

**Dumkhul Bay**, intermediate between Jyghur Point and fort, (which are nearly 2 m. apart), is a deep little cove, quite open to N. winds, but giving shelter from S. and S.W. winds, in  $4\frac{1}{2}$  fathoms, mud, at low water, 3 cables' lengths off shore, by bringing the outer point to bear W. by N., and the single large tree in the bottom of Dumkhul Bay bearing S. This is a snug little anchorage in the S.W. monsoon, where large vessels may venture.

**Zyghur or Shastri River.** Jyghur Fort, on the E. extreme of the headland, and bearing E. by S.  $1\frac{1}{2}$  m. from the outer point, looks down upon the entrance of this fine river which, from its sources in the Ghauts, receives (at the distance of 18 m. E.S.E. from its mouth), the waters of three tributaries, the Bao, the Gurni, and another; its lowest reach curves round by the S. to the W., then trends to the N.-ward along the E. face of Zyghur headland, and, discharging its waters at two places, forms a sand-bank between.

**The Bar.** The principal channel, having 3 fathoms at L. W., is under the fort, close along the cliffs, which must be hugged to avoid the above sand-bank. Within the fort point the water is deep on the S. side of the river, forming a safe harbour for shipping against all winds. The N. entrance (which has nearly as great a depth as that by the rocks, but with more breakers,) is  $\frac{1}{2}$  m. N. of the fort; and still further to the N. there is a reef of rocks projecting  $\frac{1}{2}$  m. from the N. cliffs, which are separated from Zyghur Fort by the space of  $1\frac{1}{4}$  m. The little village of Bunder, in a bight to the E. of these rocks, is at the bottom of Zyghur Bay, which, between Karliteshwur and Bunder, is more than 3 m. deep.

**The Coast** from Zyghur Point to the S. consists of rocky headlands and sandy bays; it runs about S.S.E. for 7 m. to **Warowri**, a little bluff point, which (projecting to W.N.W. about a mile from the regular line of coast) bears N. by W.  $10\frac{1}{2}$  m. from Meria Donghur. The coast is safe to approach into 5 fathoms. On the N. side of Warowri Point there is a little bay and river, similar to that of Kalbadevi, but of smaller extent, giving shelter to coasters from Southerly winds, in 3 fathoms, sand and mud; at H. W., when they get 6 or 7 ft. on the bar, they slip into the river of Warowri. **Amwah Bay**, formed under the S. side of Michi-donghur, (a prominent piece of tableland, about 120 ft. above the sea, and connected with Jyghur headland by a sandy plain,) is  $4\frac{1}{4}$  m. N.N.W. of Warowri, and gives shelter from N.-Westers in 4 or 5 fathoms, sand and mud, with the point bearing W. by N. or W.N.W. In the bight, between Warowri and Amwah, are five sandy bays and four rocky points, safe to approach into 5 fathoms.

**MERIA DONGHUR** is a headland of high round form, lighter in colour than the other land, and appearing like an island when seen from N.-ward or S.-ward. Its highest part is 475 ft. above the sea. The S.W. point bears N.N.W. 2 m. from the light-house on the S. bastion of Ratnaghiri Fort. A deep bay is thus formed between that fort and Meria Donghur, the entrance to which is  $1\frac{1}{4}$  m. wide; but a sunken rock, on which the sea breaks at L. W., lies in the centre, with 5 fathoms round it, and 7 fathoms at the distance of 3 or 4 cables' lengths to sea-ward. This dangerous rock in the centre of the bay between Meria Donghur and Ratnaghiri Fort, appears not to have been known to early navigators, who said "the landing-place is on the N. side of the fort, where there seems to be shelter for small vessels during the S.W. monsoon." The bay on the S. side of Meria Donghur affords shelter from N.-Westers, in 3 or 4 fathoms, mud and sand; but the above sunken rock must be avoided, and other rocky patches lying close to the cliffs.

**Kalbadevi Bay.** The sea face of Meria Donghur headland is nearly 2 m. long, and on its N. side a deep bay affords sheltered anchorage from S. and S.W. winds, in 5 fathoms, mud. During the Indian mutiny (1857), advantage was taken of the shelter afforded in this bay to land troops during the S.W. monsoon, near the mouth of Kalbadevi river, the entrance of which is close to the rocky cliffs, on the N.E. of Meria headland. It has been already mentioned that, when the S.W. monsoon is in full force, there is at L. W. in the daytime, half a fathom more water than the chart shows, in all the bays along this part of the coast. The Ratnaghiri Light will be very useful to vessels wishing to run into Kalbadevi Bay.

**RUTNAGHERRY or RATNAGHIRI FORT**, S.W. bastion, in lat.  $16^{\circ} 59\frac{1}{2}'$  N., lon.  $73^{\circ} 16'$  E., bearing N.  $\frac{1}{2}$  W. 6 m. from Paos Point, is on the highest end of the fort, 300 ft. above the sea. This fort covers a large headland connected by a narrow sandy neck with the main, and when viewed from a distance appears insulated, flat, and level like a wall, but the S. end rises higher and attains the elevation above-mentioned. The N. part of the fort (separated from the rest by a valley) has a perfectly flat top 200 ft. above the sea, and covered with trees, within stone walls; on the E. side of this a cove is formed between two points, most useful to the coasting trade during the fine season, when overtaken by a Southerly gale, like that of Jan. 1871, when the small steamer *General Outram* was lost off this port. The water is too shallow to admit of small vessels finding shelter during the S.W. monsoon, as formerly supposed practicable.

On the S. side of Ratnaghiri Fort a large bay is formed, from whence a river (capable of

receiving small vessels over its bar at H. W.) extends some distance inland, having on the N. side of the entrance, on the brow of a hill elevated about 150 ft. above the sea, the Adaulut, or judge's court-house, a large building, with other houses to the E. and N. Boats should not attempt to run into the river except towards H. W. The landing-place in Ratnaghiri Bay, during N.W. winds, is on the E. side of the S. fort near to a small tower, the base of which is washed by the sea at H. W., but a good look-out must be kept for rocks. In the S.W. sea-breezes, which sometimes may come in the fine season, lasting about three days, there is such a swell rolling up to this landing-place that it is recommended not to attempt landing there on such occasions, but to send the boat round to the little bay to the N. and E. of the N. fort. At H. W., if the bar does not break, a large boat may with more convenience run into the river, but should get a native pilot.

**Light.** Ratnaghiri now shows a Red *fixed* light, at 300 ft. above the sea, on the S.W. bastion of the hill fort. It is *said* to be visible 18 m. in clear weather.

**Anchorage.** Vessels may anchor in 7 or 8 fathoms, mud, about 1 m. off, with the light N.N.E. to N.E. by E. in the fine season; but in the S.W. monsoon, steamers *only* may come near the place, and run into Meria Donghur Bay. At the S. extremity of Ratnaghiri Bay there are some rocks above water, about  $\frac{1}{2}$  m. from shore, with a shoal bank of 2 to 3 fathoms rocky ground extending to the W., the outer edge of which bears due S. from the S.W. bastion of the fort, and its N. edge bears S.W. from the Adaulut. A vessel coming up from the S. should give this foul ground a wide berth, a depth of 7 fathoms being close to it. **By night**, approaching from the S., the smallest steamer should not run up for the light until it bears to the E. of N. by E.

**Tides.** It is H. W. on F. and C., at Ratnaghiri at 10h. 30m.; ordinary springs rise 8 ft.; high springs 9 ft.; neaps 5 ft.

**Poranghur Fort**, in lat.  $16^{\circ} 48' N.$ , (formerly erroneously styled Radjapour) is 12m. to S. by E. of Ratnaghiri, and situated on the S. brow of a barren point, under which lies the entrance of the Muchkundi River, only admitting coasters at H. W. **Pent**, the principal town, is just inside and to E. of the fort. **Paos Bay**, which is 6 m. N. by W. from Poranghur, is a snug and deep little cove, affording sheltered anchorage during N.-Westers in 4 or 5 fathoms, mud and sand. The town of Paos is about 3 m. up a little creek.

The coast between the two above places is rocky table-land, with 4 or 5 little sandy bays, and safe to approach into 5 fathoms. The land, at the back of Poranghur, Paos, and Ratnaghiri, gradually rises from the sea coast, in undulating hills, till at 5 or 6 m. distance it is from 600 to 700 ft. above the sea, but has no remarkable features. Hurchiri round wooded hill, 8 m. E.N.E. of Paos Bay, is 890 ft. high, and conspicuous at the back of the above land.

**RAJAH PUR BAY**, in lat.  $16^{\circ} 37' N.$ , bears from Ratnaghiri S. by E., distant 22 m., and it is 3 m. to N. of Viziadrug. It gives shelter to coasters from N.W. winds, and the river runs up to Rajahpur, a large town 15 m. up, but owing to the shallowness of the river, the native vessels discharge and load at **Jeytapore**, about 4 m. within the entrance. **Tulsunda Cove**, on the S. side of the bay, is a capital place of shelter for small vessels if overtaken by a S.W. gale.

**Ambolghur Point and Reef** lie about 1 m. to the N.W. of Rajahpur Point. Vessels should give a berth to the reef of sunken rocks (least water 5 or 6 ft.), by not shoaling under 8 fathoms, although the neighbouring coast is safe to approach into 6 fathoms.

**VIZIADROOG, or GERIAH HARBOUR** (the Fort Flag-staff in lat.  $16^{\circ} 34' N.$ , lon.  $73^{\circ} 19' E.$ ), is an excellent place of shelter for large vessels during the S.W. monsoon, but only available in the day-time, as there is no light placed there yet. **Jygi Point**, the S. extreme of Viziadroog Bay, lies nearly 2 m. to S.W. of the fort, and is a projecting part of the coast, the land receding both to the N. and S. There is no bar at the entrance, the depths being from 3 to 6 fathoms, and from 2 to 3 fathoms inside, at L. W. Without a chart, no vessel could take up a good berth unless assisted by a native pilot. **Angria Bank** bears W. from Geriah, distant 24 leagues, and seems naturally placed as a **Direction Bank** for Viziadroog Harbour; it extends from lat.  $16^{\circ} 18' N.$  to  $16^{\circ} 39' N.$ , being about 10 m. in breadth E. and W. The depths generally found on it have been from 12 to 15 fathoms rocky bottom, or hard ground; 12 fathoms was the least water that Captain Selby found in traversing it. It is steep all round; near its inner edge there is marked no bottom at 100 fathoms, and 7 m. off a cast of 115, then 49 fathoms at 12 m. distance, decreasing gradually towards the shore.

**The Fort of Viziadroog**, situated on a neck of rocky land, is of considerable extent; the walls have been very strong, but the work of decay is going on. The point, on which the Fort stands, forms the S. side of the river entrance; the upper level of the Fort is 100 ft., and the flag-staff 170 ft. above the sea. The land on the S. and S.W. being higher, hides the Fort from vessels coming from the S. This river is navigable at H. W. as far as **Wagotun** (at the foot of

the Phunda Ghaut) by vessels drawing 7 ft. Canoes can go up to Kariputtan, more than 20 m. from the mouth.

**River Entrance.** Though Viziadroog River is said to have no bar (a circumstance which may be attributed to the absence of sand along the coast to the N.), there is a flat to the E. of the Fort, on which the depth of water is a little less than will be found further in, the bottom clay and sand. This harbour is accessible to vessels during the S.W. monsoon; in the height of which, steamers of the Indian Navy conveyed troops there during the Indian mutiny, in 1857.

**Anchorage.** A vessel may run in boldly, and anchor in  $3\frac{1}{2}$  fathoms, mud and clay, at L. W., with the extremes of the Fort bearing from W. to S.W. Further in than this position the wind would probably fail or be adverse, so it is better to warp further in at H. W., taking up a position abreast the town on the W. side of the river,  $\frac{1}{2}$  m. S.E. of the Fort, moored head and stern, with the best bower to the ebb, which in the freshets runs at the rate of 4 knots an hour. The deep water is on the W. side of the river, and there is not room for a large vessel to swing, except at H. W. At the distance of 2 m. from the Fort, on the same side of the river, is an old dock, built by Angria, the pirate chief, many years ago; it appears excavated out of the rock, and was capable of receiving vessels of 500 tons, but is now almost filled up. In the fine season a ship may anchor in the bay anywhere as most convenient.

**Tides.** It is H. W. on F. and C., at 11 h.; springs rise 9 ft., neaps 5 ft. Night tides are higher than day tides in the N.E. monsoon, and the contrary in S.W. monsoon, during which stormy period you will find 2 or 3 ft. more water in the day time than is shown on the chart.

**DEOGHUR, or DEWGHUR HARBOUR** (N.W. bastion of the fort), in lat.  $16^{\circ} 23\frac{1}{2}'$  N., lon.  $73^{\circ} 21'$  E., bears about S.S.E. from Geriah Point, distant 4 leagues; the coast between them is bold, having 8 and 9 fathoms within less than a mile of the shore. This Harbour has 3 fathoms water in it, where a ship might lie sheltered during the S.W. monsoon, and is formed close under the N.E. point of the high peninsula, on which the fort is situated; this peninsula is on the S. side of the river entrance, and appears as part of the main, being nearly joined to it. **Rocks** project a considerable distance from the N. point of the entrance, and a ship running in for shelter or otherwise, should, after getting into 7 fathoms, borrow near the Fort Point, round it within a cable's length, and anchor under it in 3 fathoms, mud (L. W. depth), with the point bearing about W.N.W. The river is broad at the entrance, and is said to extend a great way inland, but the passage into the Harbour is only 3 cables wide. H. W. on F. and C., at 11 h.; rise and fall about 9 ft. at spring tides, and 5 ft. at neaps.

**Atchera River, or Achre**, in lat.  $16^{\circ} 11'$  N., bears S. by E.  $\frac{1}{2}$  E. from Dewghur River about 4 leagues; it can be entered by very small vessels, there being 7 and 8 ft. water at H. W. on the bar. On the S. side there is a sandy shore to Sirjakot, and the N. side of the entrance is level table-land, by which this place may be known, being 150 to 180 ft. high. The coast here is safe to approach within a mile of the shore, or to 5 fathoms, as far as 5 m. to S. of Atchera; but beyond that, or bearing S. by E. 6 m. from the river, stands a low black rock, called **Koora Islet**, with sunken rocks round it. Sirjakot River (running up to the large town of Musoore) lies  $1\frac{1}{2}$  m. to the S.E. of Koora.

**MELUNDY ISLAND, or SINDUDROOG**, in lat.  $16^{\circ} 2'$  N., lon.  $73^{\circ} 27'$  E., about 3 leagues S.  $\frac{1}{2}$  E. from Atchera River, is fortified, but being low, not easily distinguished from the offing; to the S., straggling rocks extend 3 m. off shore, towards Newtee Point. Malwan is a fort on the main land near it, and between them is the little **Port of Malwan**, which used formerly to protect the cruel horde of pirates, who, issuing from this place, were the dread of defenceless trading vessels. In passing this place, a large ship should not come under 13 fathoms, for 11 fathoms is close to the edge of foul ground. The small steamer *Johnston Castle* in 1865 was totally wrecked on a **sunken rock**, lying  $\frac{1}{2}$  m. to W. by S. of the N. end of Melundy. A buoy was placed to mark the rock.

**Malwan Point** is a slightly-elevated rocky cape covered with cocoa-nut trees to the N. of Melundy. With a S. wind blowing, boats can land in the little bay to the N. of this headland, near to the Collector's cutcherry; but, with N.W. winds, the landing is best in the little harbour of Malwan; a native boat will pilot you in.

**Anchorage.** Do not anchor in a large ship in less than 8 fathoms, abreast of this port. Coming from the S., do not steer in for the place until the N. end of Melundy bears E., and anchor with it a little to the S. of that bearing. For 2 m. to the S.W. of Melundy the bottom is foul, rocky, with great overfalls in the soundings, and undiscovered rocks may exist there. The smallest vessel should not shoal under 10 fathoms off this foul ground of Melundy and Karli.

**Karli River Mouth**, on the sandy shore, 2 m. N.N.W. of Nuti Point, is only available for small boats, with a native pilot. Off it are several islets, and a great extent of foul ground. Karli Town is a little way inside the river mouth. The S. extreme of Karli foul ground (4 fathoms, rocky) lies  $2\frac{1}{2}$  m. to S.S.E. of **Square Rock** (a rock 40 ft. high), the W. visible danger of the



Karli group of rocks, which is  $4\frac{1}{2}$  m. to N.W. of Nuti Point, and  $3\frac{1}{2}$  m. to N. of the N. Vingorla Rock. **Karli-ka-chal Passage**, between the N. Vingorla Rock (to sea-ward), and the Karli foul ground and Nuti Point on the main land, is  $\frac{3}{4}$  m. broad, having depths of 9 fathoms, but a stranger should not attempt it. The leading mark through, in coming from the N., is all Tiger Hill open to the S. of Nuti Point, bearing about E. by S.: and when all the Burnt Islands and rocks bear to the W. of S., the vessel should haul gradually to the S.E., to avoid Babra Rock,  $\frac{1}{2}$  m. off Nuti Point, and then steer direct for Vingorla Beacon.

**NEWTEE, or NUTI POINT** (the Fort), in lat.  $15^{\circ} 56' N.$ , lon.  $73^{\circ} 30' E.$ ,  $6\frac{1}{2}$  m. S.S.E. from Melundy, is directly opposite to the Vingorla Rocks; and bears N.W.  $\frac{1}{2}$  W. 8 m. from Vingorla Beacon; the intervening coast forms a deep bight, with several rocky capes and sandy bays, which are perfectly safe to approach into 6 fathoms, water. Nuti Fort overlooks the Point, at an elevation of 150 ft., and at the back of this is high land 500 ft. above the sea. At  $\frac{1}{2}$  m. to S.W. of the Point is a **sunken rock**, called Babra, which is the only danger on the Nuti side of the channel.

The N. Vingorla Rock, called **Karil**, bearing W.  $\frac{1}{2}$  S. 3 m. from Nuti Point, is a peaked islet, 70 ft. high, and safe to approach on its N. side within  $\frac{1}{2}$  m., where there is a depth of 9 fathoms. But, nearly  $\frac{1}{2}$  m. E. of it, there is a **rock awash**, which is the W. danger in the channel, called by the native boatmen Karli-ka-chal, between Nuti Point and the islands.

**VINGORLA ROCKS**, or Burnt Islands, a group of islets and sunken rocks, extending 3 m. in a N. and S. direction, and more than a mile E. and W., are situated some distance to the S.W. of Nuti Point, and 9 m. W.N.W. of Vingorla. The highest is a conical island, 180 ft. above the sea; but the S. one is the largest, though of rather less elevation, and from this the N. one bears N. distant 3 m. The S.W. islets, bearing W by N. a little N. from Vingorla Beacon,  $9\frac{1}{4}$  to  $9\frac{1}{2}$  m., are four separate black rocks, about 50 ft. above the water, and on one of these a light house has been built. There is a little sunken rock a cable's length to the S., but none to the W. of them. They are deep-to, 12 fathoms being close, and 15 fathoms at 1 m. off. A ship passing the Vingorla Rocks at night should not come under 17 fathoms. These rocks afford good protection from N.W. winds, during which ships may anchor anywhere to leeward of them, in from 12 to 11 fathoms, mud, at L. W., remembering that the rise of tide at springs is  $1\frac{1}{2}$  fathoms nearly, and at neaps 1 fathom nearly. There is plenty of water in the passage between them and Nuti Point; but, as there is a sunken rock on either side of the channel, sailing ships had better avoid it. The ship *Margaret*, working through this channel, struck on a rock, which made it necessary to put her under a complete repair on her arrival at Bombay.

**Light.** The S.W. Vingorla Rock, in lat.  $15^{\circ} 53' N.$ , lon.  $73^{\circ} 27' E.$ , now exhibits a *fixed* white light, elevated 110 ft., and visible 15 m. Vessels should not round too closely these rocks at night, on account of a **sunken rock**, lying nearly 2 cables to S.E. of the light.

**VINGORLA BEACON**, in lat.  $15^{\circ} 51' N.$ , lon.  $73^{\circ} 36' E.$ , bearing N. by W.  $\frac{1}{2}$  W., 7 m. from Raree Point, and E. by S. from the S. extreme of the Burnt Islands, is a white pyramid on the S. brow of a hill, overlooking the point and creek, at an elevation of 250 ft. above the sea. Vingorla, or Engurla Town, is 1 m. E. of the mouth of the creek, and the camp is 1 m. further inland. This is now a place of considerable traffic, being the sea-port of the Belgaum district, to which it is connected by good roads. Troops, moving to and from the S. Mahratta country, are embarked and landed at this port. Fresh water is obtainable at a spring just within the entrance of the creek. Vingorla now contains about 5,000 inhabitants: it has a tolerably good bazar, and an increasing number of merchants. It was formerly one of the retreats of the numerous sanguinary pirates who infested this coast, until, in 1812 it was ceded by the chief of Sawunt Wari to the E. I. C.

In the little bay, formed by Vingorla Point, small native vessels find shelter from N.W. winds, and (at H. W.) are enabled to discharge cargo under a crane on a stone wharf. There are several patches of rock about this anchorage, and in the roadstead. At  $\frac{1}{2}$  m. due S. of the Beacon, lies one patch having  $3\frac{1}{2}$  fathoms water over it, and  $2\frac{1}{2}$  cables' lengths E.N.E. of this is another rock having 3 fathoms on it. During the periodical fresh S. breezes which occur, for two or three days at a time, in the fine season the little traders that cannot get into Vingorla Creek, make a fair wind of it, and run up to Malwan or Melundi Harbour for shelter.

From Vingorla Creek to the S. is a sandy shore for 2 m. to Machlimar, or Porpoise Point, about 200 ft. above the sea, from which the table hills extend in a crescent right round the E. side of Vingorla camp, and join the Beacon Hill. A conspicuous wooded hill, 1,000 ft. high, called Wagh Ghiri, or the Tiger Hill, stands E.N.E. 5 m. from Vingorla. Half-way between Vingorla and Raree Point, the sandy coast is interrupted by Machlimar Point and Creek, the shore is safe to approach into 5 fathoms mud; but not within 7 fathoms off Raree.

**Lights.** By Vingorla Beacon, **two fixed** lights (20 ft. apart) are now shown, at an elevation of



250 ft. above sea, visible 9 m.; but in the S.W. monsoon, from mid-June till end of August, they are not exhibited, the port being then inaccessible.

**Anchorage.** Large vessels must (as a general rule) anchor in  $5\frac{1}{2}$  fathoms, mud, rather less than a mile from the beacon bearing N.N.E.; but trooping steamers may, in fine weather, take up a berth in 4 fathoms at L. W., between 2 and 3 cables' lengths S. by E. of the house on the point, avoiding the above-mentioned rocks, but at night they should move further out.

**Tides.** It is H. W. on F. and C. at Vingorla at 11 h.; springs rise 8 ft., neaps 5 ft.

**RAREE POINT** (the Fort), in lat.  $15^{\circ} 45' N.$ , bears about S.S.E.  $\frac{1}{2}$  E. from Newtee, distant 14 m.; the coast between them is safe to approach, having a sandy beach and irregular soundings within a mile of the shore; and about mid-way is the small river Vingorla. Raree Fort, being situated on an eminence near the Point, is conspicuous from sea-ward; several rocks project from the Point to the W., two of them above water lie to the S.W. of it more than a mile distant.

**Raree Outer Rock**, in lat.  $15^{\circ} 44' N.$ , lon.  $73^{\circ} 38' E.$ , is 36 ft. high, having 6 fathoms close-to, and 4 to 2 fathoms inside. On the N. side of the Point there is a small river, navigable by small boats. In the night, ships should come no nearer to this place than 10 fathoms. In the day no vessel should round Raree Outer Rock within 1 m.; the *General Havelock* was lost, at the close of 1872, on **sunken rocks** about 1 m. to S. by E. of it.

