miles.

A prominent rock (3°22'S., 143°37'E.), 9.1m high, lies about 0.2 mile from the E extremity of the island, and resembles a boat under sail.

Kairiru Strait, separating Muschu and Kairiru Islands, is deep in the fairway, and reefs fringe its shores. A rocky bank, with a depth of 7.9m at its outer end, extends about 0.25 mile S from the S end of Kairiru Island, reducing the passage to a width of about 0.1 mile. Patches, with depths of 9.7m and 7.9m, lie in the E part of the strait, about 1 and 2 miles, respectively, E of the rocky bank.

Victoria Bay (3°20'S., 143°31'E.) indents the W side of Kairiru Island for about 1 mile, and its entrance is about 1 mile wide. There are depths of 22 to 31m in the central part of the bay. Depths of less than 5.5m extend up to 0.15 mile offshore in the E side of the bay, then deepen sharply to over 18.3m. In the S part of the bay, depths shoal gradually to depths of 5.5m 0.15 mile offshore.

Anchorage.—Victoria Bay provides snug anchorage with good anchorage in the SE season. Vessels up to 60 tons can anchor in a depth of 7m close to the shore at the head of the bay and also in the S corner. There is a salt hot spring on the S side of the bay.

9.80 Yuo Islet, Karasau Islet (Keresau Islet), and Unei Islet (Buni Islet) lie in the W approach to Muschu Strait. Yuo Islet lies about 3 miles WNW of Cape Samein, the SW extremity of Muschu Island, and is very low, covered with coconut palms, and inhabited. The channel between Yuo Islet and Muschu Island, is deep and free of dangers. A rock, existence doubtful, is charted about 1 mile NW of Yuo Islet.

Karasau Islet, wooded and inhabited, lies nearly 1.5 miles WNW of Yuo Islet, and is about 1.5 miles long in a WSW-ESE direction.

Unei Islet lies about 1.75 miles WNW of Karasau Islet, to which it is almost connected by foul ground; foul ground extends about 0.5 mile WNW of Unei Islet. A light is shown from Unei Islet.

Walis Island (3°14'S., 143°18'E.), 20.7m high, densely wooded, and marked by a light, 6m in elevation upon the S point, lies about 11 miles WNW of the W extremity of Kairiru Island. A reef, marked by breakers, extends about 2.5 miles E of the island. Foul ground extends about 1 mile N of the E part of the island, and about 1 mile S of the W end of the island.

Tarawai Island, also densely wooded, lies close WNW of Walis Island, from which it is separated by a passage, 0.35mile wide, with a least depth of 5.8m.

Anchorage.—Protected anchorage may be obtained by vessels with local knowledge in a small bay on the SE side of Tarawai Island, remaining clear of a bank, with a depth of 4.3m, extending about 0.2 mile SE of the W entrance point of the bay.

Cape Pus to Aitape Roads

9.81 The coast between **Cape Pus** (3°29'S., 143°33'E.) and the boundary between Papua New Guinea and West Irian (the 141st meridian), about 163 miles WNW, is named the Finsch Coast, and is high, densely wooded in places, with many villages. There is no fringing reef as far as **Lapar Point** (3°07'S., 142°21'E.), about 75 miles WNW of Cape Pus, and anchorage may be obtained from 1 mile to 2 miles offshore. The coast here, rising in places to steep cliffs, is backed by hills from 183 to 244m high; farther inland, Mount Turu rises to an altitude of 1,219m, about 16 miles SW of Cape Pus, and Mount Sapau rises to an altitude of 1,432m, about 18 miles SE of Lapar Point.

The sea is of a bright to dark green appearance for a distance of 3 or 4 miles off the coast, except for places where large rivers color it yellow. Blue water is seen close to the coast only between Robide Point, about 83 miles WNW of Lapar Point, and Hook Germania, about 8.5 miles farther W. The discharge from Tami River discolors the water W of Hook Germania.

The mouths of rivers, lagoon, or brooks should not be used for bearings, as their positions cannot be depended on.