**TIRACOL, or CHIRACOLE FORT**, in lat.  $15^{\circ} 43' N.$ , lon.  $73^{\circ} 40\frac{1}{2}' E.$ , and  $2\frac{1}{2}$  m. to the E. by S. of Raree Outer Rock, stands on the brow of the hill on the N. side of a small river, but is not conspicuous. This river is the boundary between British and Portuguese territory. **Banda**, a town of Sawunt Wari, is on British side. Pernem, on the left bank, belongs to Portugal.

#### GOA TERRITORY BELONGING TO PORTUGAL.

**The Coast of Goa** is so well defined by the outlying islands, and many white churches on the hills, as to require no further description than is below given: Bori mountain 16 m. due E. of St. George's Islands, is a round mount, distinct from any others, and about 1,500 ft. high, having some trees looking like a black wall on the summit. To the N. of Agoada promontory the coast is sandy for 4 m., then come two rocky capes, with a sandy bay between them; then another sandy bay, beyond which is Chapra Fort and river. The coast to the N. of Chapra is sandy for 5 m., but interrupted about midway by two little rocky capes, between which and Tiracol are some rocky patches  $\frac{1}{2}$  m. off shore. To the N. of this sandy shore is a rocky cape, and then for  $\frac{3}{4}$  m., sand, which forms the S. bank of Tiracol, or Pernem River.

**TIRACOL FORT**, in lat.  $15^{\circ} 43' N.$ , lon.  $73^{\circ} 40\frac{1}{2}' E.$ , standing on the brow of a hill, on the N. side of the river entrance, is the N. limit of the Goa territory, and 6 m. N. of Chapra; the little area of the fort and 1 m. round it being all that belongs to the Portuguese on the N. side of this river, which has 8 or 9 ft. at L. W. in its narrow entrance; there are rocks to the W. of the river mouth, but a vessel may anchor with the fort bearing N.E., in 5 fathoms, mud, 1 m. off shore.

**Chapra, or Chapora Fort**, in lat.  $15^{\circ} 36' N.$ , and 7 m. to S.S.E. of Tiracol, is on the S. side of the entrance to Chapra River, which is a considerable stream, running many miles inland, but the mouth having a bar can be only entered by small coasters. The fort is on a high bluff point, 8 m. N.N.W. of Agoada Point, and its black walls are easily discerned. The land adjacent to the sea on the S. side is hilly, but the N. side of the river mouth is sandy, with cocoa-nut trees.

**Agoada, or Alguada Point**, in lat.  $15^{\circ} 29\frac{1}{2}' N.$ , lon.  $73^{\circ} 45' E.$ , forming the N. extreme of Goa Bay, is a level headland, upwards of 200 ft. high, and fortified along the sea margin; with a *revolving* light, bearing about S.S.E., and 8 m. from Chapra Fort.

**GOA BAY and HARBOUR.** This place, the capital and principal sea-port of the Portuguese possessions in the East Indies, has not such deep water as formerly in the bay, though the depth on the river bar is the same as represented on charts executed half a century ago. Shelter for small vessels from N.W. winds, is to be had to the S.E. of the light-house and landing-pier, in about 4 fathoms at L. W., about 3 cables' lengths from the rocky shore. Inside of 5 fathoms the bottom is mixed sand and mud, but outside of that depth there is mud. Saokari Creek, round the E. end of Agoada table-land, is an excellent little refuge for small coasters. **Agoada Point**,  $4\frac{1}{2}$  m. N. by W. of Marmagao, and more than 8 m. N. of St. George's Islands, is a level headland, above 200 ft. in height, fortified around the base, and on the top where there is a light-house. **Reis Magos Fort** is on the S.E. extremity of a large piece of table-land, and 2 m. E. by N. of Agoada Light-house, and  $\frac{3}{4}$  m. to N. of Gaspar Dias Fort.

**Nossa Senhora da Cabo** (formerly a monastery, but now a residence of the Governor-General of Goa) is a white building on a cape between Marmagao and Agoada, and generally spoken of as Cabo. A bay is formed between it and Gaspar Dias, a fort on the sandy shore  $1\frac{1}{2}$  m. to the N.E.

of Cabo. **Cabo Reef**, which the tide covers and uncovers, extends  $\frac{1}{2}$  m. off, but foul ground nearly 1 m. off the Cape; and at the distance of  $1\frac{1}{2}$  m. S. of this are the Sunchi Shoals.

**Panjim, or New Goa**, the capital of the Portuguese dominions, is  $1\frac{1}{2}$  m. N.E. of Gaspar Dias Fort, on the left or S. bank of the river; it has 1 m. of river frontage, and contains many excellent buildings: palace, barracks, hospital, and market. The banyan tree (the pilot's mark), is above the church on the N. end of the hills at the back of Panjim, and has a semaphore near it. The population of Panjim is about 10,000 souls; that of Goa territory being returned at 313,262; of this number two-thirds are stated to be Roman Catholics. Panjim is now the seat of Government.

**Goa City**, situated on the S. bank of the river, about 5 m. above Panjim, is now nothing but a heap of ruins, with a dozen churches, more or less in ruins, standing out from among the trees and on the hills; the place is very unhealthy. Midway between it and Panjim is the pretty little town of Raibanda, separated from Panjim by a salt marsh, over which there is an excellent causeway, which forms the high road from Old Goa to Panjim (New Goa).

**Supplies.** Ships always water at Agoada after going out of the river, but at Panjim all kinds of fresh provisions and poultry may be obtained. Rice, pepper, cocoa-nuts, betel-nuts, and salt, are the chief products; a good deal of cotton is now brought down the mountain passes into Goa, from the Belgaum district.

**LIGHT.** The light-house, in lat.  $15^{\circ} 29\frac{1}{2}'$  N. lon.  $73^{\circ} 45\frac{1}{2}'$  E., is a white round tower on the upper fort, exhibiting a light, *revolving* once in seven minutes, at an elevation of 280 ft. above the sea; but not having powerful reflectors this light could not be seen often beyond 12 m., and less in hazy weather. Near the light-house are a flag-staff and semaphore, and on the beach to E. of them is an excellent stone landing-place, close by which is a well of good fresh water, from which shipping are supplied on application to the port authorities.

**Anchorage.** The common anchorage for large ships is abreast the fort, in 5 fathoms, mud, with the light-house bearing N. about  $\frac{3}{4}$  m. from shore; but small vessels may go in much nearer to  $3\frac{1}{2}$  fathoms, mud, with light-house N.W. and the E. cocoa-nut point of Agoada N.E. by E. The bay is doubtless a little shallower than it was 50 years ago. Some rocks, mostly above water, project a small distance sea-ward from Agoada S.W. point, but this side of the bay is safer to borrow on than Cabo. After the early part of May, it was considered unsafe to remain at Agoada anchorage, it was usual then for the Portuguese to send their large ships, that could not go into the river of Goa, down to Marmagao, where they found shelter by mooring close under the fort walls of that peninsula; but even there, in the height of the S.W. monsoon, a swell rolls in round the point, rendering it necessary to moor the vessel, head and stern, so as always to have her bow to the swell.

**Tides.** It is H. W. throughout the Bay of Goa, on F. and C., at 10 h. 30 m.; the rise and fall at ordinary springs is 7 ft.; extraordinary springs rise 8 ft.; and ordinary neaps 4 ft. There is very little stream of tides in the roads, though in the river entrance it is strong.

**DIRECTIONS.** The bar at the Goa River entrance,  $1\frac{1}{2}$  m. E.S.E. of the light-house, and near a white fort on the sandy beach called Gaspar Dias, has 13 ft. at L. W. in the fine season; but in the S. W. monsoon heavy breakers extend right across the bay, and the river mouth is sealed up. There are *said to be* patches of rock on the sides of the entrance, and no vessel ought to enter without a pilot; indeed the regulations of the port insist on every vessel's taking a Government pilot, who will board the vessel from Agoada. There are good marks for entering Goa River, and the same have existed for 50 years, showing thereby that the channel remains the same.

**To enter the river**, steer E. towards Gaspar Dias; and after St. George's Islands have disappeared behind Cabo, bring the banyan tree on Panjim Hill on with Pilot's brow, the red brow of a hill  $\frac{1}{2}$  m. nearer than Panjim, and steer for them about E.N.E. When the pilot's double-headed tree (seen to the N. above the cocoa-nut trees), comes out from behind the E. cocoa-nut point of Agoada land, bearing N.W. by N., a vessel is close to the bar. Stand on about E.N.E. or E. by N., according to tide, keeping the Panjim banyan tree partly hidden behind Pilot's Brow, which mark leads you right in till abreast of Gaspar Dias Fort. Should you open out the whole of the banyan tree, the vessel may get upon the N. sands; and if it entirely disappears behind the red brow of the hill, she may get on the S. sands. The vessel having thus brought Gaspar Dias to bear S.S.E., may then stand on E.N.E. and anchor in "*the well*," which has a depth of 4 fathoms at L. W., is 3 cables to the S.W. of the E. fishing stake, and 3 cables' lengths to the N.N.E. of Gaspar Dias Fort. Or, if the wind will admit, she may haul up to the N. for Reis Fort, passing to the W. of the fishing stakes; she must keep close to the Reis shore, after passing the Fort, till past the Reis sand, which lies in the middle of the river; then, paying attention to the tide, she may gradually keep away to the E. towards Panjim, off which the shipping lie in 4 fathoms at L. W.

**MARMAGAO, or MARMAGOA PENINSULA**, is a level piece of land, appearing like an island, nearly of equal height to that of Alguada and Nossa Senhora de la Cabo. It breaks off

almost perpendicularly at both ends, the N. point being that called Marmagao Point, and is  $4\frac{1}{2}$  m. to the S. of Alguada.

**Marmagao Point** is nearly 3 m. to the S. of Cabo, and its N.W. extreme is 4 m. N. by E.  $\frac{1}{2}$  E. from the W. St. George's Island. On the N.E. side of Marmagao Promontory (which is nearly 2 m. long, N.W. and S.E., and connected by a sandy neck to the other high land), small frigates used formerly, during all the S.W. monsoon, in years gone by, to lie moored head and stern, in  $3\frac{1}{2}$  fathoms, at L. W., at 2 cables' lengths off shore. In 1857, troops were landed there by Indian Navy steamers during that stormy season.

**The Buffalo Rock** or Camberi, part of which stands up above water, lies nearly 1 m. to the S.W. of Marmagao Point, and has 5 and 6 fathoms round it. To the N. of it, and at 4 cables' lengths off, is a 3-fathom rocky patch, which a vessel running into Marmagao must remember.

**Marmagao Roads.** The N. side of Marmagao Point is bluff and steep-to, having 5 fathoms close to the rocky shore, and a vessel must borrow on this, by keeping about 2 cables off, to avoid the Amee Shoal, which narrows the passage to less than  $\frac{3}{4}$  m. To sail into Marmagao Road, in coming from the N., give a good berth to Cabo Reef, by not bringing the Buffalo Rock farther to the W. than on with the E. extreme of the middle or largest St. George Island, or between Secretario Island and the largest island, which will lead clear of Sunchee Rocks, with 12 to 18 ft. thereon, situated on the S.W. extreme of Cabo Reef, about  $1\frac{1}{2}$  m. distant from the Cape. Steer to the S. to pass outside of Amee Shoal (which has 3 fathoms only, and lies  $1\frac{1}{2}$  m. to N. by W. of Marmagao Point), by keeping at least a part of Secretario Island to the S. in sight outside of all Marmagao peninsula, until Rasseen Hill is on with the N. extreme of Ignacio Island up the river, which is the leading mark till up with Marmagao Point; or if Rasseen Hill is not seen, steer to the E., keeping Chicklee Point on with the centre of Ignacio Island, the other half of the island being shut in; and after passing the N. point of Marmagao, steer E. for the Roads, and anchor in 4 or  $3\frac{1}{2}$  fathoms (L. W. depth), with the flag-staff on the Hill bearing about S.W. by W. to W.S.W., within  $\frac{1}{4}$  m. of the fort.

If a ship be disabled, and obliged to run for Marmagao Road in the S.W. monsoon, when thick weather prevents the marks from being seen, or if those on board are unacquainted with the place, observe, that the outer part of the peninsula of Marmagao is  $3\frac{1}{2}$  m. N. by E.  $\frac{1}{2}$  E. from the outermost St. George Island, and that the peninsula has a 3-fathom shoal fronting it at the distance of less than  $\frac{1}{2}$  m., which shoal is about the same distance N.  $\frac{1}{2}$  E. from the Buffalo Rock, having close to it  $5\frac{1}{2}$  fathoms all around. Amee Shoal, having also 3 fathoms rocks on it, bears N. by W. from the outer point of Marmagao  $1\frac{1}{2}$  m., and between these two shoals is the fair channel leading to the Road, with depths in it generally from 5 to 6 fathoms, soft mud. When St. George Islands are seen, steer for the N.W. point of Marmagao, taking care not to approach it nearer than a mile till it bears to the E. of E.N.E.; and when the point is bearing any way between E. by N. and S.E. the channel is open, and a ship may steer directly towards it, then sail along the shore in 5 or  $4\frac{1}{2}$  fathoms to the anchorage in Marmagao Road. Here supplies of various kinds may be got from the Arsenal of Goa, which in the S.W. monsoon are brought round by an inland navigation, as the bar of Goa River cannot be passed with safety in this season. Marmagao Flag-staff is in lat.  $15^{\circ} 24\frac{3}{4}'$  N., lon.  $73^{\circ} 46\frac{3}{4}'$  E.

**ST. GEORGE'S ISLANDS** are indeed one island, nearly severed by a narrow neck of sand and shingle. The W. portion, or what is usually called the outer island, is a high cone, 250 ft. above the sea; and the E. part is wedge-shaped, its highest elevation being at its E. extreme, where it is 200 ft. above the sea. In length E. and W. they extend more than a mile, but are quite narrow in a N. and S. direction. To the S.E. of them vessels will find excellent shelter from N.W. winds, in 10 or 11 fathoms, mud, but not too near to the islands, for off them lie several rocks, level with the water's edge; and at  $\frac{1}{2}$  m. to E., there is a patch of rocks, dry at L. W.

The Sail Rock,  $\frac{1}{2}$  m. S. of the W. or conical island, is about 40 ft. out of water, and may be easily from a little distance mistaken for a vessel. To the E. of the Sail Rock, and between it and the islands, there are rocky patches.

**The Outer, or W. St. George's Island**, in lat.  $15^{\circ} 21'$  N., lon.  $73^{\circ} 45'$  E., bears N.N.W.  $\frac{1}{2}$  W.  $18\frac{1}{2}$  m. from Cape Ramas, and  $6\frac{1}{2}$  m. W. by S. of Col Bay; it is 8 m. to S. of Agoada Light-house. Extending to some distance on the N. of these islands there is a flat, the bottom of which is sand and rocky, with overfalls from 7 to 4 fathoms, and less water in one or two places, so that the channel between them and Secretario Island, (formerly called the E. St. George's Island, but it belongs to the Portuguese), though  $1\frac{1}{2}$  m. in width, is not recommended, although close to Secretario Island there is a good depth of water.

St. George's Islands are in the line of 10 fathoms water, and have 12 fathoms close to the S.



of them. There is 20 fathoms at the distance of 6 or 7 m. to the W., and 30 fathoms at 15 to 17 m., the bottom being mud; but outside of 30 fathoms it is generally sand or rock.

The **Coast of Goa**, below Marmagao peninsula, forms in several rocky headlands to Colla Bay (pronounced Col), thence it is a perfectly straight sandy shore for nearly 15 m. to the mouth of the **Salset or Margao River**, from which Cape Ramas bears S.W. by S. distant 4 m. **Col or Colla** is a town in a little bay at the N. extreme of the above long sandy shore, and  $18\frac{1}{2}$  m. N. by W. of Cape Ramas; Col Bay affords excellent shelter from N.W. winds, having deep and very smooth water. To the W. of Col Bay there are several rocky capes, and sandy bays, for 5 or 6 m., to Marmagao Point. **Chandernat**, a white pagoda, on a pretty hill 900 ft. above the sea, is situated about  $6\frac{1}{2}$  m. to the N.E. of Margao River mouth. The coast is perfectly safe to approach into 5 fathoms water, which depth is 1 m. off shore.

**CAPE RAMAS, or Cabo de Ram**, in lat.  $15^{\circ} 5' N.$ , lon.  $73^{\circ} 54' E.$ , bears about S.S.E. from Marmagao Point, distant 7 leagues; the coast between them is low and woody, with a sandy beach and some Portuguese churches, the soundings regular, and the shore safe to approach to 7 or 9 fathoms, except near the St. George's Islands: the country is high inland. Four miles to the N.E. of the Cape is the entrance of Salset River, having a bar with 8 or 9 ft. water in the channel, inside of which the river separates into two branches; that extending to the N.E. is said to join the inlet that divides Goa Island from Marmagao Point, by which this part of the coast has generally been called Salset Island, or Marmagao-Salset. Cape Ramas is a high, bluff headland, forming in two level points when seen either from the N. or S.; that called the False Cape is highest, and first discernible, from 700 to 1,400 ft. high; the other, less elevated, 200 ft. high, forms the extremity of the True Cape, on which is a small fort belonging to the Portuguese. The soundings about the Cape are very regular over a soft bottom, and it is steep-to, having within a mile of the extreme point 9 fathoms, mud; it projects considerably, by which a large bay is formed on each side; that on the S. side affords shelter to small coasters from northerly winds.

Between Cape Ramas and Loliem Point, the N. extreme of Carwar Bay, the coast is undulating, forming several bays, unfit for shipping; the soundings are regular to 6 or 7 fathoms, from  $1\frac{1}{2}$  to 2 m. off shore. **Paidegal Point** is a steep, projecting rocky headland,  $3\frac{1}{2}$  m. N.W. of Talpon River. Paidegal village is on the N. side of the headland, above which the coast is sandy for  $1\frac{1}{2}$  m., then rocky to Cape Ramas. The coast N. of Loliem Point trends due N. for 4 m. to the Talpon River, and three capes with three sandy bays intervene; in the middle bay is another small river. Above Talpon is the town of **Canacon**, the capital of the district of that name, and a military station. Off the sandy bay of Canacon, and S. of a little rocky island, is good shelter against N.-Westers for small vessels, in 3 or 4 fathoms, mud.

**Loliem Point**, in lat.  $14^{\circ} 55' N.$ , about 12 m. to the S.E. of Cape Ramas, forms the N. extreme of Carwar Bay. It belongs to the Portuguese, whose frontier town, called **Polem**, lies about  $2\frac{1}{2}$  m. to the E. of Loliem Point.

#### COAST OF CANARA.

This coast extends from the N. part of Carwar Bay nearly to Mount Delly, and the N. portion, down to Batkul, is subject to Bombay. The outermost Oyster Rock bears from Cape Ramas S.S.E.  $\frac{1}{2}$  E., distant  $5\frac{1}{2}$  leagues, and is  $2\frac{1}{2}$  m. to the W.N.W. of Carwar Head. This headland, in lat.  $14^{\circ} 48\frac{1}{2}' N.$ , lon.  $74^{\circ} 5' E.$ , is 640 ft. high, and conspicuous in coming from the S; it projects considerably, by which Carwar Bay is formed to the N., extending from Carwar Head  $1\frac{1}{2}$  m. to the N., and about 2 m. deep, having regular soundings in it from 6 to 4 fathoms. To the E. of Deoghur and Coormaghur Islets is the Fort of Sedashigur, within the entrance of the river. **Carwar or Carwad**, or Cadavand, the old E. I. C. factory, was farther up the river on the E. side. Beitkul Cove is now the site of the port of Carwar or Sedashigar.

**CARWAR PORT**, known also as **Beitkul Cove**,\* a small but safe haven, where the Indians used formerly to careen, lies to the N. and E. of Carwar Head. At the mouth of this cove, and along the N. cliff of Carwar Head, vessels can lie in 4 fathoms at L. W., facing the W.N.W. swell, and moored head and stern, at the distance of 2 cables' lengths from the shore, sufficiently sheltered from the S.W. monsoon to enable them to load or discharge cargo. A new town, Konay, has been built on the N.E. of the cove. Godhully Peak, 1,800 ft. above the sea, bearing E. by S. 4 m. from Carwar Head, is the highest mountain by Sedashigar, being visible 40 m. off in clear weather; 1 m. E. of it there is another of rather less elevation. **Sedashigar Town**, which is a small military station, being on the British frontier, lies on the N. bank of the river, on the N.E.

\* See Admiralty Chart, Sedashigur Bay, by A. D. Taylor, No. 242; scale, m. = 2 inches.

side of the old hill fort, called Sedashivaguddu, just inside the river entrance, and 3 m. N.N.E. of Beitkul Cove. This fort was founded by Sedashwa Rao, one of the rajahs of Soonda, in the year 1564. There are two or three bungalows on the old hill fort, the S. end of which is a steep bluff, elevated 200 ft. above H. W. mark.

**Carwar Head**, in lat  $14^{\circ} 48' N.$ , lon.  $74^{\circ} 4' E.$ , is 3 m. N.N.W. of Anjideva, and  $2\frac{1}{2}$  m. N.W. of Binghi Point, one little rocky cape and two sandy bays intervening. Rather more than  $\frac{1}{2}$  m. to the S.W. of Carwar Head there is a round rocky island, called on the charts Elephant Island, between which and the Head is a perfectly safe channel. The town of Carwar or Carwad, or Cada-vaud, where formerly was situated a large factory of the late East India Company, lies up a creek which runs into Sedashigar River, and is  $3\frac{1}{2}$  m. to the N.E. of Beitkul Cove. Carwar Head, which should properly be called **Beitkul Head**, by which name it is known to the natives, is in its highest part 650 ft. above the sea, a magnificent headland, and very steep-to, having 6 fathoms water close to the cliffs; it forms the S. boundary of Sedashigar Bay, of which Loliem Point,  $6\frac{1}{2}$  m. to the N.N.W., is the northern limit. The Bay of Carwar, between these points, is thus nearly 7 m. long, and more than 2 m. deep, having a depth of 6 fathoms on the line between its extreme points, and gradually decreasing towards the bottom of the bight.

**The Kali Nadi**, or Sedashigar River, lies behind the islands in the middle of the bay; its entrance, when surveyed in 1855, was to the N. of the two islands, Curmaghur and Sungiri: but in 1857 the river burst out to the E. of these islands, and  $2\frac{1}{2}$  m. N. of Beitkul Cove, at the spot where its mouth was sixty years ago; it is probable, therefore, that it will again work up northward. On account of this frequent alteration of the river mouth, no special directions for entering can be given, but large ships may occasionally be able to enter, if assisted by a steam-tug.

**Islands.** **Sunghiri Island**, called also Deoghur, or Buffalo, 120 ft. high, is nearly 2 m. N. of Carwar Head; the fishermen grow a little hemp on its top, but it is difficult of access, being very steep. **Curmaghur Island**, 3 cables' lengths to the N.E. of Sunghiri, is elevated 180 ft. in its centre. This island has been fortified all round, and much of the work remains in good condition to this day; on the E. side, within the fort, is a well of fresh water amongst some trees. To the E. of this island the water is quite shoal, the sand being deposited in the still water to leeward of it. Between Curmaghur and Sunghiri is a safe passage, but a vessel should borrow on the former, as there are rocky patches off the E. end of the latter. **Kumbay**, or Black Rock, is an islet standing in 4 or 5 fathoms water at the distance of 4 m. N. of the Oyster Rocks; the space between them is perfectly safe; but at  $1\frac{1}{2}$  m. to sea-ward, or W.N.W. of Black Rock, there is a dangerous little table rock, to be presently described.

**The Oyster Rocks**, the most sea-ward land-mark of Sedashigar Bay, are a cluster of islands, covering the space of 1 m. in length, E. and W.; the N.W. one, the highest, is 160 ft. above the sea, and has a depth of 7 fathoms water 2 cables' lengths off it. A light-house is now erected on this, in lat.  $14^{\circ} 49' N.$  and lon.  $74^{\circ} 3' E.$ , and vessels may anchor to the E.N.E. of these rocky islands, during the S.W. monsoon, in smooth water. This highest Oyster Rock is 2 m. W.N.W. of Carwar Head, and the fair channel between them is more than 1 m. broad.

**Elephant Island**, a round, high island, lying  $\frac{1}{2}$  m. to S.W. of Carwar Head, and  $1\frac{1}{2}$  m. to S.E. of the Oyster Rocks, forms the S. side of this channel. **A rock awash** at L.W., lying 2 cables to the E. of all the visible Oyster Rocks, must be avoided when running in during the fine season; to do this, the summit of Madhully Hill (to the N.W. of Sedashigar Hill) must not be seen to the left of the summit of Curmaghur.

**Shoals.** **A sunken rock**, with 14 ft. on it at L. W., lies between the Oyster Rocks and Elephant Islet, with the light-house bearing N.W.  $\frac{1}{2}$  N., distant rather over  $1\frac{1}{2}$  m.; Elephant Islet E.S.E.,  $6\frac{1}{2}$  cables; and the W. ends of Deoghur and Curmaghur Islands nearly in a line, about N.N.E. A red buoy marks its N.W. side. **A shoal**, about 50 yards in length N. and S., and 20 yards E. and W., with  $2\frac{1}{2}$  fathoms on it at L. W., over rocky bottom and shells, lies to the N.W. of the Oyster Rocks, with the light-house bearing S.E.  $\frac{1}{2}$  E., distant  $2\frac{1}{2}$  m.; Curmaghur Island E.  $\frac{1}{2}$  S.; and Black Rock N.N.E.  $\frac{1}{2}$  E. There are 10 fathoms all round this shoal. A red buoy marks the W. side of it; vessels should not approach within a cable's length. This is most likely the sunken rock mentioned in early editions of this Directory, as lying 3 or 4 m. to N.W. of the largest Oyster Rock. **A Sunken Rock**, scarcely a boat's length across, and nearly awash at L. W. springs, lies in  $5\frac{1}{2}$  fathoms, nearly 1 m. S. by W. of Loliem Point, and 5 m. to N. by W. of the Oyster Rocks. When close to this rock, Godhully Peak is in line with the left extreme or N.E. side of Curmaghur Island; therefore, a vessel should give the rock a wide berth, by keeping that peak to the right of that island.

**Loliem Point**, the N. extreme of Sedashigar Bay, and belonging to the Portuguese, is a steep, rocky cape, well wooded, more than 300 ft. high, and increasing in height to the E. In a little

sandy bay,  $2\frac{1}{2}$  m. E. of the Point, is the village of **Polem** (pronounced Polay), which is the border town of the Portuguese, and has a custom house with a military guard. The boundary line between Portuguese and British territory passes eastward from Polem through the summit of a round hill, called Bomguda, between 6 and 7 m. E. of Loliem Point. The sunken rock, described as nearly 1 m. S. by W. of Loliem Point, bears from the highest Oyster Rock N. by W., distant 5 m.

**LIGHT.** A dioptric, one of the first order, has been placed on the Oyster Rocks. It is a *fixed* white light, at an elevation of 205 ft. above mean level of sea, and in clear weather should be seen 20 m. The tower is round, of white granite, 40 ft. high, standing on the summit of the largest or N.W. Oyster Rock, in lat.  $14^{\circ} 49' N.$ , lon.  $74^{\circ} 3' E.$

**Tides.** It is H. W. in Sedashigur Bay, on F. and C., about 10 h. Ordinary springs rise  $6\frac{1}{2}$  ft.; extraordinary springs with the night tide in the fine season rise 8 ft.; neaps  $3\frac{1}{2}$  to 4 ft.

**Anchorage.** Vessels may anchor on the S. side of the Oyster Rocks, during N.-Westers, in 7 fathoms, mud, at the distance of 3 or 4 cables' lengths from the rocks, with the W. islet W.  $\frac{1}{2}$  N., and Curmaghur open to the right of all the Oyster Rocks. Sailing vessels making the port at night should anchor in about 8 fathoms water, near the Oyster Rocks Light, and wait for daylight. The inner anchorage of Beitkul Cove is marked by a white buoy, 3 or 4 cables from the shore. Steer for this *in a line with* the Collector's bungalow on Konay Hill, about E.S.E., and anchor in 4 or 5 fathoms, mud bottom. **By night**, a *red* light is exhibited at the Port Officer's house on Konay Hill, which may be seen from near the Oyster Rocks, and steered for about E.S.E., till in 5 fathoms water; then anchor.

**DIRECTIONS for making the port of Beitkul or Carwar in Sedashigur Bay.** In the S.W. monsoon, sailing vessels, whether from Europe, China, or the Bay of Bengal, bound to Sedashigur, must pass to the W. of the Maldivh and Lakadivh Islands. When in the latitude of Mount Dolly they may edge away to the N.N.E., and endeavour to make Cape Ramas, a fine bluff, high cape, 17 m. N.W. of Sedashigur, having deep water and no dangers off it; 10 fathoms water with muddy bottom will be found  $1\frac{1}{2}$  m. off it; 20 fathoms, mud, at 9 m.; 30 fathoms, mud, at 16 m.; and the edge of the bank of soundings at 45 m. It is recommended to make the land so much to the N. of the port, on account of the strong current, which at this season of the year sets to the S. along this coast. It will also be prudent so to regulate a vessel's speed that she may sight the coast in the day time, when no difficulty will be experienced in making out the headlands and islands.

Cape Ramas is a prominent point of table land, 200 ft. above the sea, and therefore never visible more than 15 m.; but it projects 1 m. W. of a high bluff, called False Cape Ramas, which may be distinguished in clear weather, by a vessel approaching from the S., at a distance of 25 m. Although this false bluff of Ramas is visible more than 25 m. in clear weather, yet in the thick weather of the S.W. monsoon perhaps not more than one-third of that distance; and, during the heavy rain-squalls, probably no part of this coast can be seen more than 4 or 5 m. Between Cape Ramas and Sedashigur Bay the coast is undulating, forming several small bays; the soundings are regular into 5 fathoms, but the sunken rock, standing out in  $5\frac{1}{2}$  fathoms off Loliem Point, must be remembered, as well as the shoal lying  $2\frac{1}{2}$  m. to the N.W. of the light-house on the Oyster Rocks.

**Running in** for Beitkul Cove, during the S.W. monsoon, it will be better to pass round the W. and S. sides of the Oyster Rocks, as in passing to the N.E. of them, under shortened sail, a vessel would (with a flood-tide) drop so much to leeward in the heavy S.W. swell. It is believed, however, that *now* proper lights, beacons, and pilots are available in the S.W. monsoon. During that season the strong current setting down the coast, running at right angles to the swell and wind, is pressed into the bay and runs out along the N. side of Carwar Head. During the N.E. monsoon the port can be approached from any quarter, and with a chart of the bay a vessel can work, or run in, according to the wind. When running into Port Carwar from the S., the summit of Madhully Hill must be *hidden* behind the summit of Curmaghur.

**Soundings.** Anjedeva and the Oyster Rocks are steep to on their sea face, and 10 fathoms water is found about  $1\frac{1}{2}$  m. from them, and 20 fathoms at 9 or 10 m. Thirty fathoms water is found off this part of the coast at the distance of 18 m. which is much nearer than such a depth is found off Honore and Mangalore, between which places the bank having that depth extends more than 30 m. off shore.

**ANJE-DIVA, or ANJADEEPA**, in lat.  $14^{\circ} 45\frac{1}{2}' N.$ , distant 1 m. from the shore to the S. of Carwar Head, is about a mile in length, and possessed by the Portuguese; it appears on the outside barren and rocky; but of a pleasant aspect on the opposite side next the main, where it is fortified by a wall and some towers. In case of necessity, a ship may find shelter under this island from the S.W. monsoon, there being 4 and 5 fathoms in the channel between it and the main land, and no danger, but what is visible. Close to it on the outside, the depths are 9 and 10 fathoms, and 14 fathoms about 4 m. distant. To the E. of it, near the shore, is the rocky islet Seria-ka-



Manda (10 ft. high), and the sandy bay abreast of it is called **Binghi Bay**, or Benigee, where wood and water may be procured; for supplies of which the Arab baghalahs (trading in the fine season between the Malabar coast and the Persian Gulf), often resort to this place. There is another rocky islet, called Button Rock, about  $2\frac{1}{2}$  m. to the S.E., distant nearly  $1\frac{1}{2}$  m. from the shore. The channels amongst these islands are perfectly safe. There is a succession of rocky capes and sandy bays between Carwar Head and Belikeri Bay.

**BELIKERI BAY.** This is an extensive bay comprehending the whole space between Gungaweli Rocky Cape and Gawda Guda, a distance of nearly 7 m. **Unkola Creek**, distant  $2\frac{1}{2}$  m. N. by E. of the N.W. cape of Cusuldeva, is quite dry in the entrance at L. W.; the town of Ankola, or Unkola, which is nearly 2 m. inland, is a large place, having a ruinous fort, a bazar, and many temples. Belikeri Point is a low, flat rocky point 2 m. N. of Unkola Creek; on it is a large bungalow amongst trees, and to the N. of the rocky cape (which projects to the W. with rocks off it), is the little river of Belikeri. At 1 m. to the W. of this river entrance is Kukra, a woody island, almost connected with rocks to Belikeri Point. To the N. of Belikeri Bay there is very high undulating land, about 1,700 ft. above the sea; the low valley of the Belikeri River goes straight to the N.E. for many miles, and shows in striking contrast to the high lands on either side of it. Tulsi Parwat, is a peaked hill, with a black cap, 1,680 ft. high, 4 m. N.E. of Unkola.

**Cawda Guda**, at the distance of 3 m. W. by N. from Belikeri Point, is a steep rocky cape, projecting into the water to the S.E., and thus forming the extensive Belikeri Bay, which is 2 m. deep, affording excellent shelter from N.W. and even from W. winds, but to small vessels only, as the water is shallow. The bay to the E. of Cawda Guda (not Cawda Bay), is very convenient for grounding small vessels to clean their copper, the water being so smooth in the fine season.

**GUNGAWELI RIVER** is 5 or 6 m. to the S. of Belikeri, and the same distance to N.N.W. of Tudri S.W. Point; its entrance, which is shallow, and rendered tortuous by sand-banks, is on the sandy shore; but there is a rocky cape close to it,  $\frac{1}{2}$  m. to the W.N.W., the cliffs of which extend along the shore for 2 m. to N.W., there terminating in Cusuldeva Guda projecting cape, forming a little bay on its N. side, in which however there is no shelter, as a reef of rocks lies in the middle of it.

**Timber depot.** From the forests, on the banks of Gungaweli River, splendid teak timber is floated down; this is the property of the British Government, and is carried in native vessels to the dock-yard of Bombay. The rocky cape N.W. of Gungaweli Mouth, called Cusuldeva Guda, is highest in the centre, being there 550 ft., and slopes gradually either way; about 15 m. due E. of it there is a high range of hills, which need not be described, as all the land-marks along this sea-shore are so prominent and well defined.

**TUDRI, or MIRJAN RIVER**, (Tudri being the town at its entrance, and Mirjan another about 5 m. higher up) in a fine river, the bar of which bears N.N.W. 6 m. from Cumta Light-house. It is situated in a deep bay formed on the S. side of a high cape, the central part of which, called Kudiniguda, is 430 ft. above the sea. This projecting land affords excellent shelter from N.W. winds to vessels anchoring off the mouth of the river. On the E. side of the entrance is the old hill-fort of Rajahmundroog, the upper walls of which are 300 ft. above the sea; and on the top of the hill, about  $\frac{1}{2}$  m. to N.E. of the fort, there is a little beacon at 400 ft. above the sea.

**Tudri S.W. Point**, in lat.  $14^{\circ} 31' N.$ , lon.  $74^{\circ} 18' E.$ , stands about 2 m. to W. by N. of the river mouth, and it is 5 m. to S.S.E. of Gungaweli River. Just within the Tudri entrance on the sandy point there is a large screw-house, erected by Mr. Brice, and (abreast it) a wooden pier, where several cotton ships have been loaded since 1857. The town of Tudri lies along the river-bank N.W. of the screw-house. The river is not navigable any distance up, except for small boats, which may go to Cutgal 12 m. above Tudri. On the N.W. extreme of Tudri high land, and close to the sandy shore, lies the famous town of **Gokurn**, (which means the cow's ear,) with many large temples, and tanks of fresh water; this is a place of great repute among the Brahmins.

**Anchorage.** Large vessels may anchor off the bar in 5 fathoms, mud, with the beacon on Rajahmundroog Hill E.N.E., and the outer cape of Tudri N.W.; from this position the Cumta Light will bear S.E.  $\frac{3}{4}$  S., and the Tudri River entrance N.E. by E. Arrangements for getting into the river may be made with the local authorities.

**Tides.** It is H. W. at the bar of Tudri, on F. and C., at 10 h.; ordinary springs rise  $6\frac{1}{2}$  ft., extraordinary springs with the night tide in the fine season rise nearly 8 ft.; neaps 4 ft. There is a depth of 10 ft. on the bar at ordinary L. W. springs, and vessels drawing 15 ft. water could be taken in or out at spring-tides.

**CUMTA POINT.** This little point, bearing S.S.E. 6 m. from Tudri River; and N. by W.  $6\frac{1}{2}$  m. from Fortified Island, forms a little bay off the mouth of Cumta Creek which it protects from N.W. winds; but the water is very shallow, and the coasting craft which are too large to enter the

creek at H. W., anchor in 3 or  $3\frac{1}{2}$  fathoms, sand and mud, to the S. of the point without any shelter. The commercial town of **Cumta, or Coompta**, is on the N. side of the creek, about 1 m. E. of the light-house. Cumta, though an open roadstead, is a place of large trade, owing to roads having been constructed from it to the famous cotton districts of the Dharwar country. About a mile N.W. of Cumta Rocky Cape is a rock above water, called the Snail Rock, from its resemblance when viewed from the anchorage off Tudri River.

**Light.** The Cumta Light-house, in lat.  $14^{\circ} 25' N.$ , lon.  $74^{\circ} 23' E.$ , and 6 m. to the N. of Fortified Island, is a white column, 65 ft. high, standing on a hill more than 100 ft. high, situated  $\frac{1}{2}$  m. to the E. of the rocky cliffs of Cumta Point. It exhibits, at an elevation of 180 ft. above the sea, a *fixed* White light, visible 12 m. in clear weather. This light overlooks the mouth of the creek which leads boats at H. W. up to the cotton warehouse on the S. side of the town.

**Baswarajah Drug, or Fortified Island**, in lat.  $14^{\circ} 18\frac{1}{2}' N.$ , lon.  $74^{\circ} 24' E.$ , has, as its name implies, some old fortifications on it, formerly erected by a Rajah of Mysore, but now in ruins. This Island, which is covered with brush-wood, and standing  $\frac{1}{2}$  m. from the shore, bears 3 m. N.W. by N. of Honore River entrance, and consists principally of iron-stone; small coasters find shelter under its lee from N.-Westers.

**HONORE, HONAWA, or ONORE**, a place of considerable trade in pepper, rice, &c., is situated near the entrance of a salt-water river, between Tudri and Hog Island, and 17 m. N.N.E. from Pigeon Island. The entrance of the river may be easily known by a level island, with fortifications on it, generally called Fortified Island, which is in lat.  $14^{\circ} 19' N.$ , near the shore, about 2 m. to the N. of the river. A ship may anchor in the road, with the flag-staff of Honore bearing E. by N. or E.N.E., Fortified Island N.  $\frac{1}{2}$  W., and Pigeon Island about S. by W., distant from the shore  $1\frac{1}{2}$  m., in 5 to 6 fathoms, soft ground. Fresh water is here very scarce. There is a large gaol with an hospital at Honore. The English officials are an Assistant Collector and a Judge.

The Coast between Honore and Hog Island is high, and may be approached with safety to 8 fathoms water; but to the S. of that island, between it and Barsalore Peak, the coast ought not to be borrowed on under 12 fathoms in the night, nor under 10 fathoms in the day; for several straggling rocks, under and above water, lie 3 m. from the shore, having  $8\frac{1}{2}$  and 9 fathoms within  $\frac{1}{2}$  m. of them. Between Hog Island and the main there is a low rugged island, and several rocky islets lie near the shore to the S.

**PIGEON ISLAND, or Netrum**, in lat.  $14^{\circ} 1' N.$ , lon.  $74^{\circ} 19' E.$ , bears from Anje-Diva about S.S.E., distant  $15\frac{1}{2}$  leagues, and nearly S. from the entrance of Tudri River, distant  $9\frac{1}{2}$  leagues. It is of good size, about  $\frac{1}{2}$  m. across, covered with trees, and 300 ft. high, situated more than 10 m. from the continent, and may be discerned 8 leagues in clear weather; a small rock lies very near it, to the S. There are 20 and 21 fathoms water within a mile of Island bearing E.N.E.; ships passing outside of it in the night ought therefore not to come under 23 or 24 fathoms, which will be within 2 or 3 m. of it: about 3 or 4 leagues from it, the depths are from 30 to 32 fathoms.

**HOG ISLAND, or Jali-kund**, in lat.  $14^{\circ} 0' N.$ , lon.  $74^{\circ} 28' E.$ , is nearly 300 ft. high, of pyramidal form, and situated very near the main, directly E. from Pigeon Island, distant 9 m. The channel between these islands is safe, with 15 and 16 fathoms water near Pigeon Island, and 8 or 9 fathoms towards Hog Island and the main land, which is rocky, with found ground within the meridian of the island.

From Hog Island to Barsalore Point, the coast extending about S.S.E.  $\frac{1}{2}$  E. 6 or 7 leagues, forms some small bays; near the sea the land is generally low and woody, but very high in the country. False Barsalore Peak, 4,400 ft. high, in lat.  $13^{\circ} 51' N.$ , lon.  $74^{\circ} 51' E.$ , is a round mountain, nearly 5 leagues inland; which is frequently set by navigators as Barsalore Peak. W.N.W. 8 m. from the False Peak, and 3 leagues inland, is Barsalore Peak; it stands in lat.  $13^{\circ} 55' N.$ , lon.  $74^{\circ} 44' E.$ , and is 3,600 ft. high. The coast abreast of the Peak, and to the S., is very foul and rocky for nearly 3 leagues to lat.  $13^{\circ} 47' N.$ , for a league off shore. In clear weather this part of the coast is discernible at a great distance.

**BATKUL DRUG** is a little fort on a rocky point, at the entrance of a little river, and at 4 m. to S.E. of Hog Island. The town is 1 m. up the river, and was formerly a place of considerable trade. The E. I. C. had a factory there, known as **Baticolo**, which was deserted in 1670, owing to the massacre of the English living there. Some of the inhabitants of this place are descendants of the Arabs, and still retain many customs like to theirs. None but coasters frequent this place now, but a vessel may anchor in 6 fathoms, mud, with Batkul Fort N.E., the immediate vicinity of this anchorage being free from rocks, though many exist to N.W. and S.

**Batkul**, in lat.  $13^{\circ} 58' N.$ , lon.  $74^{\circ} 32' E.$ , is now the S.-most port under the Bombay Government; the coast from Carwar to Batkul was transferred to Madras.

**SEROOR, or Sherur**, in lat.  $13^{\circ} 56' N.$ , lon.  $74^{\circ} 35' E.$ , though an insignificant place now (its ruins point it out as a large town centuries ago), is the N.-most port under the Madras Government; it is 3 or 4 m. to S.E. of Batkul, and a little way to the E. of Huddi Point. **Huddi Point** is  $5\frac{1}{4}$  m. N.W. by N. of Byndur Head; the space between them is studded with dangerous rocks; **one white rock**, just above water, bears S.W. by S.  $2\frac{1}{4}$  m. from Huddi Point, and 2 m. S. of this single rock are **two white rocks** close together above water; and between these and Byndur Head and S. of that headland there are numerous others, which, extending out to the depth of 7 fathoms water, make this coast unsafe to approach under 10 fathoms. **Byndur River** and town are on the E. side of Byndur Head, which is a piece of table-land jutting into the sea, and running back for some distance inland. The River is only fit for little boats, and the scattered rocks off it make it unsafe to approach.

**The Coast.** From the Cundapur Sandy Point, which is 3 m. N.W. by N. of that river mouth, and was formerly called Barsalore Point, the sandy coast runs N. by W.  $\frac{1}{4}$  W. 12 m. to Byndur Head; at 5 m. S. of which there are some dangerous rocks awash, in 6 and 7 fathoms at L. W., situated 3 m. from the shore. To the W. and N.W. of Byndur are other rocks in even deeper water, which render this part of the coast dangerous, and it is prudent to give them a wide berth. The land near this part of the coast shows in detached pieces of table-land, most easily recognised as such in the morning, when the mist hangs in the valleys; scattered here and there are little round hills of about equal height.

**The mountains** of Bednore or Nuggur come very close to the sea about here, being only 6 m. off, and have some beautiful peaks more than 3,000 ft. high; Yelgetty Guda, the S. one, 2,950 ft. above the sea, is a beautiful sharp peak, at 7 m. to E. of Byndur Head, and very conspicuous to a vessel coming from the N. Barsalore Peak is a round mountain, 3,600 ft. above, and 9 m. from the sea; but, having the high chain of the Bednore Mountains for its base, does not show much above them, except at a distance from land. **Colur Guda**, or Codachi Parwut, 4,400 ft. above the level of the sea, is a magnificent sugar-loaf peak, 17 m. N.E.  $\frac{1}{4}$  N. of Cundapur; it was styled by early navigators *false* Barsalore Peak, from the fact of its being frequently mistaken for the peak of that name, which is 8 m. farther to the W.N.W., and only visible at a great distance from land; for other peaks, intervening between it and the sea, hide Barsalore Peak, whereas Colur Guda is distinct, being perfectly isolated, but it disappears behind the others when bearing to the S. of E.

From Mangalore to Cundapur the whole coast is sandy, with cocoa-nut trees, with the exception of Surutkul little rocky point, and the Cahp battery rocks; at the back of the trees the hills rise gradually towards the base of the mountains.

**CUNDAPUR, or COONDAPOOR RIVER**, in lat.  $13^{\circ} 38' N.$ , lon.  $74^{\circ} 39' E.$ , lies to the S.S.E. of Barsalore Point, and is 18 m. N. of Deria Bahadur Ghur. It is now a place of considerable trade; a reef of rocks, on which the sea breaks, lies at 2 m. to the W. of the river entrance; the rocks off it afford a little shelter to small coasters from N.-Westers, but these vessels generally run into the river at H. W. At the distance of 2 m. N.N.W. of the entrance, is a little rocky point; and 1 m. further N.W. is a sandy cape (formerly called Barsalore Point), off both of which patches of rocks extend into 5 fathoms water. This river is only navigable by boats and small vessels; and the shore here should not be approached under 9 fathoms in a large ship.

**Barcoor, or Barkur**, called also **Hungarcutti**, is a little river port, about mid-way between Cundapur and Deria Bahadur Ghur.