Good anchorage may be obtained during the southeast trade all along the coast between Cape Pus and Altabe Roads. During the NW monsoon anchorage may be obtained between the off-lying islands.

Hawain River (3°27'S., 153°05'E.) discharges about 4.25 miles WNW of Cape Pus; depths of less than 5.5m and 11m extend about 0.5 and 0.75 mile, respectively, off its mouth.

Bogim Harbor, entered between Hawain River and a point, about 3 miles WNW, has depths of less than 11m extending up to 1.5 miles offshore.

Cape Karawop (3°25'S., 143°25'E.) lies about 2 miles WNW of the W entrance point of Bogim Harbor. A conspicuous radio tower stands on the coast about 0.75 mile W of Cape Karawop.

9.82 Aitape Roads (3°09'S., 149°29'E.) (World Port Index No. 53280), the area enclosed by Seleo, Ali and Tumleo Islands, E of **Lapar Point** (3°07'S., 142°21'E.), is known as Aitape Roads. The harbor is located W of Soleo Island.

Lapar Point, the W entrance point of Aitape Roads, is the termination of a spur of a hill, easily identified by black rocks and stones lying in the vicinity. The wooded land in the vicinity is lower than the coast E of it, and the mountain ranges and hills backing the point are also lower than those E.

Many villages are on the mainland and the islands. Aitape, the principal settlement, lies near Rohm Point, about 1 mile SE of Lapar Point. A mission and wharf lie about 5 miles ESE of Rohm Point, and a signal station lies about 1 mile farther ESE. Pilotage is not compulsory. An airfield lies about 1 mile S of the wharf.

Tides—Currents.—The tidal currents set E and W at a rate of about 0.75 knot.

Caution.—Foul ground extends from a position about 3.5 miles ESE of Seleo Island for about 8 miles ESE, lying about 2.5 miles offshore and parallel to the coast.

A reef was reported about 1 mile NW of the W end of the above-described foul ground.

Islands and Dangers

9.83 Seleo Island (3°09'S., 142°29'E.), 30m high and wooded, lies about 8.5 miles ESE of Lapar Point, and nearly 3 miles offshore; the reef, fringing the island, extends about 0.25 mile from its N side. Angel Islet lies about 0.4 mile S of Seleo Island, on the W side of a detached reef extending 0.5 mile SE of it. The channel between this reef and the reef fringing Seleo Island is nearly 0.2 mile wide, with depths of 16.5 to 55m in the fairway.

Babelsberg Strait (3°10'S., 142°28'E.) is about 2.5 miles wide between the reef on which Angel Islet lies and the mainland. The strait leads into Aitape Roads, but is not recommended due to shoals in the fairway.

On the N side of the strait, Saer Laeing, a shoal, in a depth of 3m, lies about 0.55 mile SW of Angel Islet, and Dalton Shoal, in a depth of 10.4m, lies 0.65 mile farther SW. Starkey Shoal and Reeves Shoal, with depths of 5.5 and 7.3m, lie, respectively, about 1.25 and 2.25 miles W of Angel Islet. Robertson Shoal, in a depth of 7.9m, lies about 1.5 miles farther WNW.

McGee Shoal (3°08'S., 142°26'E.), with a depth of 3.4m, lies about 3 miles W of the W extremity of Seleo Island.

On the S side of the strait, Samoi Shoal, with a least depth of 2.4m, lies about 0.5 mile from the S shore, SSW of Angel Islet. Cole Shoal, with 7.9m, lies about 1 mile WNW of Samoi Shoal, and about 0.3 mile offshore.

Ali Island (3°08'S., 142°28'E.), a wooded island, 36.6m high, lies about 1 mile NW of Seleo Island; reefs and shoals extend up to 0.2 mile off the island. The channel between the two islands is reduced to a width of about 0.25 mile by Middle Reef and other dangers. Middle Reef lies on the S side of the channel, 0.17 mile W of the reef extending W from Seleo Island. A shoal, with a depth of 5.5m, and Tapel Rock with a depth of 3.4m, lie about 0.3 mile N and 0.4 mile W, respectively, of the N extremity of Middle Reef.