**THE ST. MARY ISLES** extend from lat.  $13^{\circ} 27'$  to  $13^{\circ} 20' N.$ ; the outermost of the range being  $2\frac{1}{2}$  m. distant from the shore, with a channel with 2 and 3 fathoms irregular soundings between them and the main, but safe only for boats. Some of them may be seen 3 or  $3\frac{1}{2}$  leagues from the deck; the others are low, nearly even with the water's edge. They are in one with Barsalore Peak bearing N. by E.  $\frac{1}{4}$  E., and some of them are long, flat islets, particularly the S.-most.

**Deria Bahadur Ghur**, in lat.  $13^{\circ} 20' N.$ , lon.  $74^{\circ} 41' E.$ , about 18 m. to the S. by E. of Cundapur, and bearing N. by E.  $8\frac{1}{4}$  m. from Molky Rocks, is the highest and middle one of the three islands generally called **St. Mary's Isles**, and its highest part is 70 ft. above the sea; these islands are basaltic, and in some parts have long grass and creepers. The N., a separate island, which is nearly 3 m. N.N.W. of Deria Bahadur Ghur, has cocoa-nut trees on it, and water is obtainable by digging; there are rocks mid-way between these islands, and scattered about to the N. of them; rocks awash extend 1 m. to W. of the cocoa-nut island, and another patch at the distance of 2 m. N.W. of it; whilst to the N. there are other rocks until abreast of Barkur River.

A ship should not approach this part under 8 fathoms by day, in working up the coast, or 12 fathoms by night; in running down coast it is prudent not to come under 15 fathoms.

**Anchorage.** To small coasting vessels excellent shelter is afforded from N.W. winds between Deria Bahadur Ghur and the sandy shore abreast; the passage in is close round the S. end of



these three islands, and the anchorage is in 3 fathoms at L. W. sand and mud bottom, with the highest part of Deria bearing N.W. The sandy shore abreast of these isles is the point of **Mulpy**, or Moolapi River, inside of which stands the little port of **Oodiawar**, not far from the town of **Oodapee**, one of the German missionary stations, so numerous along this coast, and doing such good work in the improvement of the natives.

The **MULKY**, or **PRIMEIRA ROCKS**, in lat.  $13^{\circ} 12' N.$ , lon.  $74^{\circ} 40' E.$  (nearly 3 leagues to the S. of Deria Bahadur Ghur), bear from Mangalore Light-house N.N.W.  $\frac{1}{2}$  W. 22 m.; they are situated 4 m. from the main land, are of black basalt, elevated in parts 40 ft. above the sea, and may be seen 9 or 10 m. from a ship's deck. On their E. side the bottom is sand and broken shells, which is not good holding-ground, otherwise a vessel in extremity might anchor to leeward of them in a W. gale. The channel between them and the main is perfectly safe, but contracted to a breadth of 2 m. on the N. by the Cahp Rocks, which are above and below water, 3 m. to the N.E. of the Primeira; and there is a detached rock out in 4 fathoms 3 m. due E. of them, off the little hill of **Uchil Guda**, which hill is on the shore 20 m. N. by W.  $\frac{1}{2}$  W. from Mangalore Light-house. **Cahp Battery**, 2 m. N. by W. of Uchil, is an old rock fortification on the sandy shore, and from this the outermost Cahp Rocks bear W. by N.  $1\frac{1}{2}$  m. There is an old temple, called Cunjar Guda, within a fort on an isolated hill, 280 ft. high, a good land-mark, 4 m. N.E. of Cahp Battery.

**Rocks awash.** At the distance of 4 m. N. by E. from the Molky Rocks, is a patch of dangerous rocks awash; they lie out in 5 fathoms, with Cunjar Guda bearing E., and they are  $1\frac{1}{2}$  m. to the S.W. of a solitary **black rock** standing out of the water, mid-way between Cahp Rocks and the S. islet of the Deria Bahadur Ghur group.

**MANGALORE**, or **Kodyal Bunder**, in lat.  $12^{\circ} 52' N.$ , lon.  $74^{\circ} 49\frac{1}{2}' E.$ , is the chief town in the province of Canara, and a place of large trade; the light-house is on high ground,  $1\frac{1}{2}$  m. E.N.E. of the river entrance, and 250 ft. above the sea. The town is very large, and on the N. and E. sides of the river, which is navigable for boats for many miles up to **Buntwal**, a large town. The bar has only 6 or 7 ft. on it at low spring tides, so that only small vessels can enter; Arab vessels of 150 tons manage to get in at high springs, but the larger baghalas, which bring horses from the Persian Gulf, are compelled to lie out in the roadstead. The houses and trees on the elevated plateau by Mangalore Light-house unmistakably point it out; Barn Hill, 16 m. to S.E. of it, is also a good mark. The Ass's Ears, or Codinjau Col, 17 m. N.E. of Mangalore, is a rugged, double-peaked hill, of limestone, 1,100 ft. above the sea, rising almost vertically from the low country, but is in many views only just visible from sea-ward above the tops of intervening flat hills. **Mount Hyder**, or **Kudri Mukh** (the horse's face), 30 m. N.E. by E. of Mangalore, is a magnificent peak, 6,000 ft. above the sea, abruptly terminating on the S., when viewed from the W. It is the S.W. extreme of the Nuggur, or Bednore district, of the independent principality of Mysore, and beyond it the Ghauts recede much to the E.; the hills at the back of Mangalore are undulating, and separated from each other by valleys through which rivers run from the mountains.

**Light.** A fixed light on a white tower is exhibited on the hill at the back of the town, at an elevation of 250 ft., and may be seen in clear weather 14 m., but in the hazy weather of March and April, only 10 or 11 m. On the light-house hill there are houses and trees, which form conspicuous marks in the day time.

**Tides.** It is H. W. on F. and C., at 11 h.; ordinary springs rise 7 ft., neaps  $3\frac{1}{2}$  ft.; night tides are higher than day tides in the fine season.

**Anchorage.** The most convenient anchorage for communicating with the river, is with the light house E.N.E. in 5 or 6 fathoms, muddy bottom; in case of a N.-Wester (which breezes prevail here in the afternoon between Feb. and May), boats can conveniently come at H. W. out of the Gurpur Mouth, 2 m. N. of the Mangalore entrance.

**Approaching Mangalore** from the N., caution is necessary to avoid the St. Mary's Isles and Molky Rocks, the latter being in the line of 9 fathoms, and it must be remembered that this is a projecting part of the coast. The bank on which a ship may get soundings extends nearly 40 m. off Mangalore; there being a depth of 10 fathoms at 4 m. off shore, 20 fathoms at 10 m., and 30 fathoms at 18 m., all muddy bottom, between Mangalore and Mount Delly; but above the latitude of Mangalore these depths are found much further off shore. Abreast of Barkur and Cundapur, 30 fathoms, is found more than 30 m. from land, and soundings of between 20 and 30 fathoms occupy a flat, 17 m. broad E. and W., between the latitudes of St. Mary's Isles and Pigeon Island. At depths greater than 30 fathoms on this part of the coast the bottom is generally sand or rock. **Surutkul** is a little point with a temple on it, about 150 ft. above the sea, bearing N. by W. 9 m. from Mangalore River mouth; the intermediate shore is straight, sandy, and planted with cocoa-nut trees. **Molky River entrance** is 4 m. to N. of Surutkul, on the same bearing, and is nearly 10 m. to S.E. of the Primeira, or Molky Rocks.

**The Coast.** From Mangalore, the direction of the coast is S.S.E. 18 leagues to Mount Delly; the land near the sea is generally low and woody, particularly to the S. of Barn Hill, or Pussodi Gumpa, which is a sloping mount, nearly level on the summit, 1,000 ft. high, situated a little inland, in lat.  $12^{\circ} 40\frac{1}{2}'$  N., lon.  $75^{\circ} 0'$  E., and  $5\frac{1}{2}$  leagues distant on a S.E. bearing from Mangalore. About 7 leagues to the S. of this hill, and nearly an equal distance from Mount Delly, stands another mount, in lat.  $12^{\circ} 23'$  N., 500 ft. high, 3 m. inland, called Mount Formosa, and there are other hills farther from the sea, and 2,800 ft. above level of the sea. In passing along this part of the coast there is no danger, the depths decreasing regularly towards the shore to 7 or 8 fathoms about 3 m. off. A ship in working may stand in to 7 or 8 fathoms, soft ground, when the weather is fine. Between Mangalore and Beykul, there are three considerable streams, Manjeshwur, Cumla, and Causergode, all reckoned among the minor ports of Madras. The bars of these rivers change every year, and a native pilot is a necessity.

**BEYKUL FORT**, in lat.  $12^{\circ} 23'$  N., lon.  $75^{\circ} 1'$  E., covering the whole extent of a little prominent point, 130 ft. high, bears from Delly little cape N.N.W. 25 m.; there is a traveller's bungalow among trees to the N. of the Fort. Rather more than  $1\frac{1}{2}$  m. to N.W. of this Fort is a reef of rocks, on which the sea breaks, having 4 fathoms close to it; this reef is rather more than  $\frac{1}{2}$  m. to the S.W. of another little rocky cape. The coast from Beykul to Mangalore is all sand, fringed with cocoa-nut trees, with the exception of the little rocky points before mentioned; the land at the back rises gradually from the sea, until at 5 m. distance there is table-land nearly 400 ft. high, intersected by rivers every 6 or 7 m. To E. of Beykul and Hoss Droog, a spur of the Ghauts, of considerable elevation, reaches toward the coast, but to the N. of this the high land recedes, and is not often visible.

**CAVOY, or KUYOVY RIVER**, in lat.  $12^{\circ} 5'$  N., about 20 m. to S.S.E. of Beykul, is a river which skirts round the N. side of Delly high land, and is the actual boundary of the provinces of Malabar and Canara; its mouth is 4 m. N.N.W. from Delly Fort Point; it runs parallel with the coast for 15 m. N., but is only available for small boats. The ancient city Nileshwar was up this river. **The Coast** N. of Kuvoy is a very straight sandy shore for 20 m.; at a distance of 5 m. from the sea there is table-land, from 150 to 250 ft. high. Nearly 20 m. N. by W.  $\frac{3}{4}$  W. from Delly Cape is the old fort of Hoss Droog, on elevated ground, and close to it a traveller's bungalow, rather more than a mile from the shore, and about 150 ft. above the sea; 2 or 3 m. at the back of this is a wooded hill, 550 ft. above the sea, which early navigators called Mount Formosa; it is the outermost detached hill of a spur which stretches W. from the mountains of Coorg. Eastward of this hill are other conspicuous peaks, increasing in elevation as they near the Ghauts, which in Coorg are 4,000 or 5,000 ft. high, but seldom are visible from the sea, except in very clear weather.

#### COAST OF MALABAR.

This coast commences at Kuvoy or Cavoyn, and Calicut is its chief town. The S. extreme of the British province of Malabar is just above Cranganore. It seems necessary to explain this; for navigators, being in the habit of calling the whole sea-board the Malabar Coast, from Bombay to Cape Comorin, are liable to be misunderstood by the natives and residents in India. The Malabar Coast in its S. portion, from Paliport to Beypore, is wholly devoid of conspicuous land-marks, being low and sandy, with cocoa-nut trees: Beypore, the terminus of the Madras railway, has some little hills at its back, and above it to Mount Delly the coast is bolder, being composed of sandy bays, interrupted here and there by slightly-elevated rocky points. Mount Delly is a remarkable headland, whose summit is 850 ft. above the sea, in reality an island, though separated by only a narrow creek from the low and sandy ground which fills up the intervals between the headland and the laterite table-land of Pyangadi, which latter is less than 100 ft. in elevation at a distance of 2 m. from the Mount, and gently rises towards the Ghauts, but does not attain to the same elevation as Delly till a dozen miles from it.

The Kundah range of Ghauts approach the sea between Tellicherry and Calicut, and are higher here than on any other part of the W. coast. The highest and most remarkable, called the Camel's Hump, about 7,000 ft. above the sea-level, stands in a N.E. direction more than 20 m. from Calicut. The Wynad range, at the back of Tellicherry, has several very conspicuous and beautiful peaks, the most W. standing prominently forward only 10 m. to the E. of that sea-port; to the N. of them the high-land recedes from the coast, and the valley of the Billipitam River fills the space to the mountains of Coorg, which, though of great elevation, are situated far from the sea, and only visible in very clear weather.

**MOUNT DILLY, or DELLI**, may, however, be considered the limit between the coasts of Canara and Malabar, which is a conspicuous headland (the summit 850 ft.) that may be seen 8 or 9

leagues from the deck, in clear weather. The contiguous coast, being low and woody, is not seen far, which gives the Mount the appearance of a high island, when viewed either from the N. or S. The outer extreme of this headland terminates in the S.W. bluff point, having on it a small ancient fort, of black aspect, situated in lat.  $12^{\circ} 0\frac{1}{4}'$  N., lon.  $75^{\circ} 11\frac{1}{2}'$  E. The shore here is bold and safe to approach, there being 7 and 8 fathoms at 2 m. distance; 20 and 22 fathoms at 2 or  $2\frac{1}{2}$  leagues' distance; and at 15 leagues' distance, abreast the Mount, you lose soundings. This is the narrowest part of the channel between the main and Laccadiva Islands, the distance being 28 leagues betwixt Elicalpeni Bank and Mount Dely. Abreast of this headland there is frequently a drain of current to the S., and a short confused swell, the effect of brisk N.W. winds, which greatly prevail here. The kingdom of Eli is mentioned (as existing hereabouts) by Marco Polo, who said that great Chinese vessels used to come to this bay before the twelfth century. The Portuguese gave to the hill the name of **Monte d'Eli**, from which comes the present name.

**Bilipatam, or Balliapatam River**, is 6 m. to the S.E. of Mount Dely; the coast between them, forming a bight, is low, covered with trees, safe to approach to 5 or 6 fathoms, in regular soundings, soft ground. This river extends a considerable way inland, and is a place of some trade, although navigable only by boats or small vessels, there being from 1 to 2 fathoms water at the entrance, abreast of which ships may anchor in  $3\frac{1}{2}$ , 4, or 5 fathoms, from 1 to 2 m. off shore.

**CANNANORE FORT** flag-staff, in lat.  $11^{\circ} 51'$  N., lon.  $75^{\circ} 22'$  E., bears from Monte d'Eli Fort S.E.  $\frac{1}{4}$  E. 14 m., and is about 9 m. to the N.W. of Tellicherry. The point is 2 cables' lengths W.S.W. of the flag-staff, and has a reddish appearance. To the W. of the fort are the British barracks, between which and the sea are three or four cocoa-nut trees overhanging the sea; to N. of these are several houses amongst trees, on slightly-elevated red cliffs, about 40 or 50 ft. above the sea. To the N.N.E. of the flag-staff is the English church, on elevated ground, and other houses and trees beyond. Nearly 3 m. N. of the Fort is the Collector's cutcherry, a thatched building, on elevated ground, 250 ft. above the sea. The houses of Cannanore cantonment extend along the cliffs some distance N. of the Fort, and  $4\frac{1}{2}$  m. N.W. of it there is a projecting rocky point of elevated red land, with high cocoa-nut trees; and 3 m. farther N.W. is the mouth of the Billiapatam River, down which excellent poon spars for ships' masts are brought. Between the above red point and the base of Mount Dely the sea shore is low, sandy, and fringed with cocoa-nut trees; 3 or 4 m. inland the country becomes hilly. There is backwater communication for boats from this river to Hoss Droog, nearly 30 m. to the N., passing to the E. of Mount Dely.

**Supplies.** Good water may be obtained from the wells on the beach to N.E. of the fort; fresh provisions and refreshments of various kinds, and excellent fruit may be procured; there are Government Commissariat and Ordnance Departments at Cannanore: in fact it is a large military station.

**Light.** A *fixed* White light, elevated 110 ft., and visible 12 m. off, is shown from the flag-staff at Cannanore; it is, however, extinguished during the S.W. monsoon, from May 20th to Aug. 10th.

**Anchorage.** Vessels may anchor with the flag-staff N.N.E. about  $1\frac{1}{2}$  m. off shore, in 5 fathoms, mud. Ships' boats can easily land in the bay to N.E. of the fort; the custom-house is on the sandy beach, more than  $\frac{1}{2}$  m. E. of the fort. There are a few sunken rocks off Cannanore Point, but not outside of 4 fathoms. With a S. or a S.W. wind, a heavy swell prevents landing in Cannanore Bay.

**TELLICHERRY** (the flag-staff), in lat.  $11^{\circ} 45'$  N., lon.  $75^{\circ} 28\frac{1}{2}'$  E., bears S.E.  $\frac{1}{4}$  E. from the fort on Mount Dely, 23 m., and 3 leagues to the S.E. of Cannanore Point; the coast between them is safe to approach to 5 fathoms, but a large ship ought not to come under 7 fathoms in the night, for it is rocky under 4 fathoms from Tellicherry to Green Island, a small island covered with trees, situated close to Durmapatam Point, about 3 m. to the N. of the anchorage, where two small rivers fall into the sea, having 4 or 5 ft. water at the entrance, one of which goes up to Anjercandy. The anchorage in the road is soft mud, in  $5\frac{1}{2}$  or  $5\frac{3}{4}$  fathoms, with the flag-staff bearing N.E. by N., and Green Island N.N.W. off the town 2 m. Large ships touching here, or at other places on the coast, where there is a chance of unsettled weather, should anchor well out in 7 or 8 fathoms. The fleet having anchored in 5 and  $5\frac{1}{2}$  fathoms, a heavy sea began to roll in, which made the *Superb* strike on the *Sultan's* anchor, she being moored inside. The land about Tellicherry and Cannanore appears rather low and barren near the sea, but at a distance in the country, over the former place, the Ghauts are formed of high undulating mountains. From Mount Dely to Tellicherry the soundings are regular, 20 or 22 fathoms about 4 leagues off, and 30 to 34 fathoms 7 or 8 leagues off.

**Tellicherry Flag-staff** in the fort is 9 m. to S.E. of Cannanore, and bears N.W. nearly 4 m. from Mahe flag-staff. The fort, in which are situated the gaol and hospital, is built on rising ground, 100 yards from the sea, and about 40 ft. above its level. At  $\frac{1}{2}$  m. to S.W. of the flag-staff is a ridge of basalt rocks, lying parallel with the coast for 2 cables' lengths; between them and the shore



are detached rocks, above and below water, but they only afford shelter to the landing-place at low tide, during N.W. winds. Within and on the N. side of the ledge of rocks fronting the fort small vessels have been known to be moored head and stern during the S.W. monsoon. **Green Island**, at  $2\frac{1}{2}$  m. N.W. by W. of Tellicherry flag-staff, and 2 or 3 cables' lengths from Durmapatam Point, is surrounded by rocks, and they are scattered over the whole space between this Island and the Tellicherry Rocks. Durmapatam old fort is 1 m. within the Point, and about 200 ft. above the sea. Boats sometimes bring their cargo to ships out of the little river E. of Durmapatam.

**Trade.** A considerable and increasing trade in coffee now goes on at Tellicherry; other articles of commerce are pepper, cardamoms, ginger, arrowroot, cinnamon, rice, and sandal-wood; good water and other refreshments on a small scale may be procured here; small native boats bring much coir yarn to this place and Cannanore from the Lakadivh Islands, taking away rice in exchange. There is a custom-house at Tellicherry, and a Government medical officer; several English merchants are also settled there. The population is about 20,000, the majority of whom are Moplahs, or Muselmin; the rest Brahmins and Tiars, with a few Roman Catholics.

**Lights.** Two vertical *fixed* White lights, elevated respectively 140 and 104 ft. above the sea level, are shown all night throughout the year from the flag-staff at Tellicherry. In clear weather they are visible 12 m. The high light, in the S.W. monsoon, is lowered to 112 ft.

**Anchorage.** Large ships must anchor well out in 6 or 7 fathoms, when there is a chance of unsettled weather; but in the fine season, when *only* trade is carried on along this coast, vessels may anchor in 5 fathoms, soft mud, with the flag-staff N.E. and Green Island N.N.W., rather more than 1 m. from the rocks.

**Tides.** It is H. W. on F. and C., at 11 h. 40 m., springs rise 5 ft., but extraordinary tides 6 ft.; neaps rise 3 ft.

**MAHE FORT** flag-staff, in lat.  $11^{\circ} 42' N.$ , lon.  $75^{\circ} 31' E.$ , stands 4 m. to S.E. of Tellicherry, and bears N.N.W. 15 m. from Ticottay Point, and N.  $12\frac{1}{2}$  m. of the Sacrifice Rock. This is a French settlement, of but small extent, at the mouth of a little river, off which are sunken rocks: ships' boats should not attempt to run in till they have examined the passage, which is very narrow. The land at the back of Mahe and Tellicherry consists of detached hills, on which are old forts and houses. Vessels may anchor off Mahe in 5 fathoms, mud, with the flag-staff E.N.E., and 2 m. from shore.

**Wuddakurray, or Badagherry**, is a town of importance, about mid-way between Mahe and Ticottay Point. At the back of the town, and on to Cannanore, there are pretty undulating hills, about 400 ft. high; and the Wynaad range of mountains to the E. have remarkable and lofty peaks, which make this the most beautiful part of the Malabar coast.

**SACRIFICE ROCK**, called also Kanahli, or Cugnali, in lat.  $11^{\circ} 29\frac{1}{2}' N.$ , lon.  $75^{\circ} 31\frac{1}{2}' E.$ , bears S.  $\frac{1}{2}$  E. from Tellicherry  $5\frac{1}{2}$  leagues, and is distant  $4\frac{1}{2}$  m. from the land opposite: it has a white aspect, 40 ft. in height, and is discernible 3 and  $3\frac{1}{2}$  leagues from a large ship, the deck being elevated 15 or 20 ft. above water; by the natives of Malabar it is called Billiculor, or the White Rock. This rock or island is steep all round, having 12 and 13 fathoms close to it, 16 fathoms  $2\frac{1}{2}$  m. outside, 10 fathoms within it, to 7 fathoms about mid-way between it and the main, in a very good channel.

**Ticottay or Cotta Point**, situated to the E. of Sacrifice Rock, at the entrance of Cotta River, is low and covered with trees, having a reef of shoal water extending from it along shore to the N., extending about  $2\frac{1}{2}$  m. off shore. Ships passing through the inside channel ought, therefore, to give the Point a berth of 3 m., by borrowing towards the rock; and in working should heave the lead quick, if they come under 6 fathoms standing in shore. Passing outside Sacrifice Rock in the night, do not come under 16 or 17 fathoms water. The *Prudence* and *Union*, ordnance store-ships, were driven from Calicut Road in a storm, at the setting in of the S.W. monsoon, and not being able to weather Cotta Point, were both wrecked on the reefs near it. About fourteen years afterwards, the *Heicules*, of Bombay, by borrowing too close in the night, grounded, and was nearly lost.

**CALICUT**, in lat.  $11^{\circ} 15\frac{1}{2}' N.$ , lon.  $75^{\circ} 45\frac{1}{2}' E.$ , bears from Sacrifice Rock S.E., distant 20 m., and N. by W.  $\frac{3}{4}$  W. 6 m. from Beypore. Calicut has a light-house, a white stone column 105 ft. high, standing on the sandy beach a few yards N. of the custom-house. It is a prominent mark from sea-ward in the afternoon; but is scarcely distinguishable even with a telescope in the morning. The same may be said of the town, which covers a good extent of the beach, but the houses are much hidden by the cocoa-nut trees. The houses of the English authorities amongst trees on little hills (about 200 ft. high), and  $2\frac{1}{2}$  m. N. of the light-house, form the best land-marks for Calicut; and vessels should anchor in 5 fathoms, mud, with those houses bearing N.E., or the light-house E., as it is all foul ground S. of that line even out to 6 fathoms.