Sang Shoal, steep-to, and in a depth 5.5m, lies about 1 mile WNW of the N end of Ali Island. Warrego Shoal, steep-to, and in a depth of 10.7m, lies about 0.5 mile farther NW.

9.84 Tumleo Island (Tamara Island) (3°07'S., 142°24'E.), about 2.5 miles ENE of Rohm Point, has a conspicuous hill, 63m high, at its NW extremity. The channel between Tumleo Island and Rohm Point is encumbered with dangers.

Tumleo Rock (Tamara Rock), 15m high, with some small trees on it, lies about 1.25 miles W of the NW extremity of Tumleo Island. It lies at the N end of a reef, with depths of less than 1.8m, extending 0.35 mile SSE of the rock. Arak Rock, with less than 1.8m, lies about 0.5 mile E of Tumleo Rock; Knight Shoals, two patches with depths of 8.5m and 7.6m, lie 0.45 and 0.65 mile, respectively, S of Arak Rock. Pultata Rock, 0.9m high, lies 0.35 mile SW of Tumleo Rock; Lamak Rock, 0.6m high, and Wolpei Rock, with less than 1.8m, lie about 0.2 mile and 0.4 mile, respectively SSE of Pultata Rock.

Stein Reef, 1.2m high, lies about 0.5 mile ENE of Rohm Point. Hunter Rocks, 1.5m high, lie on the coastal bank, about 1.25 miles SE of Rohm Point.

Anchorage.—Aitape Roads provides shelter for all classes of vessels, but the best shelter, during the southeast trade, is in

depths of 24 to 31m, in Aitape Harbor, close W of Seleo Island. Anchorage may also be obtained W of the S end of Tumleo Island during the SE season in less depths, and off the SE end of the island, in depths of 14.6 to 18.3m, in other seasons of the year.

A certain amount of shelter can be obtained in 5.5 to 10m in the bight S of Rohm Point, where cargo can be handled by surf boats during the greater part of the year. A jetty extends 0.12 mile NE from the head of this bight, with a wharf at its head which is 18.3m long and has a depth of 4.3m alongside.

There are no pilots and fuel and water are not available.

Directions.—From any direction the hill on Tumleo Island is a good landmark, and first appears as a cone above the horizon. There are several passages to the roads and harbor, the passage between Seleo Island and Angel Islet is used by the mail steamers and is the one recommended.

The passage N of Seleo Island, though narrow, is sometimes used by vessels approaching from E; a vessel bound for the harbor may pass on either side of Middle Reef, the channel to the E is narrow but well-defined and clear of dangers, while that to the W is encumbered by Tapel Rock.

The passage between Tumleo and Ali Islands is deep and nearly 4 miles wide, and may be used by vessels proceeding W from Aitape Harbor or coming from W, taking care to avoid the previously described dangers.

There are clear passages close W of Tumleo Island, and on either side of Stein Reef, which may be used.

Aitape Harbor to Irian Jaya

9.85 The coast between **Lapar Point** (3°07'S., 142°21'E.) and Cape Concordia, about 69 miles WNW, presents very few distinctive features. About 7 miles WNW of Lapar Point, a reef, with a depth of 5.8m, on which the sea breaks in heavy weather, lies about 0.75 mile off the mouth of Yalingi River.

The entrance to Sissano Lagoon (Norovu Lagoon) lies about 16.5 miles WNW of Lapar Point. Between the entrance, and a position about 10 miles WNW, depths of 18.3m or less extend up to 2.25 miles offshore.

At **Prittwitz Point** (2°55'S., 141°50'E.), about 17 miles WNW of the entrance to Sissano Lagoon, a range of mountains, 373m high, approaches the coast and terminates in steep rocks, 30.5m high. About 8.5 miles farther WNW, a coral patch, in a depth of 12m, lies about 1.5 miles offshore. The village of Leitre, with a lagoon, lies 12 miles WNW of Prittwitz Point.