Calicut has a large trade in pepper, coffee, cardamoms, rice, coir-rope, timber, &c. The

merchants find it more convenient, when the sea-breezes are strong, to load from the beach abreast of the hill-houses, 1 or 2 m. to N. of the light-house, where there is always less surf than opposite the town. A screw-pile pier has lately been erected to the N. of the light-house. Large kotiyehs and pattamars are built on the beach  $1\frac{1}{2}$  m. S. of the light-house, by the entrance of Calicut River or Creek, where the shore is also smooth, being partially protected by the Coote Reef.

**Sunken Rock.** There is a patch of rocky ground with 4 fathoms least water, having 6 fathoms, mud, all around it, bearing W.N.W. distant  $3\frac{1}{4}$  m. from the light-house. This is supposed to be the shoal discovered by Captain Hogg of the *Juliana*.

**Calicut Reef**, on which the sea breaks in one part almost always where there is only 2 ft. at L. W., is of irregular outline. This shoal-patch of 2 ft. is in its centre, and bears from the light-house S.S.W.  $\frac{1}{2}$  W.  $1\frac{1}{4}$  m., and is distant 6 cables' lengths from the nearest shore abreast. The S. extreme of this reef (which is generally called the **Coote Reef**, after the late E. I. C. sloop-of-war *Coote*, which was lost there) lies 2 cables' lengths to the S. of the centre breakers. To the S. and E. of the reef the bottom is soft mud; and there is a considerable extent of anchoring ground for small coasting craft in 2 and  $2\frac{1}{2}$  fathoms at L. W., partially protected from N.W. winds by the reef. A Black buoy to mark the W. extreme of this reef, and as a guide to small coasting vessels, was moored 2 cables' lengths W. by N. from the shoalest part. Sea-ward of the reef are numerous dangerous rocky patches, but none have less than 2 fathoms on them, and this foul ground extends more than 2 m. off shore. One patch of 13 ft. at L. W. bears S.W.  $\frac{3}{4}$  W.  $1\frac{1}{4}$  m. from the light-house, and another with a similar depth S.S.W.  $\frac{1}{2}$  W. rather more than 2 m.

**Light.** The light-house exhibits at 110 ft. above the sea a *fixed* White light, visible in clear weather at 12 m., but not lighted in the S.W. monsoon, from May 20th to Aug. 10th.

**Tides.** It is H. W. on F. and C., at Calicut and Beypore at 12 h. 15 m.; springs rise little more than 4 ft., but extraordinary tides as much as 5 ft.; neaps rise  $2\frac{1}{2}$  ft.

**Calicut S.W. Shoal** bears from the light-house about S.W. by W.,  $2\frac{1}{2}$  m. On the N. extremity of this shoal, with the light-house bearing E.N.E., are rocks in 4 fathoms, and on its W. edge rocks in  $4\frac{1}{2}$  fathoms. Over the centre of the shoals are numerous rocky heads, with 3 fathoms on them, and  $3\frac{1}{2}$  to  $4\frac{1}{2}$  fathoms between them. These are the rocks on which the *Juliana* first struck, when Captain Hogg anchored in 5 fathoms, light-house bearing E.N.E. On the inner or E. side of the shoal was 4 fathoms clear ground, with the water decreasing gradually towards the shore. When there is any sea on, it breaks, and may generally be seen. On the outer edge are rocks in  $3\frac{1}{2}$  fathoms with 2 and  $2\frac{1}{2}$ , and the remains of the *Juliana* lay in  $3\frac{1}{2}$  fathoms, S.W.  $\frac{3}{4}$  S., about  $1\frac{1}{4}$  m. from the light-house. There is said to be another dangerous ledge, bearing W. from the light-house, from  $1\frac{1}{2}$  to  $2\frac{1}{4}$  m. distant. On the N. side of this shoal, with the light-house E.  $\frac{3}{4}$  S., are 4 fathoms, and on the S. side with light-house E.  $\frac{3}{4}$  N., 4 fathoms; on the W. extremity  $4\frac{1}{2}$  fathoms.

**Ships approaching** from either the S. or the N., intending to anchor, ought not to come inside of 8 fathoms till the light-house bears E. by S., then steer for the anchorage. The best anchorage in Calicut Roads is, during the N.E. monsoon, in  $5\frac{1}{2}$  fathoms, with the light-house about E. by S., which is a convenient berth for the new screw-pile pier.

**ASPECT OF COAST.** From Ponany to Calicut, and onwards to Cotta Point, the coast is low, sandy, and fringed with cocoa-nut trees, with red laterite hills at the back. About 10 m. inland of Calicut are isolated hills about 800 ft. high. The best distinguishing mark for Calicut in the morning is the house amongst trees on the hill more than 2 m. N. of the light-house; in the afternoon the white column of the light-house shows well 10 m. off. **The Camels Hump**, or Wavut-mullay, about 7,000 ft. above the sea level, (the culminating peak of the Kundah Mountains which stand 20 m. W. of the Nilghiri Range), bears from Calicut Light-house N.E. by E.  $\frac{1}{2}$  E.  $23\frac{1}{2}$  m. It may be seen in clear weather, as soon as a vessel is on the bank of soundings; but in the hazy weather of March and April it is frequently indistinct from the anchorage off Calicut. The S. extremity of Kundah Range is rather abrupt, the mountains thence receding far to the E.

**BEYPORE, or BAIPUR RIVER**, in lat.  $11^{\circ} 10' N.$ , lon.  $75^{\circ} 47' E.$ , bearing S. by E. from Calicut, about 2 leagues distant, has 8 or 10 ft. on the bar at high tides; but the rise and fall is very little along the Malabar coast. This river takes its rise from the Ghauts, and runs through a country abounding with excellent teak-timber for ship-building. A little inland from this place there is a hill called the Dolphin's Head. About 4 leagues farther to the S., in lat.  $10^{\circ} 59' N.$ , is situated the small river of **Tanore**, and  $3\frac{1}{2}$  leagues distant from it to the S. by E. is Ponany River. Tanore may be known by a tuft of trees: the coast is very woody between it and Ponany.

**Beypore\*** is now become a place of importance at the terminus of the Madras Railway; but

\* At present there is no light-house at Beypore.

being so close to Calicut, and having no dangers near the shore except the rocks which are visible, the light-house of Calicut is made to answer for both places, and there is one Conservator only for the two ports. There is a good landing-place for boats on the E. side of the Chaliyam Rocks, which (at L. W. when the sea is rough and the bar of the river unsafe to cross) make a still-water harbour during N.W. winds. Boats should pass round the S. end of these rocks where they rise several feet out of the water and are deep to. At 2 m. up the river, on the N. bank, there is the Beypore Iron-Foundry, an extensive establishment, where castings of a considerable size, and other iron-works are executed. **Chaliyam** is the town on the S. side of Beypore River entrance, where the railway terminus is situated: it is low and woody, but at the back the land rises gradually. Kolahchoon, or two-tree hill, bearing S.E. by E., and distant about 3 m. from the river mouth, is about 200 ft. above the sea. Oorutmulla, the Dolphin's Head, is a wooded hill about 900 ft. above the sea, bearing E. by S.  $\frac{1}{2}$  S. distant 13 m. from Beypore: it shows well when seen over Calicut, or bearing S.E.; but when seen at the back of Tanore, or bearing N.E., is not at all a good landmark. **Tanore** is a town of some size on the sea-shore, about mid-way between Ponany and Beypore.

**PONANY, or PANIANI RIVER** (the tree near it), is in lat.  $10^{\circ} 47\frac{1}{2}'$  N., lon.  $75^{\circ} 53\frac{1}{2}'$  E.; the river is navigable only by small craft, the water being shoal. The coast from Calicut to this place, and from hence to Cochin, may be approached to 7 fathoms. The whole of this space is low and woody fronting the sea, but inland, the high ridge of mountains called the Ghauts extend nearly parallel to the coast to Cape Comorin, excepting a remarkable interruption, or gap of low land, between Paniani and Cochin, through which the land-winds usually blow stronger than any other part of the coast. Supplies and water are to be procured. H. W. on E. and C. before 1 o'clock, rise and fall 6 ft. There is a timber depot for teak, anjeli, erool, and other woods, on the S. side of this river, at  $\frac{1}{2}$  m. within the entrance. The timber is brought and floated down from the Anamullay forests.

**CHITWA** (the church), in lat.  $10^{\circ} 32'$  N., is situated on the N. side of the River Chitwa, or Palur, about 6 leagues S.S.E. of Paniani River. **Chitwa Town, or Chitwye** (at the entrance of a river, now usually called Chowghat, from the principal town, about 3 m. N. of the village of Chitwye), bears from Paliport N.N.W. 22 m. Small coasting vessels only can enter this little river at H. W. The sea-face of this part of the coast is all low and sandy, fringed with cocoa-nut trees, amongst which houses are visible at intervals. At the distance of 15 m. to E. of Chowghat is the base of the mountains; but off that place it is difficult to make out any particular peak. There is a little round red hill about 8 m. N.E. of Chowghat, about 250 ft. high, with a tree on its top. About 18 m. to the E.N.E. of Chowghat is a range of hills intermediate between the Ghauts and the coast; the S.E. extreme is the highest, and more than 1,000 ft. above the sea, and like a porpoise's back, rather abruptly terminating on the S. Ships anchor off this place in 6 fathoms, mud, abreast the river, which is wide; but the water being shallow, it will admit only boats or small vessels.

#### COCHIN AND TRAVANCORE COASTS.

**The Cochin Coast** from Paliport to within a few miles of Alipee, is all low and sandy, with cocoa-nut trees, having no elevated land whatever near the sea. The highest Ghauts are nearly 50 m. inland, though several spurs, with remarkable hills, stand between them and the sea, but none near enough to be distinguished, except when the weather is clear. The Anamullay Mountains stand in British territory, on the E. side of the province of Cochin, and to the S. of the Palghat Gap; they furnish good but small teak timber for ship-building, which is brought to the sea-coast at Ponany. The highest peaks of the Anamullay range are upwards of 6,000 ft. above sea-level, but nearly 50 m. inland. **Colungode Bluff**, the N.W. extreme of these mountains, estimated at 5,000 ft. high, is a remarkably steep bluff facing the N. It is about 40 m. E.  $\frac{1}{4}$  N. of Chowghat, and makes the S. boundary of the Palghat gap, through which the Ponany river flows, and the Madras Railway now passes, and through which the land-winds blow so fiercely between Nov. and Feb. This remarkable gap, more than 4,000 ft. lower than the hills on its N. and S., is on the meridian of  $76^{\circ} 45'$  E., and between the parallels of  $10^{\circ} 33'$  N., and  $10^{\circ} 52'$  N. In the fine weather of the N.E. monsoon, the Colungode bluff is very conspicuous, but in the hazy weather, after February, it is seldom seen.

**The Travancore Coast**, from Alipee to Comorin, is generally low and sandy, fringed with cocoa-nut trees, but patches of red cliffs of slight elevation here and there break the otherwise continuous line of sand. The Travancore Mountains, though generally spoken of by navigators as a part of the Western Ghauts, are indeed separated from the latter by a low neck of land, the Palghat



Valley, which has proved a most useful feature in the railway communication between E. and W. coasts. The length of this S. mountain chain, extending from a few miles N. of Cape Comorin to the Valley of Palghat, is nearly 200 m. The W. brow, overlooking the coast of Travancore, is, with little exception, abrupt; on the E. side of the culminating range the declivity is in general gradual, the surface in many places being extensive table-land, sloping gently and nearly imperceptibly to the E.-ward. In the last half of the year many a cascade of great height is visible from sea-ward, pouring down the steep declivity of these W. ghauts, which present so vast and lofty a front to the violence of the S.W. monsoon.

The principal peaks of the Travancore Ghauts are as follows: Miandraghiri, between 3,000 and 4,000 ft. about 20 m. N. of Comorin, and Cuchy Mulla, nearly 5,000 ft., the same distance N.E. of Trivandrum. Between these peaks the culminating range has a N.W. direction, but afterwards trends a little E. of N., more away from the coast; and its highest mountains, though loftier, are not so often visible at sea; they form the boundary between the independent state of Travancore on the W., and the British province of Tinivelly on the E. To the E. of Quilon there are broad, high peaks, estimated at 5,000 ft. above, and more than 30 m. from the sea. The S. portion of the W. Ghauts, from Comorin to Palghat (which run like a spine from S. to N., thus forming the water-parting between the E. and W. coast rivers), being exposed to all winds from E., round by the S. to W., there is scarcely a day when rain-clouds may not be seen hiding for a time the summits of the high land. Towards the vernal equinox (after which the air gets saturated with moisture and is hazy) the Ghauts N. of Quilon up to Calicut can seldom be seen. Midway between the above lofty summits of the Ghauts and the low sea-coast, the country has several hills of moderate elevation, useful as land-marks. Beginning from the S., mention may be made of the isolated conical mount, in lat.  $8^{\circ} 8' N.$ , and lon.  $73^{\circ} 30' E.$ , near Cape Comorin, and taken as the cape by seamen when approaching the coast from the W. The next conspicuous peak is Maruvatur, about midway between Miandraghiri and the Crocodile Rock, and 10 m. N.W. of the conical mount. On the S.E. of Trivandrum, and again to the N. of that capital, hills, averaging about 400 ft. lie parallel to the shore, some 4 or 5 m. off. Near Anjengo there are a few low hills, but above that place extensive back-waters become the peculiar feature, overspreading great portions of the low tract of country.

Vessels bound to any port on the W. coast of Hindostan, and to the Persian Gulf during the N.E. monsoon, from China, Australia, and the Bay of Bengal, or from Europe, should sight Ceylon, and make the coast of India somewhere near Cape Comorin, and thence hug the coast to profit by the land and sea-breezes. The coast from Cape Comorin takes a general N.-westerly direction for nearly 300 m. to Mount Dolly. From the village of Comorin to Alipee belongs to the Rajah of Travancore; thence to Paliport (with the exception of the port of Cochin, under the British government) is the territory of the Rajah of Cochin; above Paliport to Mount Dolly is the British province of Malabar.

**PALIPORT RIVER.** Cranganore, or Kodungalore, in lat.  $10^{\circ} 12' N.$ , where the Dutch had a fort and factory, lies on the N. side of, and  $2\frac{1}{2}$  m. within the mouth of a river called Paliport, the entrance to which bears from Cochin N. by W.  $\frac{1}{2}$  W., 14 m. Between these two places is an extensive soft mud bank, which (like that off Alipee) shifts its position, also rendering several portions of this shore free from surf, and consequently safe landing-places. At 5 m. S. of Paliport this **soft mud bank**, having little more than 1 fathom on it, extends nearly 3 m. to sea-ward of the cocoa-nut trees. The river has a bar, and is only available for small coasting craft. The times of H. W., and the rise of tide, are almost the same as at Cochin, but more regular; and the rise and fall is a little greater. Coir, timber, and some pepper, are exported from these rivers situated between Calicut and Cochin. From Cranganore the coast stretches S. by E.  $\frac{1}{2}$  E.,  $4\frac{1}{2}$  leagues to Cochin; the general direction of it from Calicut to the latter place is S.S.E., but varies at different parts between S. by E. and S.E. by S. The depths are 20 and 22 fathoms 6 leagues off shore, the low land then just visible from the deck; and 30 or 32 fathoms is about 8 leagues from it. From lat.  $10^{\circ} 30' N.$  to the parallel of Cochin, the edge of the bank has a steep declivity, from 36 or 40 fathoms to 100 fathoms, no ground, about 9 or  $9\frac{1}{2}$  leagues off shore.

**Narrakel Flag-staff**, in lat.  $10^{\circ} 2' N.$ , marks this new port, which the Cochin Rajah has established as a safe place (like Alipee) during the S.W. monsoon, when there is no surf on the beach, and easy communication can be had in any boats, as the water is smooth under a depth of 3 fathoms, owing to the **mud flat**, which lies off this part of the coast. The position of the place is pointed out by the flag-staff, and by the Cruz-Milagre Gap, a conspicuous opening in the belt of cocoa-nut trees, which however is not seen till the ship is abreast of it, when coming from the S., but the Cochin Light-house is a good guide, being only 4 m. from Narrakel.

**Narrakel Anchorage** in bad weather, or during the S.W. monsoon, serves as a sort of refuge

for those ships which cannot remain in Cochin Roads. When a S. or a S.W. gale comes on, they should weigh (with ebb tide if the wind be scant), and steer to N.W. by N., till abreast of Narrakel; then run in to 4 or 5 fathoms, which is nearly 3 m. off shore, with the flag-staff between E. by S. and E.S.E., and the Cochin Light-house about S.E. by S. Boats communicating with the shore should steer direct for the flag staff, where they can be safely hauled up, and should avoid the heavy outer surf line as far as possible. Cochin can be reached in two hours; provisions and water easily obtained, and repairs or refitments can be done.

**COCHIN** (the flag-staff) is in lat.  $9^{\circ} 58' N.$ , lon.  $76^{\circ} 15' E.$ , bearing from Alipee N. by W. 29 m. This port belongs to the British Government, and has a master attendant, a magistrate, and pilots. The English territory is very limited, and all on the S. side of the river entrance. The adjoining land belongs to the Rajah of Cochin. The British Resident or Commissioner has a large house on Balgotti Island, nearly 2 m. N.E. by E. of Cochin. There are many English and Dutch merchants here, with a Government medical officer and hospital, and a custom-house. An electric telegraph has been laid between this place and Point-de-Galle, also to Bombay and Madras. The town, which is situated on the S. side the entrance of the most considerable river on this coast, is a place of consequence as a naval depôt, the country abounding with excellent teak-timber for ship building, and coir for cordage. Several ships have been built here for the merchants of Bombay, measuring from 600 to 1,000 tons. The land at the back of Cochin is all low: and although the houses and the light-house on the sea-face of the town are white, they do not show well, except in the afternoon; but the flag-staff is high above the trees and houses, and easily perceived with a telescope, as signals are always made when ships are in sight.

**The Bar** at the river's mouth is a narrow strip of sand, having 13 ft. on it at L. W., but the rise and fall being only 3 ft. at spring tides, pilots will only take in vessels drawing less than  $14\frac{1}{2}$  ft. The bar is marked by two buoys, the S. one chequered and pear-shaped, the N. one a dull white spire-buoy. The best channel does not always remain at the same spot. There is at times a surf on the bar, occasioned by the strong ebb running out against the sea-breezes when there is any swell outside. Strangers ought, therefore, in running for the river in their boats, to be careful to keep in the proper channel, as several accidents have happened to boats crossing the bar after dusk. The river inside is deep, 7 to 9 fathoms are found abreast of the flag-staff and building yards; vessels are snugly berthed there by the master attendant, and generally load at a pier.

**Supplies.** Cochin is an important ship-building depôt, and repairs of any nature to sailing vessels can be executed; but teak timber is not so cheap or plentiful as formerly, though other useful woods are procurable. Water, poultry, sheep, pigs, and rice and other provisions in moderation may be procured; but the water of this place is not recommended, unless the supply comes in boats from Alwey, a town several miles to the N.E. of Cochin.

**Light.** A fixed White light, in lat.  $9^{\circ} 58' N.$ , lon.  $76^{\circ} 14\frac{1}{2}' E.$ , is exhibited from sunset to sunrise, on a white column near the beach, to sea-ward of the town, 95 ft. above the sea-level, and seen 14 m. off. This new light-house is 800 yards to S.W. by W. of the Port Flag-staff, where the old light used to be hoisted on the top of an old church-tower.

**Anchorage.** Vessels should anchor off Cochin with the light-house between E. by S. and E  $\frac{1}{4}$  N., in 5 or 6 fathoms, mud, about 2 m. off shore. They should not come under 6 fathoms in the S.W. monsoon, as a heavy swell then rolls in.

**Tides.** The stream of tide is very strong, and its times of change are very irregular, influenced by the evaporation from, or the fall of rain upon, the immense area of backwater, of which the Cochin river mouth is the outlet. At the anchorage abreast the bar the ebb sets W.N.W., but the tendency of that tide is to the N.W.; its racing over the sand-banks, on the N. side of the river entrance, produces heavy breakers there always, which a ship's boats should avoid.

It is H. W. on F. and C., between 1h. and 2h.; ordinary springs rise  $2\frac{1}{2}$  ft., neaps  $1\frac{1}{2}$  ft; but sometimes the water remains at the same level (about its mean level) during a whole day by the custom-house tide-gauge. This peculiarity may be attributed to the great evaporation from the immense back-water of Cochin, as above stated; but it is believed that there is a little more rise and fall on the bar, and on the adjacent coast, than inside the river: extraordinary springs rise a little more than 3 ft.

Night tides are highest all along this coast from Nov. to March, and day tides from May to Aug.; in the other months they are about equal.

**ALIPEE, or AULAPOLAY**, in lat.  $9^{\circ} 30' N.$ , lon.  $76^{\circ} 20' E.$ , bearing S. by E., from Cochin, distant  $9\frac{1}{2}$  leagues, is the principal sea-port of the Rajah of Travancore. It communicates with Cochin by a canal commencing inshore from the coast about 200 yards, and running into the vast back-water. The place may be known from the offing, in coming from the N.-ward, by a large white house, which is hid by some cocoa nut trees, when approached from the S.-ward. This village

is situated in the Kingdom of Travancore, and carries on a considerable trade in teak-timber, betel-nut, coir, and pepper. Large ships used to anchor in 5 or  $5\frac{1}{2}$  fathoms, with the large white house N.E. by E.; or, a ship not drawing more than 18 ft. water, in 4, or  $\frac{1}{2}$  less 4 fathoms, with the flag-staff bearing N.E., distant about  $2\frac{1}{2}$  m. It is a safe roadstead all the year round, being fronted by a soft mud bank, on which a vessel might ride with less risk than at any other part of the coast. A shoal-bank of from 6 to 9 ft. extends about  $1\frac{1}{2}$  m. off shore. The cause of this mud bank is supposed by Mr. Crawford (Commercial Agent of the Travancore Raj) to be the greater elevation (by 4 ft.) of water level in the vast back water, over that of the outside sea; thus the hydraulic pressure forces out mud and vegetable matter through mud volcanoes which (in the S.W. monsoon) form along the beach, and in the shallow water. Mr. Crawford also by boring found evidence of a subterraneous communication through mud between the back-water and the sea. This may account for the accession of mud, but doubtless (as explained by the Editor of this book, who surveyed Alipee about 16 years ago) the monsoon swell keeps this accumulated mud so stirred up as to deaden its activity and produce the remarkably smooth water which constitutes **Mud Bay** (as it was called by the pioneers of commerce on the Malabar coast) the safest harbour along it.

**Anchorage.** During the S.W. monsoon, although the surf breaks on the shore to the N. of this place, and the sea is white with foam outside, there is at Alipee a large extent of smooth water, on the outer part of which a vessel may conveniently anchor in  $4\frac{1}{2}$  fathoms, and keep up a communication with the shore. In the fine season, a vessel, not drawing more than 18 ft. water, may anchor in 4 fathoms, or a trifle less, the bottom being such soft mud.

Vessels anchor with the flag-staff bearing about E. by N. to N.E. by E.; but, as the mud-bank changes its position, advice should be taken from the master attendant, whose boat is sure to communicate with every ship. When, during the S.W. monsoon, trade cannot sometimes be carried on at Cochin, the port of Alipee is always available; and the back-water and canal communication between these two places is an immense advantage.

**Light.** Alipee has a flag-staff which shows above the trees, and near it, a white light-house, 85 ft. high. It has a *revolving* white light, attaining its greatest brilliancy every *minute*. The light is of the second order, elevated 100 ft. above mean sea-level, and should be seen in clear weather 15 m.

**The Coast.** Between Cochin and this place the coast is very low, covered with trees, and may be approached to 6 fathoms in a large ship, the bank being very even to 5 fathoms, about 1 or  $1\frac{1}{2}$  m. from the shore. H. W. on F. and C. at 1h. 30m.; rise about 3 ft.

**Porca, or Pooracaud,** in lat.  $9^{\circ} 21' N.$ , bearing about S. by E.  $\frac{1}{2}$  E., 3 leagues from Alipee, is another village belonging to the Rajah of Travancore, of considerable extent, but the houses are not easily seen except when near the shore. Coir, plank, or timber for ship-building, and pepper, are exported from these places, and from some of the adjacent ports. The coast continues low and uneven, safe to approach to 5 or 6 fathoms. The anchorage is opposite the village in  $5\frac{1}{2}$  or 6 fathoms,  $1\frac{1}{2}$  or 2 m. distant. Between Alipee and Porca a village named Crahul is situated, with cajan storehouses close to the water's edge: it carries on some trade. **Carunapale** lies to the N. of Iveker River, and when running along the coast in 8 fathoms, it may be easily distinguished by a considerable opening like the mouth of a river.

**Iveker or Aybika River,** in lat.  $8^{\circ} 56\frac{1}{2}' N.$ , lon.  $76^{\circ} 32' E.$ , is 4 m. to the N.W. of Quilon, and has on its banks a village of the same name, subject to the Rajah of Travancore. The river has a wide entrance, communicating with several other rivers, one of which extends parallel to the coast, and unites with Cochin River, forming a safe inland navigation. This place admits only boats over the bar at the entrance, there being but 5 or 6 ft. on it at H. W., and the bottom consists of hard sand and gravel, as far out as 8 fathoms. A large ship touching here to take in plank, or other articles, may anchor in 7 fathoms, with Quilon Point bearing S.E. by E., and the middle of Iveker River's mouth N.E. by E.; or in 6 fathoms hard sand, with the river's mouth N.E.  $\frac{1}{2}$  E., and Quilon Flag-staff S.E. by E.  $\frac{1}{2}$  E., off shore about  $2\frac{1}{2}$  m. It would not be prudent to go farther in with a large ship. The soundings are very irregular under 8 fathoms, particularly to the N.-ward and S.-ward of this anchorage, having coral heads of 2 to 4 fathoms nearly 2 m. off shore. There is here some export trade of timber, pepper, ginger cardamoms, lac, and turmeric. The bar of the river has little more than 1 fathom at high tide; within the entrance, the area of shallow water is very great, and there is canal communication with Cochin to the N., and Trivandrum to the S.

**The Coast** from Iveker River to Cochin is all sand, and fringed with cocoa-nut trees. The town of Purcaud or Porca, lying 9 m. S. of Alipee, has a considerable trade in coir, timber, pepper, &c. The sea coast of the Travancore Rajah's dominions terminates about midway between Alipee and Cochin. Alipee bears N.N.W. 40 m. from Quilon Point. The coast between, except near



Tangacheri, is sandy, and nearly straight; but 10 m. N. of Quilon there is a slight indent, which does not, however, amount to 1 m. from a straight line drawn between the two places. The shore is safe to approach into the depth of 5 fathoms, mud; but it must be remembered that towards Alipee this depth is found nearly 3 m. off.

**QUILON or QUILON** (the Tangacheri Fort), in lat.  $8^{\circ} 53\frac{1}{4}'$  N., lon.  $76^{\circ} 34'$  E., bears S.S.E. about  $10\frac{1}{2}$  leagues from Porca; the coast between them is low, covered with trees, and may be approached to 6 fathoms, till near the entrance of Iveker River. Quilon Bank, of hard ground, extends from Iveker round Quilon Point, where it becomes very uneven, and dangerous to approach under 12 or 13 fathoms; for under these depths, abreast the Point, there are sudden overfalls from 9 to 4, 3, and 2 fathoms rocky bottom. The reef or foul ground of Quilon should not be approached under 12 fathoms. Quilon, or properly Koilon (in ancient maps Coulan), bears from Anjengo N.W.  $\frac{1}{2}$  N. 18 m. A small British force is stationed here; the ground on which the cantonment stands rises by a gentle ascent from the sea, above which it is about 40 ft. Between Anjengo and Quilon the coast forms a bight, which is deepest about 5 m. S.E. of the latter place, at which spot an extensive back-water makes a gap in the line of trees fronting the coast.

**Quilon Point** is a projecting part of the coast, and the outer point, which is called Tangacheri, on which are the flag-staff and master attendant's house, amongst high cocoa-nut trees, is slightly elevated above the adjoining land. One large bushy round tree above the rest may be seen beyond 10 m. from a ship's deck; the flag-staff cannot be seen so far off unless the colours are hoisted. This point is about 2 m. W. of Quilon cantonments, where another flag is hoisted by the commandant of the troops. The coast for more than 2 m. N. of Tangacheri flag-staff is rocky and slightly elevated, having half way along it a white church, which in the afternoon shows well.

**Tangacheri Reef.** Quilon, besides being a very projecting point of the Travancore coast, is rendered still more unsafe to approach by the bank of hard ground, called the Tangacheri Reef, extending  $1\frac{1}{2}$  m. to the S.W., and 3 m. to the W. of the Point, and 6 m. along the coast to the N.-ward. The bank should not be approached under 13 fathoms water by day, or 17 fathoms at night, as it is deep-to. In standing to the N.-ward along the coast at night with a fresh land-wind, be careful to increase the distance from the shore as the vessel approaches Quilon.

**Anchorage.** To the S.E. of the reef the coast forms a bight, where ships may anchor off the town and military station of Quilon, in 5 or 6 fathoms, sand, with Tangacheri flag-staff bearing N.W. 1 m. distant; but as there are rocky overfalls a little to the E. of this position, and the master attendant's boat will always come off, it is better to wait for that officer to berth the ship. During the fine season from Nov. to April, trading or trooping vessels can lie close in-shore in safety. The point and reef shelter this anchorage from N.W. winds; but if the weather is cloudy and unsettled, it will be prudent not to place the ship too close to the shore.

**Soundings.** The bank of soundings off Anjengo extends 25 m. from the main; off Quilon 28 m.; off Alipee 30 m.; and off Cochin 35 m. Off Quilon Point there are 20 fathoms at 5 m. off shore; but farther to the N. that depth will be found farther from the coast: off Alipee there are 20 fathoms at 12 m. distance, and off Cochin the same depth at 16 m.

There are 10 fathoms only 1 m. off Anjengo, but farther to the N. that depth is 2 m. off shore; abreast Quilon Point there are 10 fathoms on the foul ground 3 m. from land; to the W. of Iveker River at 4 m. from land, and so gradually increasing its distance, until at Alipee there are 10 fathoms as far as 8 m. from the coast; above this latter place the 10 fathoms line runs N.  $\frac{1}{2}$  W., again approaching the coast, until off Cochin it is  $5\frac{1}{2}$  m. from land. Thus it will be seen that the bank, of such soundings as the hand-lead will give, extends farther off Alipee than off any other place yet described.

To the N. of Iveker, as far as Calicut, the soundings are all regular, and the bottom mud; whereas below Quilon to Cape Comorin it is sand, and rocky in many places.

**ANJENGA, or ANJENGO** (the Fort), in lat.  $8^{\circ} 40'$  N., lon.  $76^{\circ} 45'$  E., bears from Quilon S.E.  $\frac{1}{4}$  S., distant 6 leagues; when 3 m. to the S.-ward of the latter, the coast may be approached to 10 fathoms, which will be  $1\frac{1}{2}$  m. from the shore. In clear weather it may be known by a remarkable peak of the Ghauts, sometimes called Anjenga Peak, about 8 leagues inland, higher than the adjoining mountains, which is in one with the fort bearing E. by S. This peak (the name of which is Cuchi-Mulla) may be seen from abreast Quilon, and off Cape Comorin.

**Anjengo Flag-staff** is between 4 or 5 leagues to the W.N.W. of Trevandrum Observatory, and bears from Covilum Point N.W.  $\frac{1}{4}$  N., 20 m.; but, as the fort and a few houses (that are visible through the trees) are low, this place is not easily distinguished from even a short distance. A church with a white front will be seen on the beach 2 or 3 cables' lengths to the N.W. of the fort, and a bungalow on the hills 2 m. N. of it. There is some red table-land about 4 m. to the N. of Anjengo, which may denote the approach to it in coming from the N.; this and other similar

table-land along this coast, being much higher than the cocoa-nut trees, when seen from a ship's deck at a greater distance than 7 m., give the mariner an idea that these red cliffs come down to the water's edge; whereas the shore is all sandy from Covilum to Quilon.

**The Anchorage** off Anjengo under 10 fathoms is foul rocky ground; but outside of that depth the bottom is sand and shells. Ships ought, therefore, not to anchor under 10 or 11 fathoms, the ground being good in these depths. A convenient berth is with the Flag-staff about N.E. by E., and Brinjall Hill about S.E. by E., in 11 or 12 fathoms mud, off shore 1 m. Coir may be procured here, but the water is indifferent and scarce, and few articles of refreshment are to be obtained: ships load pepper here, and at Quilon, also at Calicut, Tellicherry, and Mahe, which is brought off in tonies or country boats, adapted for passing through the surf. There is said to be fresh water at the Red Cliffs to the N.-ward of Anjenga, but it cannot be got conveniently: a considerable surf generally prevailing on the coast, particularly to the S.-ward, renders it frequently unsafe for ships' boats to land. The depths of water between Cochin and Anjenga are 20 and 22 fathoms, from 2 to  $2\frac{1}{2}$  leagues off, 30 to 34 fathoms about 5 and  $5\frac{1}{2}$  leagues; and the edge of the bank of soundings is distant 9 or 10 leagues from the shore. There is an admirable system of inland communication by canal and natural back-water, in fast-pulling boats, from below Anjengo through Quilon and Alipée to Cochin, and 50 m. beyond.

**TREVANDRUM OBSERVATORY**, in lat.  $8^{\circ} 30\frac{1}{2}'$  N., and lon.  $76^{\circ} 57'$  E., established by the Rajah of Travancore, is situated on an isolated hill, about  $2\frac{3}{4}$  m. inland, and to the N. of Trevandrum Town, and 196 ft. above the level of the sea.

**Trevandrum**, the capital of the independent principality, Travancore, and the seat of the British Residency, is  $5\frac{1}{2}$  m. N.N.W. of Covilum. The town is of considerable size, having its greatest length N. and S.; on the latter extremity stands the fort, about  $\frac{1}{2}$  m. square, on ground elevated 100 ft. above the sea. The Rajah's palace, within its precincts, is a large handsome edifice in the European style; it is a little way inland, more than 2 m. from the sandy beach of Pondera, or Pootoray. The Trevandrum Observatory is on a hill, more than 2 m. N. of the capital, and 200 ft. above the sea; its two white domes are very conspicuous, but having been established since the province was surveyed, its position is not accurately defined.

**Pondera**, off which vessels communicating with Trevandrum should anchor, has a flag-staff on the sandy beach, which bears N.W., and is 5 m. from Covilum, and is 2 m. to the S.W. of Trevandrum Fort. No ship's boats should attempt communication with the shore, when there is a heavy surf in the N.E. monsoon. The coast is sandy, with cocoa-nut and other palms.

**Anchorage.** As the shore is deep-to, a vessel should anchor in 12 fathoms, sand,  $\frac{1}{2}$  m. from Pondera Flag-staff bearing N.E. and nearly in line with the Observatory.

**Mountains.** Inland of Trevandrum the Ghauts are of great elevation; Cuchi Mulla, the highest peak (called sometimes by early navigators, Anjengo Peak), is more than 4,000 ft. high, and bears N.E. by E.  $\frac{1}{4}$  E., distant 21 m. from the beach by Pondera Flag-staff. Between this high range and the coast some small hills appear, the most remarkable of which is Naimun Hill, or Makunamulla, a regular sloping round mount about 600 ft. above the sea, called by former navigators Brinjall Hill. This Hill bears E. from the anchorage off Trevandrum, and being only 5 m. from the sea, is visible at a considerable distance from the S., and from Anjengo Roadstead. There are little white churches in almost every village along this coast. Between Ruttera Point and Anjengo, the land, at the back of the cocoa-nut trees which fringe the coast, is hilly and undulating.

**COVILUM, or RUTTERA POINT**, in lat.  $8^{\circ} 24'$  N., lon.  $76^{\circ} 58'$  E., bears S.E.  $\frac{1}{2}$  S. from Anjenga, distant  $6\frac{1}{2}$  leagues: it is a piece of low, level land, terminating in a bluff, fronting the sea, higher than the contiguous coast, but projects very little. About  $3\frac{1}{2}$  m. to the N. of the Point, there is a village, established not long ago by the Rajah of Travancore, called Pondera, having a high flag-staff with several straggling buildings between it and Anjenga. The coast in this space is low, and abounds with trees; it is bold to approach, having 12 or 13 fathoms at a mile distant, 25 or 26 fathoms about 2 and  $2\frac{1}{2}$  leagues' distance; and the edge of the bank of soundings is about 9 leagues distant from the shore. Covilum, or Ruttera Point, bears from Enciam Islet about N.W.  $\frac{1}{4}$  W.  $16\frac{1}{2}$  m. The coast between them, except near Covilum, is sandy, nearly straight, fronted with cocoa-nut trees, and safe to approach. Covilum is a piece of low level land terminating in a bluff cape higher than the contiguous coast, but it projects very little, and has a building upon it; there are three little projecting points close to the S.E. of it, and at the distance of 3 m. another point, 1 m. to the E. of which is the village and back-water of Karuchel.

We formerly described a point called Veniam as  $7\frac{1}{2}$  m. to the S.E. of Ruttera Point, and "formed of steep bold land, or reddish cliffs, considerably elevated, having on the N. side a small river, and a village at the N. extremity of the high land that forms the point." This is evidently

a description of the Colatur Hill and the Village of Powaur as seen from the S., from which point of view the Hill would look like a point projecting to N., if the vessel was far enough off to dip the trees. The coast-line hereabouts, according to Captain Selby's survey, is all sandy, and fronted with cocoa-nut trees. Colatur Hill (formerly called **Point Veniam**) bears from Enciam Islet N.W.  $\frac{1}{4}$  N. distant 8 m. From Point Veniam the coast takes a direction about S.E. by E. to Cadiapatam Point, 6 leagues; the land facing the sea is mostly steep and high, of red appearance in some places. About half-way between them, the **Island Enciam**, having a church and some other buildings on it, is situated near the shore, and rocks above and under water project from it to a small distance. To the N. of these lie the town and river of **Tengaypatnam**; this river having a bar at the mouth, can only be entered by large boats in the rainy season, although navigable inside at all times, and extends a considerable way inland. There are several small villages and churches along this part of the coast, and some of these *ancient* Nestorian churches may be seen interspersed along the shore from hence to Cape Comorin. A little to the E. of the Island of Enciam, the steep land near the sea has a red aspect (resembling that about Point Veniam), between which and Cadiapatam Point is situated the village Kolatchy or Colachul, where the coast forms a small bay, or concavity. Kolatchy Church is in lat.  $8^{\circ} 10\frac{1}{2}'$  N.

**ENCIAM ISLET**, in lat.  $8^{\circ} 12\frac{1}{2}'$  N., lon.  $77^{\circ} 9'$  E., is  $5\frac{1}{2}$  leagues to S.E. of Ruttera Point, and bears from Cadiapatam Point N.W. by W. 10 m.; this Islet is rocky, has a church on it, and lies about  $\frac{1}{2}$  m. off the sandy shore; rocks, above and below water, project from it to a small distance. A little to the E. of the Islet the steep land near the sea has a red appearance; indeed there are numerous patches of red land between Comorin and Quilon, but cocoa-nut trees fringe the most part of the coast. A depth of 13 fathoms will be found close to the outer rocks off Enciam; at night a vessel should not shoal under 20 fathoms, which depth is only 2 m. from the rocks.

**COLACHUL**. This place is on the shore just half-way between Cadiapatam and Enciam Islet; off it there are several rocks above and below water. At the village of Colachul, troops sometimes embark in the fine season, the out-lying rocks forming a partial break-water, within which landing is comparatively easy. There is a remarkable tree on the undulating ground of Aunipauri Hills, elevated more than 250 ft. above the sea, bearing from Enciam Islet N.E. by E.  $\frac{1}{2}$  E.  $4\frac{1}{2}$  m., and about 4 m. to N. of Colachul Village.

**Colachul**, in lat.  $8^{\circ} 10'$  N., lon.  $77^{\circ} 14'$  E., is about 25 m. from the foot of the Asambu Hills, a new coffee-growing district of Travancore, between 2,500 ft. and 3,500 ft. above the sea-level; and the coffee is now exported direct from this place. The first British ship called there in March, 1871, and others have been since. There are no port-dues at Colachul as yet, nor has the anchorage been properly surveyed; but ships of good size can sail between some of the outlying rocks, and ride at anchor to leeward of them in smooth water.

**Anchorage**. Anchor with the tree N. by E., and the highest part of Cadiapatam Red Point E.S.E., in 11 or 12 fathoms water, which position will be  $3\frac{1}{2}$  m. to the N.W. of Kotah Rocky Islet. Native pilots can take the vessel further in to a good berth.

**CADIAPATAM POINT**, in lat.  $8^{\circ} 7\frac{1}{2}'$  N., lon.  $77^{\circ} 18'$  E., bearing W.  $\frac{3}{4}$  N. 14 m. from Cape Comorin, and S.E. by E. 10 m. from Enciam Islet, is steep, rather high, and of a very red appearance, with a few trees near its extremity. A heavy surf prevails all along this part of the coast, between Comorin and Cadiapatam, and only catamarans are used by the natives; no ships' boats should attempt landing. To the S.W. of this Point there are two rocky islets about  $1\frac{1}{2}$  m. from each other, and distant 1 and  $2\frac{1}{2}$  m. from the Point, surrounded by rocks under water, and foul ground; they are named Adumdah and Kotah. About 1 or  $1\frac{1}{2}$  m. S.W. by S. from Adumdah Islet, and  $2\frac{1}{2}$  m. from the Point, lies the **Crocodile Rock**. From this Rock, the extreme low point of Cape Comorin bears E., distant  $5\frac{1}{2}$  leagues, the S.-most high land over the Cape E. by N.  $\frac{1}{4}$  N., Cadiapatam Point N.E.  $\frac{1}{2}$  N., Adumdah Islet N.N.E., Kotah Islet N.N.W., and the N. extreme of the land N.W.  $\frac{1}{2}$  N. Close to it, at  $1\frac{1}{2}$  m., there are 13 and 14 fathoms, 17 fathoms about  $2\frac{1}{2}$  m. off, 19 fathoms about  $3\frac{1}{2}$  m., 22 fathoms about 7 m., and 23 fathoms about 2 m. outside of it, sandy bottom.

**CROCODILE SUNKEN ROCK**, in lat.  $8^{\circ} 6'$  N., lon.  $77^{\circ} 15'$  E., bears S.W. from the above point nearly 3 m.; close to it are depths of 14 and 16 fathoms, and 20 fathoms  $\frac{1}{2}$  m. outside. A part of this rock appears sometimes above water, but it does not break at all times, nor is it visible at H. W. when the sea is smooth. **At night** do not approach it\* under 25 fathoms water. Between the Crocodile Rock and Cadiapatam Point is the rocky islet Adumdah, and  $1\frac{1}{2}$  m. to

\* A light has been proposed to be placed near the Crocodile Rock, either on one of the islets or on the main land abreast. Another light has been recommended for Cape Comorin.



W.N.W. of this islet is another called Kotah. Both are surrounded by sunken rocks and foul ground, but there is a channel between the two, and between each and the Crocodile Rock. Kotah bears from the Crocodile N.N.W. nearly 2 m.

**The Coast.** From Ruttera Point to Cadiapatam Point, the bank of soundings extends about 9 or 10 leagues from the land; 30 fathoms is from 4 to 5 leagues off; 25 or 26 fathoms is  $2\frac{1}{2}$  and 3 leagues from the shore, which should not be approached under these depths about Cadiapatam Point, during the night or in dark weather, on account of the straggling rocks off that place: to the W. of these rocks the coast is not so dangerous. In passing between them and Ruttera Point, from 22 to 26 fathoms is a good track with the land-wind; or the coast may be approached to 18 or 20 fathoms occasionally; between Enciam Island and Ruttera Point, a ship may borrow into 16 or 17 fathoms. From Cadiapatam Point, the low sandy extremity of Cape Comorin bears E. by S., distant 5 leagues; the coast between them having a little concavity in some places, is low and sandy close to the sea, rising in a gentle acclivity to the base of the mountains situated a few miles inland. Close to the shore some churches are seen, and 4 m. to the W. of the cape lies the small river Manacoudy, with rocks barring its entrance, and some buildings near it. Between this place and the grove of trees at the village of Cape Comorin, the low country seems divided by a wall or trench, stretching from the shore to the mountains, and fortified by mounds of earth. The land between the Ghauts and the shore, from Point Veniam to Cadiapatam Point, may be seen 7 leagues; and the mountains inland 18 or 20 leagues in clear weather. In passing along this part of the coast, when clear of the rocks off Cadiapatam Point, the shore may be approached to 22 or 20 fathoms toward Cape Comorin, which will be about 5 m. off; but in the night or in hazy weather, it ought not to be approached so close.

**CAPE COMORIN**, in lat.  $8^{\circ} 5' N.$ , lon.  $77^{\circ} 31' E.$ , the S. extremity of Hindostan, is a low sandy cape, with a small pagoda at its extreme point; and (a little to the W. of this) the British Resident's bungalow with a flag-staff. About 2 cables' lengths to the S.E. of the sandy cape is a sloping rocky islet high above water, with other rocks about it, on which the sea breaks. To the W. of the Residency the shore of the cape is sandy and barren, but to the E. it abounds with trees, amongst which, and 3 m. to the N. of the pagoda, is Watakota Fort. The pagoda is a low, white, square building near the water's edge,  $\frac{1}{2}$  m. to the N. of which stands the village of **Comorin**, called by the natives **Cania Cumari**, amongst cocoa-nut trees, with high reddish ground at the back; and  $\frac{1}{2}$  m. farther N.E. is another little sandy cape, with rocks off it. The land of the cape rises from the sea with a gentle acclivity to the base of the nearest mount, which is of a sharp conical form, 1,400 ft. above the sea, at 4 m. to the N.W. of the pagoda. It is separated from the range of Ghauts, which at its back rise in majestic sharp peaks, chained together, and forming a ridge, which is in one with the cape bearing about N.

**Approaching the Coast** from the W., it must be remembered that the above-mentioned isolated conical mount can never be seen, even in the clearest weather, at a greater distance than 35 m. Some prominent peaks to the N. of it may be seen 50 and 60 m., and the most S. visible one may be mistaken for the conical mount by ships passing at a great distance. The most likely one to be mistaken for it is a mountain 10 m. to the N.W. of it, and called Maruvatur; this is more than 2,000 ft. high, and bears from Cadiapatam Point N.N.E.  $\frac{1}{2}$  E., distant 9 m. Another peak, called Miandrighiri, between 3,000 and 4,000 ft. above the sea level, bears N.E. by N., distant about 11 m. from Maruvatur.

**SOUNDINGS.** The bank of soundings extends 50 m. off shore to the S. and W. of Cape Comorin. At the distance of 8 m. from the shore S. of the cape there are 20 fathoms; but farther to the N.W., as far as Quilon, that depth is between 4 and 5 m. off shore, except in the vicinity of Ruttera, where 20 fathoms will be obtained only 2 m. off land. Near Comorin, and by the Crocodile Rock, casts of 10 fathoms are found nearly 3 m. from the main land; but generally between the cape and Enciam there is that depth at 1 and 2 m. distance. Between Enciam and Anjengo, 10 m. is about 1 m. from land. The bottom is sand and shells, with exceptional rocky casts. To the E. of Cape Comorin the bank of shoal soundings extends further off shore, and has more overfalls.