Neumayer River (2°45'S., 141°27'E.) discharges about 10 miles ESE of Cape Concordia; depths of less than 11m extend up to 1 mile offshore for about 7 miles ESE of the river mouth. Anchorage by vessels with local knowledge may be obtained about 0.5 mile WNW of the river mouth. Two islands, 41 and 13.7m high, respectively, to the tops of the trees, lie about 0.5 mile offshore, and 2 miles SE of Cape Concordia. Two rocks, with depths of less than 1.8m, lie about 1.25 and 2.5 miles ENE of Narimuru Island, and about 0.5 and 1 mile, respectively, offshore.

Daumlinge Bay (2°42'S., 141°19'E.) is entered between Narimuru Islet and Cape Concordia, about 1.25 miles NW.

Anchorage, sheltered from NW and N winds, may be obtained by vessels with local knowledge in depths of 9.1 to 18.3m.

Vanimo Harbor (2°41'S., 141°18'E.) (World Port Index No. 56736) is entered between **Cape Concordia** (2°40'S., 141°18'E.) and Vanimo Point, about 1.25 miles WNW; reefs extend about 0.25 mile N from both entrance points. Cape Concordia, the N extremity of a peninsula, rises to an elevation of 82.6m and is densely wooded; it is marked by a light. There is a village and mission station on the W side of the harbor, and the government station of Vanimo lies in the SE corner of the harbor. At the station a causeway projects from the shore. At the head of the causeway is a wharf 19m long with a depth alongside of 4.9m. The wharf is well sheltered, though occasionally a swell is felt alongside. A wreck with a depth of 5.5m, lies 0.15 mile WNW of the wharf. An airfield is located S of Vanimo.

9.86 Mount Hartmann (2°46'S., 141°15'E.), about 610m high, with a cone-shaped summit, is conspicuous about 6 miles SSW of Cape Concordia.

The depths in the harbor decrease regularly from 31m in the entrance towards the head of the harbor.

Anchorage.—Large vessels can anchor in any part of the harbor in convenient depths, with good holding ground. Small vessels anchor near either corner of the harbor, dependent on the monsoon, fairly protected from the swell.

For vessels approaching from the E and keeping along the coast, Narimuru and Buru Islets form the best guide to the vicinity of the entrance. Vessels can enter without any difficulty by keeping midway between the entrance points; the

reefs fringing the entrance points should be given a berth of at least 0.2 mile.

The coast between Vanimo Point and **Robide Point** (2°36'S., 141°04'E.), about 14 miles W, is flat from 1 mile to 3 miles inland, and consists of swampy ground and bushes; it is fronted by a steep-to coral reef, drying nearly as far W as the point. Farther inland is a range of hills.

Westward of Robide Point the spurs of Mount Bougainville approach the coast, which falls steeply to the sea, and the fringing reef becomes narrower. **Mount Bougainville** (2°39'S., 141°02'E.), 1,204m high, conical, and with a flat summit, lies about 4 miles SSW of Robide Point, and is conspicuous from N or NW.

A vessel took anchorage in a bay 6 miles E of Robide Point, in a depth of 14.6m, about 0.2 mile from the sandy beach. The bay is easily recognized by an off-lying rock, and in the E part of the bay is a 4.6m patch, lying about 0.25 mile offshore.

Bougainville Bay (2°37'S., 141°01'E.), about 2.5 miles W of Robide Point, is about 1 mile wide at its entrance. The village of Wutung lies on the W side of the bay, near a creek discharging into the S side. Approaching the bay from E, the cliffs immediately E of the entrance are steep and conspicuous.

Anchorage may be obtained by vessels with local knowledge in depths of 18.3 to 22m. A vessel anchored in 20.1m, coral sand, about 0.17 mile offshore. Landing can be difficult if there is a heavy NW swell.

The 141st meridian is the boundary between Papua New Guinea and Irian Jaya. The E boundary of Irian Jaya is marked on the coast at the foot of a steep rocky cliff by a white stone pyramid, visible from seaward.