**Wadge's Bank.** The ship *Shah Alum*, Captain Wadge, from Bombay to Calcutta, in lat.  $7^{\circ} 39' N.$ , lon.  $77^{\circ} 16' E.$ , sounded in 17 fathoms, hard rocky bottom, on a shoal of small extent on the bank of soundings, 36 m. S.W. of Cape Comorin. It was examined in 1861, but not less a depth than 14 fathoms was found. This is probably that bank formerly described by Captain Horsburgh as "a great way out from Cape Comorin, and abounding with cod, where some ships have caught considerable numbers of those fish, but it appears to be of small extent and little known."

## GULF OF MANAR.—CAPE COMORIN TO POINT DE GALLE.

(VARIATION OF COMPASS, ABOUT  $1^{\circ} 0'$  E.)

The Gulf of Manar is formed by the coasts of Tinavelly and Madura on the W.; the ledge of rocks and islands, called Adam's Bridge, on the N.; and Ceylon on the E. The extreme breadth from Cape Comorin to Point de Galle is 200 m.

**The Tinavelly Coast** is about 85 m. in length; the portion to N. of Tuticorin is low, with cocoa-nut trees fringing it; scarcely any rising ground occurs inland till S. of that harbour at the back of Manapaud Point; but the magnificent ghauts, which, running N. from Comorin are the boundary between Tinavelly and Trávancore, form a back-ground, in clear weather, to the otherwise monotonous landscape. Towards Comorin, the ghauts are much nearer to the shore, and always visible. Tinavelly has several minor streams, but only two principal rivers, the Tambaravari, or Tambapani, and the Vypar, falling into the sea, the latter 16 m. to the N. of Tuticorin, the former about half that distance to the S. In the rainy season, the numerous feeders of these two, and other rivers, lay the country in many parts under water, and leave everywhere in the plains innumerable small lakes or ponds. That part of the province to the N. of the River Tambaravari is the more level and fertile and very productive, being extensively irrigated by canals from that river. The S.E. part of Tinnavelly is, however, barren; having a light stony soil; that throughout the province is generally of a deep red or rusty colour, from the presence of iron, and contains a large quantity of sand, forming a friable mould. In the maritime tract on the S.E. coast, there are extensive salt marshes, liable to spread greatly during the rainy season. Of all the products of Tinavelly, cotton is the most important; but the cultivation is restricted to the native plant of India. Rice is the principal alimentary crop, but it sometimes fails to a considerable extent when the rain-fall is below the usual average. Pearl-banks exist in the shallow sea both to N. and S. of Tuticorin, but do not produce so great a revenue as those off Ceylon.

**The Madura Coast**, from the Paumben Pass to Vaimbaur, about 50 m., is an extensive sandy plain, without a single hill or conspicuous eminence. The Vygah, the principal river of the province, falls into Palk Strait just to the N. of Tonitorai, the headland which forms the W. side of Paumben Pass. The other rivers are numerous, but smaller, and, though destitute of water in the dry season, have considerable volume during the rains, and must naturally bring down much of the alluvial deposit, which tends gradually to fill up Palk Strait.

**CEYLON ISLAND**, known as Lanka by the natives of India, lying off the S.E. extremity of the continent of Hindostan, from its peculiar configuration and position nearer the equator, needs some general description, that any points of difference between its seasons and those of Hindostan may be comprehended. Its extreme length N. and S. is 240 geographical miles, and its greatest breadth, on the parallel of Colombo, is just the half of its length. The N. half of the Island is flat and low, but the S. half is mostly mountain region (separated from the nearest ghauts of India by a gap of 200 m.), and from its great elevation and isolated position, by arresting the winds from all points of the compass, causes a considerable amount of rain-fall to be experienced, in some part or other of the Island, during every week of the year. The greatest quantity falls on the S.W. portion of Ceylon in the month of May, when the wind is intercepted and its moisture condensed by the lofty mountain ranges surrounding Adam's Peak.

**The W. Coast of Ceylon** is low near the sea, much planted with cocoa-nut and other trees. Inland, the mountains attain a great elevation; Adam's Peak (the loftiest visible from the W. coast), stands 7,420 ft. above sea level; but, being 35 m. from the nearest sea, it is veiled in haze during the S.W. monsoon, though an excellent land-mark for two-thirds of the year. The culminating peak, however, of Ceylon is Pedrotala-gala, 860 ft. higher than Adam's Peak, and nearly 20 m. farther to N.E. Between Galle and Colombo much elevated country intervenes between Adam's Peak and the coast; the most useful marks are the Haycock and the Hummocks or Knuckles, which, with any other conspicuous hills, will be described under their contiguous ports. To N. of Colombo, the country gets lower and lower towards the N. end of the island. Estuaries of great area, called after ancient Arab navigators "gobbs" (ghubbet), separating large tracts of low land from the main, are the peculiar feature of the N. part of this W. coast of Ceylon. A peculiarity, which is one of the first to strike a stranger who lands at Galle or Colombo, is the bright red colour of the streets and roads, contrasting vividly with the verdure of the trees; the fine red dust penetrates every crevice, and imparts its own tint to every neglected article. Natives resident in these localities, are easily recognisable elsewhere, by the general hue of their dress. This is occasioned by the prevalence, along this W. coast, of *laterite*, or, as the Singhalese call it, *cabook*, a

product of disintegrated gneiss, which, being subjected to detrition, communicates its hue to the soil. Along this W. coast, from Point de Galle to Chilaw, corallines and shells mixed with sand, and particles of gneiss, are found near the shores. But the principal scene of most recent formations is the extreme N. of the island, with the adjoining peninsula of Jafna. Here the coral rocks abound far above H. W. mark, and extend across the island, where the land has been gradually upraised, from the E. to the W. shore. Sand covers a vast extent of the N. sea-board, the peninsula of Jafna, and Manar Island; this is doubtless brought by the currents of the N.E. monsoon from the Coromandel coast, and from the N.W. shore of Ceylon in the S.W. monsoon, across the shallows of Adam's Bridge; this barrier being formed by a long line of sandy embankments, which shift about materially through the force of the ocean swell in opposite monsoons.

**Rivers.** Nine or ten streams of some magnitude, besides smaller ones, fall into the sea between Point de Galle and Manar. The Gindura near Galle; next to N. comes the Bentotte River; then the Kalu-ganga, or Kalu oya at Caltura; the Kalani-ganga, or Mutwal at Colombo; the Maha-oya, or Kaymel, near Negombo; and the Dedruoya at Chilaw. The Veluki-ar falls into the Putlam back-water, running N. to the ocean round the N. end of Calpentyn Island, whereabouts also is the mouth of the Kala-oya, debouching into the sea at Dutch Bay. Farther to N. are the Moderegam, and the Arive-ar or Aripo River. All these streams are liable, during the fury of the monsoons, to be surcharged with rain till they overflow their banks, and spread in wide inundations over the level country. On the subsidence of these waters, the intense heat of the sun, acting on the surface they have deserted, produces a noxious and fatal malaria, prolific of fevers; and, in some seasons, so deadly is the pestilence, that the Malabar coolies as well as the native peasantry betake themselves to flight. Very few of the rivers of Ceylon are navigable, and these only by canoes and flat boats, which ascend some of the largest for short distances. Those which intersect the great high road from Point de Galle to Colombo are mostly bridged; a bridge of boats connects each side of the Kalani-ganga near the latter place.

**Soundings.** Off the S.W. coast of Ceylon, the bank of soundings extends nowhere so much as 15 m.; to the N. of Colombo, only about 10 m.; but to less than half that distance off Calpentyn and Kara-tivo. From the latter place, the edge of the bank trends N.W. towards Paumben, and at 15 m. S. of that town there is no bottom at 100 fathoms. It is to be regretted that the continuation of the bank off the Tinavelly coast to Comorin, has not yet been examined. Its outer edge cannot therefore be correctly defined, but due S. of Comorin it stretches 45 m. off shore. This bank is doubtless the accumulation (throughout many ages) of the Malabar coast sand, picked out by the ocean swell, and borne along by the S. currents during successive S.W. monsoons. There is very deep water at half-way between Comorin and Galle, where the E. I. C. steamer *Zenobia* failed to obtain bottom at 500 fathoms.

**The Pearl Banks** of the Ceylon coast extend several miles to the W. and S. of Manar Island, but are not specially depicted on the charts; many of those, however, of the Tinavelly coast between Paumben and Trichendore are laid down. More care than formerly has of late been bestowed upon the pearl oysters of the Gulf of Manar; they occasionally disappear from banks where many an annual harvest has been reaped, and this disappearance is now known to be owing to the recently-ascertained fact that they migrate at times to more favourable situations, for which purpose the oyster can sever its byssus, and re-form it at pleasure; thus it not only possesses locomotive powers, but their exercise is indispensable to its economy when obliged to search for food, or compelled to escape from local impurities. It is also susceptible of translation from place to place, and thus new beds are formed in positions ascertained to be suitable for its growth and protection. The pearl divers are chiefly Tamils and Moors, trained for the service by diving for *chanks*,—shells that are used by the people of India to be sawn into bangles and anklets—which are not only fished up by the divers off the islands of Manar and Kara-tivo, but dug up in large quantities from beneath the soil on the adjacent shores, in which they are deeply embedded, the land having evidently been since upraised. The apparatus employed to assist the diver's operations are exceedingly simple in their character; consisting of a stone, about 30 pounds weight, to accelerate the rapidity of his descent, this is suspended over the side of the boat, with a loop attached to it for receiving the man's foot; also a net-work basket, which he takes down to the bottom, and, throwing himself on his face, fills with the oysters as he collects them; this, on a concerted signal, is hauled to the surface. The divers do not ordinarily remain a full minute below, and the most expert cannot continue at the bottom so much as 90 seconds, nor attain a greater depth than 13 fathoms in the pursuit of their calling. The Gulf of Manar abounds with sharks, but, strange to say, hardly more than one accident is known to have occurred from these creatures during any pearl fishery since the British have had possession of Ceylon.

**Winds and Navigation.** Point de Galle bears from Cape Comorin S.E.  $\frac{1}{2}$  E., distant



66 leagues. Ships crossing from the Cape in the S.W. monsoon ought not to steer a direct course, as they may be liable, *at times*, to experience a current setting to the E. into the Gulf of Manaar; a S.E., or S.E.  $\frac{1}{2}$  S. course will therefore be proper, according to circumstances, until they get nearly in the latitude of Point de Galle; they may then steer to the E. and make it in day-light, if bound to the Bay of Bengal or the Coromandel coast; but it will be prudent to approach the coast about Point de Galle with great caution during the night, on account of the rapid currents and sunken rocks interspersed at a considerable distance from the shore. Ships bound to the E. parts of India have no occasion to keep close to the S. coast of Ceylon, at least not to lose time by so doing. The current sets into the Gulf of Manaar only at times during the S.W. monsoon, for it usually runs about S.S.E. or S. between Caltura and Galle. It would be imprudent to make the island of Ceylon to the W. of Point de Galle, for if the wind veer to the S. it might be difficult to get round that place, which has been already noticed, in the directions for sailing from Bombay to the S. in the S.W. monsoon. During the N.E. monsoon, a direct course may be followed from Cape Comorin to Point de Galle; the wind blowing then from the Gulf is generally more fair for ships passing from the former to the latter, than in returning towards the Cape; for in this season, ships keep near the W. coast of Ceylon to Caltura or Colombo, or even to Chilaw, before they stretch across to Cape Comorin. In Dec. and Jan., when the N.E. monsoon blows strong out of the Gulf of Manaar, it is certainly advisable for ships proceeding from the S. part of Ceylon to the Malabar coast not to stretch off until they have coasted along to Caltura; then they may steer over for the Cape close-hauled, and will find the N.E. wind increase greatly in strength as the Gulf is opened. When they approach the land about the Cape, it will draw more to the E., and afterwards become variable, inclining to land and sea-breezes, when near the land to the W. of the Cape Mountains.

About the changes of the monsoons, the winds often prevail from the W. between Cape Comorin and Ceylon, accompanied, *at times*, by a current setting into the Gulf, which renders it advisable for ships passing from the S. part of the island towards the Cape, in Oct., Nov., March, and April, to steer direct from Point de Galle for it. In the two former months, some ships have been set to the E. by the current and W.S.W. winds, so far as to make the coast of India, near Manapaud Point; in crossing from Caltura late in March, the same happened to the *Anna*.

From March to Nov., Westerly winds prevail off the S.W. end of Ceylon; it is then difficult for a ship to get to the W. from Point de Galle, and after April it is too late to proceed from thence to the ports on the Malabar coast, until Oct. is advancing. Even in April, being off the S. or S.W. part of Ceylon, bound to Bombay, if a ship can make considerable progress against the W. winds, it will be prudent for her to pass through the Eight or Nine-Degrees Channel, and to the W. of the Laccadiva Islands, making short tacks occasionally in passing them, to keep up her Westing. She will then avoid being embarrassed by the coast, and probably escape bad weather, which is very liable to happen near it in May; and may reasonably expect to reach her port of destination more speedily than keeping near the land, in the track used during the fair season.

#### THE INDIAN SHORE.

**The Coast** from Cape Comorin goes about N.E. by E. to Manapaud Point. The distance is 15 m. to the prominent point, which is 1 m. to S. of the village of Ootaunkudi, and was called East Cape by old navigators, and thence it is 20 m. to Manapaud Point. To the N. of Manapaud the shore is low; but to W., from that place towards Comorin, it rises to the height of 100 or 200 ft. in undulating sandy hills, and the tops of tall palmyra trees are apparent as emerging from them; the back-ground is mostly of a reddish-soil, covered with palmyra trees and bushes, and rising gradually to the foot of the ghauts, which at Cape Comorin approach to within 3 m. of the shore. Numerous fishermen's villages and small white-washed churches line the coast, but landing in a ship's boat is at all times a difficult and dangerous operation. The coast from Cape Comorin to East Cape forms in a deep bight to the N. of the former, in which vessels can find considerable shelter from W. winds, but the swell of the S.W. monsoon rolls round into it; therefore no attempt should then be made to land in a ship's boat. The boundary between Tinavelly and Travancore is situated about 5 m. N.E. of Cape Comorin.

**East Cape** stands 15 m. about E.N.E. from Comorin, and bears about S.W. by W. from Manapaud Point, from which it is distant 20 m. To N. of East Cape a considerable bay is formed, where, in 4 fathoms, a small vessel may find some little shelter from W. winds and their accompanying swell, which is still further broken by the prominency of the shore-reef between Ootaunkudi and Idingikari. This bay was known to former navigators as Covalum. The cape has trees

on it, and near the town there is a tuft of trees elevated more than the other land; to the N. about 3 m. off there is the mouth of a small river.

**Shoal.** The shore-reef, between East Cape and Idingikari (which is 3 m. nearer to Cape Comorin), extends off a full mile and perhaps more; the latest chart shows that there is not a distance of  $1\frac{1}{2}$  m. between the reef and the 12-fathom sounding. This is probably the spot where H.M.S. *Thalia* is said to have seen breakers at  $\frac{3}{4}$  m. from her. Cape Comorin bore W. by S. (most probably the isolated conical mount, distant 3 m. N.W. from the low cape, as the latter would have been too far off to be visible), and the extreme eastern land N.E. by N. (probably the East Cape). She sounded, and shoaled her water suddenly from 11 to  $3\frac{1}{2}$  fathoms.

**MANAPAUD POINT**, in lat.  $8^{\circ} 23' N.$ , lon.  $78^{\circ} 3' E.$ , 8 m. from Trichendore Pagoda, is a high sandy promontory, based on rock, jutting boldly into the sea, and having a small white-washed church on its summit, visible in clear weather at 12 or 13 m. The breakers extend 3 or 4 m. to the N.E. of this point, and about 1 m. to the S.E. The town of Manapaud may be known by the ruins of a large church half buried in sand, and the mouth of a small river, too shallow for internal navigation, opening into the bay to the N. of Manapaud Point.

**Anchorage.** There is excellent holding ground in 5 fathoms, mud, to be found near the shore, between the towns of Manapaud and Periathullay, which are 5 m. apart. This anchorage is only available in the N.E. monsoon. In June, July, and Aug., the heavy sea which rolls in upon that part of the coast, precludes the possibility of any vessel anchoring there; therefore, during these months, when the S.W. monsoon is strong, vessels should anchor off either Alendal, or Penacoi, where the coast, trending more to the N., becomes a weather-shore. But if, in coming from the W., the navigator passes between Manapaud Point and its outer shoals, he must be cautious of the shoal patches off Alendal (see page 418), and not come within 5 m. of the shore in passing them, nor bring Manapaud Point to bear to the S. of W.S.W., till the Trichendore Pagoda bears N.W.

**Manapaud Outer Shoal.** This dangerous shoal has its nearest part at 5 m. to S.E. by E. from the point, and between them a depth of 12 fathoms is found; the same water is to be had all round this extensive shoal. On it are patches of 4, 5, and 7 fathoms. It extends E.N.E. and W.S.W., 10 m., having an average breadth of 1 m. From its centre, a tongue of the shoal projects in a N. direction, the apex of this constituting its N.-most or inner danger, on which is  $4\frac{1}{2}$  fathoms, sand; from this part Manapaud Church bears N.W. by W., 5 m., and Trichendore Pagoda (seen in clear weather from above the deck) N., a little W., 10 m. From the central shoal part, where there is 4 fathoms, sand, Manapaud Church bears the same as above, distant 8 m., and Trichendore Pagoda N. by W. a little W.,  $12\frac{1}{2}$  m.; this latter mark, however, is too distant to be seen in any but the clearest weather. There are many other patches with  $5\frac{1}{2}$  and 6 fathoms water, over which a vessel might pass; yet the safest plan, when coming from the W., sailing between the Manapaud Shoals and the point, is not to bring Manapaud Church to the W. of N. till within 2 or 3 m. of the point, and then a course E.N.E. will take a vessel clear. The soundings off the shore, S. of Manapaud, at 1 m. are 6 fathoms, and at 3 m. 9 fathoms, sand and mud.

But if the passage outside the Manapaud Shoal be preferred, a vessel ought not to come under 15 fathoms, which will be 11 or 12 m. off shore, until she has passed Manapaud, when, with the church at that point and Trichendore Pagoda in sight, her position cannot be mistaken. As, however, the soundings outside of the shoal are very scanty, the charts exhibiting no depths beyond 1 m. S. of the central shoalest patch, no very definite instructions can be given.

**Coilsinipatam, or Coilesegarapatam**, is a town on the sea-shore, a little to N. of Manapaud, and bearing S.W. by S.  $7\frac{1}{2}$  m. from Trichendore Pagoda, and nearly 2 m. to the N.W. of the tip of Manapaud Point. Off this town, extending 4 or 5 m. to the N. and E., there is a great extent of foul ground, over which there are heavy breakers in the N.E. monsoon, but it has many small channels which are only known and used by the native craft. The anchorage inside is very insecure, and subject to a heavy breaking sea during the prevalence of E. and N.E. winds.

**TRICHENDORE POINT**, in lat.  $8^{\circ} 30' N.$ , lon.  $78^{\circ} 7' E.$ , lies about 8 m. to N.N.E. of Manapaud Point, and is the next prominent point to S. of Tuticorin, from whose light-house it bears S. by W.  $17\frac{1}{2}$  m., and from Coilsinipatam Town S., 4 m. This point is a low rocky bluff headland, covered with sand, and having a remarkable high dark pagoda situated on its extremity, which is seen in ordinary weather from 12 to 15 m., and sometimes even at 18 m. from aloft. The town of Trichendore is situated at the back of the pagoda, and  $1\frac{1}{2}$  m. further N., in the bight, lies Virandnapatnam, a town second only to Tuticorin in size and importance, inhabited by fishermen of the Parwa caste. **Trichendore Reef** is a dangerous reef projecting 3 m. to the N.E. from the point, and affording some little shelter for small craft to the anchorage off the large town of **Virandnapatnam**, which is situated in the Bay at  $2\frac{1}{2}$  m. W.S.W. from the N. tip of the reef, to round which that town must be brought to bear S.W. by W., as, further to the N., comes the foul ground

of Coilnapatam Reef. To the E. of Trichendore Reef the soundings regularly increase till, at 6 or 7 m. distance, the **Pearl-Banks** are found, little patches with 7 or 8 fathoms water, the surrounding water being from 1 to 3 fathoms deeper. To the S. of Trichendore Point, the foul ground extends about 1 m. from shore till abreast of Alendal Village, off which place there is a small patch of good anchorage at from 1 to  $1\frac{1}{2}$  m. off shore, in  $3\frac{1}{2}$  to 4 fathoms, mud, with the church bearing W.N.W., distant 2 m.; here a vessel is protected, during S. and S.W. winds, by the projecting part of a reef to the S., which there stretches out to more than 3 m. from the shore.

**Alendal Shoals.** Eastward of the above anchorage about 3 m., there is one shoal patch of  $3\frac{1}{2}$  fathoms with 9 fathoms round it. Another shoal of greater extent and with less depth of water, viz., 2 and  $2\frac{1}{2}$  fathoms, lies about 2 m. to the S.E. of the above anchorage, and 6 m. N.E. of Manapaud Point. Both these shoals are situated about 4 m. to the S.E. of Trichendore Point. A third shoal, with  $4\frac{1}{2}$  fathoms, bears E.S.E. 3 m. from the pagoda.

**Coilnapatam, or Coilpatam,** is a considerable town 4 m. S. of Penacoi Creek entrance; and Coilnapatam Point is  $1\frac{1}{2}$  m. N. of the town. The coast is sandy, with cocoa-nut trees, and there are some hills a little way inland. Between the outer reef and the shore-reef there is only water enough for coasting craft, but the outer reefs break the swell, and render the water much smoother inside. **Coilnapatam Reef** is dangerous, and commences at  $2\frac{1}{2}$  m. N.E. by N. from the town, with 10 ft. water on its N. extremity, and extends (with the exception of a break off the little Parwa Village of Alendal) as far as Manapaud Point. The outer edge lies from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  m. off shore, and has, in heavy weather, a high surf rolling over it in  $2\frac{1}{2}$  to 3 fathoms, but ordinarily the sea only breaks on an inner ledge, in from 2 to 12 ft., from 2 to 4 cables' lengths within the former. Many small channels exist between the rocks composing the reef, of which the dhonies, or small trading craft, take advantage, but the channel inside is not good. The mark for the largest channel is the Periamalia Hill (the highest of the two most conspicuous, and often the only hills visible inland) anywhere between the two large trees at the town of Coilnapatam.

**PENACOIL,** is a small fishing village, situated about 1 m. from the sea, whence it is approached by a creek, the mouth of which bears S.S.W.  $\frac{1}{2}$  W.  $9\frac{1}{2}$  m. from Tuticorin Light-house. Penacoi is easily distinguished by the ruin of an old square-built church, with a scanty top of palmyra trees on the beach to the S.-ward of that building. **Coil or Kayal,** the great emporium of trade, mentioned as "*the Key of Hind*" by Marco Polo, in the 12th century, lies between Penacoi and Tuticorin. The ruins of the ancient city are about 2 m. from the sea, near the mouth of the Tambapani River. Tuticorin (though its roadstead is no better than that of Coil) is now the principal port of Tinavelly.

**Anchorage.** Off Penacoi, there is anchorage in 4 fathoms, rather more than 1 m. from the shore, with the tope, or plantation of trees, bearing W.; where, with the wind at S.W. to S., vessels will be protected by the Coilnapatam Reef. Extending to the E. beyond the above anchorage, there is a natural **deep basin**, which is  $4\frac{1}{2}$  m. in length E. and W., and averages  $1\frac{1}{2}$  m. in breadth; the bottom is fine sand and mud in 7 fathoms on the W. side (at the distance of 2 m. E. of the Penacoi tope), and 18 to 20 fathoms on the E. extreme, from which it suddenly shoals to 9, 8, and  $7\frac{1}{2}$  fathoms on a pearl-bank. When standing up the coast during the night, with a scant wind, this is good ground for ascertaining a vessel's position, as there is no spot like it between Paumben and Cape Comorin. From the outer part of this deep basin, the anchorage off Tuticorin bears N. by E.  $9\frac{1}{2}$  m. In the daytime the high Ghauts are visible to ships navigating this coast; and there are some nearer hills, one of which, bearing about W. by N. from Penacoi, was called by old navigators Penacoi Peak.

**Mooram-Shulli-Tivo,** nearly 2 m. S. of Devil's Point, is the S.-most of the islets that front Tuticorin, and is also the S.-most island along the Indian shore of the Gulf of Manar. Numerous pearl-banks lie from 3 to 9 m. to E. of these islands. The greatest depth at L. W., in the channel across the sandy barrier between this islet and the main land, is 13 ft., at the distance of 4 or 5 cables to the S. W. of it. To the N. of the barrier towards Devil's Point the water deepens. From a short distance to the S. of this islet till abreast of Penacoi tope, there are occasional patches of rock found; but the anchorage is good in general, along this part of the coast in  $3\frac{1}{2}$  to  $4\frac{1}{2}$  fathoms, mud, between  $1\frac{1}{2}$  and  $2\frac{1}{2}$  m. from the shore.

**TUTICORIN TOWN and HARBOUR.** This, the largest commercial town on the Indian shore of the Gulf of Manar, is situated 18 m. to N. by E. of Trichendore Point, and bears from Vypar Point S.S.W., 14 m. The land about Tuticorin is low and sandy, with palmyra trees near the town; on the N. side of which there are a flag-staff, a tower on the beach, and a Protestant church; on the S. side there is a Roman Catholic church, with some screw-houses where cotton is pressed. The harbour is fronted by several low islands and banks, running N. and S., or parallel with the shore, at about 2 m. distance. Outside of these banks is Tuticorin roadstead, with



anchorage in 5 to 6½ fathoms, sand. On the N. point of one of the islands, called Paundian-tivo, or Hare Island, there is an obelisk, from which a light is exhibited. There are two channels for small craft into Tuticorin Harbour, but that to the N. is so intricate as to be seldom used. The S. channel leads between the S.-most island and the main land; the reef connecting them has to be crossed in 12 to 14 ft. water, at a distance of from ½ m. to 1½ m. of the island. This being passed, a course may be steered for Devil's Point on the main land, after closely rounding which, a small vessel may stand direct for the town of Tuticorin, carrying soundings of 11 to 9 ft. Before passing Devil's Point, a depth of 2½ fathoms is found, sand and mud. **Devil's Point**, (close to which vessels must pass in entering Tuticorin Harbour by the S. entrance) bearing S.S.W., and distant 1½ m. from the light-house, is a low sandy cape, with sparse bushes on it; the shore, inland of it, is swampy and intersected by creeks. The channel, between the point and the islet of Krangitivo, has a width of only 3 cables' lengths.

**Light.** The obelisk, in lat. 8° 47' N., lon. 78° 11' E., on which the light at Tuticorin is exhibited, is octagonal: the light is *fixed*, at an elevation of 43 ft. above H. W., and is visible about 12 m. off from a vessel's deck. The town of Tuticorin bears W. by N. 2½ m. from the light.

**Outer Anchorage.** The best anchorage in the roadstead is in from 5½ to 6½ fathoms, with the light-house from W.N.W. to W. by S., distant about 1½ m. During the months of Aug and Sept., when strong winds are invariably from the land, vessels may anchor in 5 fathoms, but should not approach closer than that depth, as a ledge extends from ½ m. to 1 m. outside the islands, with uneven soundings of from 10 to 20 ft. water on it. In making the port at night, a vessel may anchor with the light bearing from W.N.W. to W. by S., about 2 m. off, where good holding ground will be found, in 6 to 6½ fathoms. At 3½ m., distance, on the same bearings, the ground is foul on pearl-banks. In approaching from the S., the light may be kept about N.N.W., till within 3 or 4 m., when the above anchorage may be selected. When coming from the N., a vessel may keep the light bearing about S.W. till within 3 or 4 m., when she must steer more out for the anchorage; but, in no instance, ought the water to be shoaled under 6½ fathoms, excepting with the bearings on for the anchorage, and then not under 6 fathoms.

In the N.E. monsoon, vessels should lie with a good scope of cable out; as, although the seas are not heavy, they are sharp, and occasion a chain to jerk. The sea-breeze, at this time, blows on to the reef; and a second anchor, with chain ranged, ought always to be kept ready for letting go.

In the S.W. monsoon, which usually lasts from the middle of May to the middle of Aug., this port may be made without fear; for, although the winds are very violent, they are invariably off shore from W. to S.W., accompanied by smooth water. At this time, vessels may approach the reef to 5 fathoms water, but should always have a stream anchor to sea-ward, as, occasionally during the lulls of the monsoon, a light air comes in from the E.

**Tides** are very irregular; the flood sets to the N., and the ebb to S.; past Devil's Point they run 8 knots an hour. Spring tides rise 2½ ft.; neaps 1½ ft. H. W. at F. and C. occurs at 1h. 15m.

**General Directions.** In the N.E. monsoon, vessels from Europe, bound to Tuticorin, should keep the W. coast of Ceylon in sight as far N. as Calpentyn, or until they can fetch across to Tuticorin. In going from Bombay or the Malabar Coast at the same season, after rounding Cape Comorin, the Indian shore may be kept aboard till abreast of Manapaud Point; a vessel may then stretch across to the Ceylon coast with advantage, and probably on the next tack to the N.W. she will fetch Tuticorin. In the N.E. monsoon, that is, from Nov. to March inclusive, fine weather with land and sea-breezes will be found to prevail on the Ceylon side of the gulf, where good anchorage may always be selected between Colombo and Chilaw, at 1½ to 3 m. off shore, in 6 to 9 fathoms, sand. Vessels, wishing to beat up during the first three months, Nov. to Jan., ought therefore to keep over on the Ceylon side till they have advanced sufficiently far to make certain of their port, if bound to Tuticorin, as the breezes on the Indian coast may be expected to blow steadily and strong from N.N.E., with a strong lee current. In navigating the W. side and head of the Gulf of Manar, great attention must be paid to **the lead**; and, unless they have a good pilot on board, or good charts, vessels should not shoal to less than 18 or 20 fathoms, below Manapaud, nor to less than 12 fathoms to the N. of that place. The currents are so irregular in their direction and velocity, that no reliance can be placed on their exact set.

In the S.W. monsoon a ship, on leaving Tuticorin, ought to keep over on the Indian side till near Manapaud Point, whence she will generally be able to fetch to windward of Colombo, and be clear of all dangers along the W. side of Ceylon.

In the S.W. monsoon, when bound to Tuticorin, from whatever port they may come, vessels must sight and round Cape Comorin, and keep along the Tinavelly coast. Some few years since, it was considered a hazardous undertaking for vessels of any size to proceed far up the Gulf of Manar; more particularly during the S.W. monsoon, when it was supposed to be impossible to

beat out again. Later experience, however, has shown that no dangers exist that may not be avoided by ordinary care and attention; and that, as regards working to windward against the monsoons, no difficulty will be experienced if the instructions be attended to.

**VAIMBAUR.** This town, at which is the boundary between the provinces of Madura and Tinavelly, bears about W. by S.  $\frac{1}{2}$  S., 18 m. from Valinukam Point. The intermediate coast, which is all low and sandy, well planted with palm trees, forms a considerable bight, at the distance of some 4 or 5 m. N.E. of Vaimbaur. Scattered shoal banks extend off this shore for more than 5 m., therefore no vessel should attempt to sight the land. The **Vypar River** falls into the sea between the village and the point of the same name, which bears S.W.  $\frac{1}{2}$  W.,  $7\frac{1}{2}$  m. from Vaimbaur. This is a very shallow coast, the line of 3 fathoms water being 3 m. off shore; one shoal patch, having only 9 ft. water, lies 5 m. E. of Vypar Town. To the S.S.E. of Vypar Point there are two or three sandy low islets, called **Chully-tivo**; the outermost of these is in a straight line between Vypar and Tuticorin Light-house, distant from the former  $3\frac{1}{2}$  m., and from the latter 10 m. Nearly 5 m. W. of this outer islet, the coast forms a deep bight, at the bottom of which stands the town of Putnurmudur, having some large clumpy trees which are visible 9 or 10 m. off shore, when no other land-mark is visible. As a rule, vessels of size ought not to approach the land, above Tuticorin, nearer than 6 or 7 m., on account of the scattered shoal having less than 3 fathoms on them.

**VALINUKAM POINT**, in lat.  $9^{\circ} 9' N.$ , lon.  $78^{\circ} 39' E.$ , is 2 m. W. of Anapar-tivo, and bears E. by N.  $\frac{1}{2}$  N., 18 m. from Vaimbaur. The town of Valinukam is more than  $\frac{1}{2}$  m. within the point, but access to it from the sea may be had at a less distance on its N. side, as it lies on the shore of the considerable bay formed to the N. of the point. **Nulla-tani-tavo**, or Fresh water Island, bears S.W. by W., 5 m. from Valinukam Point, and 7 m. W.S.W. from Anapar-tivo. It is abreast of Keelcaud, or Keelakari Point, distant about  $1\frac{1}{2}$  m. The soundings are tolerably regular off it, but no large vessel should come under 7 fathoms. There is a very small islet 2 m. W. of it, and another beyond, called Oopu-tani-tivo, or Salt-water Island, in contradistinction to Fresh-water Island, from which it bears W. by S., 5 m.

**Anapar-tivo.** This little island, lying 2 m. E. of Valinukam Point, has a reef encircling it, and shoal water extending 1 m. to the S.W., between which and the point is the W. entrance of the inland navigation along the Indian coast, by which small coasting vessels are enabled to work in smooth water for half the distance between Paumben and Tuticorin. To the S. and W. of this islet, there are overfalls in the soundings, owing to the many pearl-banks; one shoal patch, with  $3\frac{1}{2}$  fathoms, lies 5 m. S.W. from Anapar-tivo, and 3 m. E. of the S. end of Fresh-water Island. There may be other shoals between this and Tuticorin Harbour, but the bank of soundings has not been thoroughly examined. Therefore no large vessel has any business N. of that commercial port, and it will be a safe rule not to shoal under 12 fathoms above the parallel of  $8^{\circ} 30' N.$  latitude.

**Islets and Shoals.** From Anapar-tivo, the chain of islets and shoals runs in a mean direction about E. by N. for 26 m. to Manauli. The soundings outside them are tolerably regular, but with some slight overfalls in a few places. About 4 m. S.S.E. of Moolee Islet, which is 10 m. to the W. of Manauli, a shoal patch of  $2\frac{1}{2}$  fathoms exists amongst soundings of 8 and 9 fathoms, but this is the only dangerous overfall known as yet. No large vessel should, however, shoal under 12 fathoms, or sight these low islands, excepting Manauli and Anapar-tivo.

**MOOTAPETTA BAY** is a large space of smooth deep water, of 5 and 6 fathoms at L. W. (to the S.E. of the town of that name), bounded on the S. side by **Moolee Islet**, in lat.  $9^{\circ} 11' N.$ , lon.  $78^{\circ} 58' E.$ , and on the S.E. by **Moosel Islet**. Between these two islets (which are 5 m. apart) a shallow and narrow bank exists, forming some shelter from the swell of the S.W. monsoon. This bank comes within 12 ft. of the sea-surface in most parts; but, at one spot, which is about  $1\frac{1}{2}$  m. to the E. of Moolee, the least depth across is 15 or 16 ft. at L. W. It has been proposed to deepen this to enable large vessels to enter the Bay, which has been named **Port Lorne** by Sir James Elphinstone, who has also proposed cutting a ship-canal (to connect the Gulf of Manar with Palk Bay) through the narrow Ramnad promontory.

**GENERAL DIRECTIONS for the INLAND NAVIGATION.** Small craft, in working down from the Paumben Pass during the S.W. monsoon, will do well to take a pilot and keep inside the islands and banks, which render the water so much smoother, to Valinukam Point. They can there discharge the pilot, and work down the Indian coast as far as Manapaud Point, when their fetching Colombo on the starboard tack may be considered certain.

In going E. by the inland navigation towards the Pass during the S.W. monsoon, the entrance should be made between Valinukam Point and Anapar-tivo, where the depth is 5 or 6 fathoms, not approaching the latter so nearly as 1 m., till its S. end bears S. of E., when the islet may be passed at half that distance in about 3 fathoms, water, and a straight course at N.E. by E. may be kept

for the anchorage off Keelakari; the general sounding along this line is 3 fathoms, shoaling occasionally to  $2\frac{1}{2}$  fathoms, sand; care must be taken to avoid some reefs nearly awash, lying off Yeravadi Point, which is  $2\frac{1}{2}$  m. N.N.E. of Anapar-tivo.

**Keelakari Anchorage** has from  $2\frac{1}{4}$  to 3 fathoms, stiff mud, with a detached ruin (E. of the town) bearing N., and some large terraced houses about N.W. Pilots here come on board to take vessels to Paumben, which lies 26 m. farther E.; but, should a vessel proceed without such assistance, the following directions must be followed:—

From Keelakari anchorage steer E.N.E., with Najimundel Point on the port bow, till a small tope of trees (standing between a hillock at the mouth of a rivulet and an old ruined temple) bears N. Then, for the purpose of crossing a sandy spit which has only 7 ft. water in some places, steer about S.E.  $\frac{1}{2}$  E., or with the W. extreme of the little island Taliari, one point on the port bow; this will lead over the deepest part of the spit in  $2\frac{1}{4}$  fathoms, where a buoy has been placed to indicate the channel. After passing over this spit, the water will deepen to 4 fathoms; two bungalows at the next point E. of Najimundel will then be seen; when they bear N.E.  $\frac{1}{2}$  E., steer E.N.E. till they are passed, then a due E. course will take a vessel to the buoys which mark the passage between the shoal banks at Ramasamy's Choultry.

In approaching these buoys, bring the S. one to bear E. by N., when about 3 cables' lengths off, to avoid a sandy knoll with only 7 ft. water; haul more N. as the buoys are approached, and, after passing between them, steer on about an E. course for a high beacon erected on a patch of rocks, about 2 m. to the N. of Manauli Island. Passing about half a cable's length to the N. of this beacon, stand on for the N. end of Pullée Islet, which must not be rounded within 3 cables' lengths; keep on about E.N.E., till the opening between Pullee and Pulleevausel bears S., then steer E., and anchor near the horse-shoe bank channel, which has a buoy to mark its position. No vessel drawing more than  $8\frac{1}{2}$  ft. water, ought to attempt this navigation without a Keelakari pilot.

**MANAULI ISLET**, lying 7 m. to the S.W. of Paumben Light-house, is the E. of a number of islets, which, with their fringing reefs and intervening banks, lie at some distance off the Madura shore between Tonitorai and Valinukam Points, thus sheltering a considerable extent of the N. waters of the Gulf of Manar from the swell of the S.W. monsoon, and affording convenient smooth water navigation for the coasting craft. The E. extreme of its fringing reef is 2 m. E. of Manauli; and the passage between it and the shoal water on the S. of Pullee, is  $\frac{1}{2}$  m. broad; the leading marks through it being Tonitorai Temple, just open to the left of Pullee Islet. A shoal patch, with  $2\frac{1}{2}$  fathoms water, lies outside of the reef  $2\frac{1}{2}$  m. S. of Manauli Islet; and the S. extreme of the reef encircling Manauli and Moosel Islets bears 3 m. W. from this patch.

**Pullee Reef**, encircling the three Islets, Pullee, Pullee-vausel, and Coorisuddy, forms a natural break-water to protect the Paumben Pass from the violence of the S.W. monsoon. Pullee, the W. islet, has now a **Beacon**, not far within the W. end of the Reef, bearing E.N.E., and  $3\frac{1}{2}$  m. from Manauli Islet. Shoal-patches of 6 and 8 ft. lie about  $1\frac{1}{2}$  m. to S. of Pullee Beacon, and nearly connect Pullee Reef with the Shingle Islets. (See also Paumben Pass, further on).

**The Shingle Islets** are 3 m. to E. of Pullee Beacon, and  $1\frac{1}{2}$  m. to S.E. of Coonducam Point (Ramiseram Island); the reef, on which they stand, extends rather more than a cable's length E. of them. There is a shoal patch of 2 fathoms lying 4 m. S. by E. from these islets; to avoid this, attention must be paid to the chart, which will be the best guide, if there be not a pilot on board. When going in by the E. channel, give the Shingle Islets a wide berth of 3 or 4 cables' lengths, to avoid the foul ground off them; a good rule for passing clear is, not to bring the high conspicuous tree to bear to the N. of N.W. by N., till close in with the S. shore of Ramiseram Island; then haul to the W., and pass Coonducam Point within 2 or 3 cables' lengths. A pole has been erected (1846) on the N. limit of the shoal water inside the Shingle Islets, between which and Ramiseram the deepest water is to be found; the S. end of the passage through the horse-shoe bank, by which vessels have to enter, when going through the Paumben Channel, bears from this pole W. by N.

**RAMISERAM, or RAMESHWARAM ISLAND**, lying between Adam's Bridge and the S.E. cape of Hindostan, is low and sandy, well planted with cocoa-nut trees towards its W. end. In length, nearly E. and W., it measures 14 m.; its E. half is merely a narrow strip of sand, but the breadth of the island, where the great temple stands, is nearly 5 m. It is uncultivated, and principally inhabited by Brahmins and their followers, who are supported by the profits derived from the temples. The village of Thani Kodi, at the E. extreme of the island, bears W. by N.  $\frac{1}{2}$  N.,  $16\frac{1}{2}$  m. from the W. end of Manar Island. **The Great Temple, or Coil**, stands on a piece of rising ground on the N. part of the island, bearing N.W. 10 m. from Thani Kodi, and E.  $\frac{1}{2}$  N. 5 m. from Paumben Light-house. Its height is about 120 ft., and, with its majestic towers, its vast and gloomy colonnades, and its walls encrusted with carved work and statuary, this temple



exhibits a grand example of the style of such monuments in Southern India; though inferior in dimensions to those of Seringam, Madura, and Tanjore. Thousands of pilgrims from all parts of India resort here. To the S. of the Great Temple there is a fresh-water lake, about 3 m. in circumference. The town of Ramiseram stands N.E. of the lake, and S.E. of the temple, on the E. sea-face of the island.

**Coonducam Point** (the S.W. point of Ramiseram Island, between which and the Shingle Islets lies the E. channel to and from Paumben Pass), bears S.  $\frac{1}{2}$  E. nearly 2 m. from the light-house. The extreme point is low and sandy, but cocoa-nut plantations commence about a cable from it and extend towards the town of Paumben and to the N.E., where a high conspicuous tree stands about  $\frac{3}{4}$  m. from the point. This Point bears E.N.E., and is  $2\frac{1}{2}$  m. from Pullee Beacon.

**PAUMBEN PASS.** This most important channel between India and Ceylon, recently so much deepened and improved by blasting and dredging, leads the coasting craft from the Gulf of Manar into Palk Strait, close along the W. end of Ramiseram Island, where the town of Paumben stands. This town is intermediate between the light-house and the W. extreme of the island; its regular inhabitants consist chiefly of boatmen and pilots; and their occupation is in conducting vessels through the Pass, unloading, and lading them. Anchorage-fees and customs are levied by the British Government. The Pass consists of a cutting through sand-stone rock, and a dredging through a horse-shoe sand-bank on the Gulf of Manar side of it; an average depth of 12 or 13 ft. water has now been obtained, and further improvement is expected. The approach to the N. entrance is marked by a buoy, from which the light-house bears about E. by S., and is 7 cables distant. South of the horse-shoe bank, protecting the Pass from the S. swell of the S.W. monsoon, there is a large coral reef, on which stand the islets of Pullee, Pulleeausel, and Coorisuddy, all low and sandy, with stunted bushes. Eastward of this reef there lies another, on which stand the Shingle Islets, bearing S.S.E. 3 m. from Paumben Light-house, and  $1\frac{1}{2}$  m. from the nearest shore of Ramiseram. There are channels round both E. and W. sides of the above reefs, by which small vessels approach the Paumben Pass. For the W. channel, between Manauli and Pullee Islets, the leading marks are, Tonitorai Temple just open to the left of Pullee Island.

**Light.** A fixed light is exhibited to the N.E. of the town of Paumben, and 1 m. E. of the Pass. It is 97 ft. above H.W. mark; but its column, which is circular, is only 56 ft. from base to vane, as it stands on an elevated piece of ground. The light is visible all round the compass, and seen 11 to 12 m. off in clear weather.

**Adam's Bridge.** This barrier is a narrow ridge of sand and rocks, mostly dry, forming the head of the Gulf of Manar; with the islands of Ramiseram near the Indian side and Manar on the Ceylon side, it nearly connects the latter with the continent. It extends 16 or 17 m. nearly E. and W., and is composed of shifting sand-banks with small intricate channels between them, in which the average depth is 4 ft. at L.W. The edge of the bank of soundings is 12 m. to the S.W. of Adam's Bridge. Small native craft often pass through the channels of the Bridge to escape payments of the *dues* which are charged for the Paumben Pass.

**MANAR, or MANAAR ISLAND,** is separated from the main land of Ceylon by a very narrow channel, which is said to have 10 or 12 ft. water in some places. It is about 15 m. in length E. and W., and its W. point bears N. 53 m. from the N.W. point of Calpentyn Island. The town of Manar is at the E. end of the island, amongst cocoa-nut trees, and has an old fort. Manar was anciently the seat of the pearl-fishery; but, at the present day, its importance has greatly declined. During the early ages, a considerable portion of the trade, between the E. and W. coasts of India, was carried on through the narrow channel which separates Manar from Ceylon, and active establishments were formed, not only at Mantotte on the main land, but in the little island itself, to be used for unloading and reloading such craft as it was necessary to lighten in order to assist them over the shoals. The fort at Manar, in lat.  $8^{\circ} 59' N.$  lon.  $79^{\circ} 53' E.$ , built by the Portuguese, and strengthened by the Dutch, is still in tolerable repair; the village has plenty of cocoa-nut trees, and presents an aspect of industry and comfort. But the country beyond is sterile, covered only by stunted trees. The most singular objects in the landscape are a number of the monstrous Baobab trees, whose importation, from the W. coast of Africa to India and Ceylon, is a mystery as yet unsolved: one of the largest, at Manar, measured upwards of 30 ft. in circumference, although it was a very little more in height.

**Old anchorage.** The extensive bay, between the Arive-ar mouths and the S.W. end of Manar Island, is gradually becoming more shallow. The anchorage off Manar, half a century ago, was in 4 or 5 fathoms, about 4 m. to the W. of the gut which separates the island from the point of Mantotte. Now that depth of water will not be found within 6 m. of the gut.\* The bank of soundings extends 17 m. to the S.W. of Manar Island.

## CEYLON WEST COAST.

The **N.W. part of Ceylon**, with the islets and creeks that separate Manar from the main land, need not be described. Aripo, the N.-most sea village, bears about S. from the town of Manar. The **Aripo River**, or Arive-ar, falls into the sea by three or four mouths to the N. of that village, and about 8 m. to N.N.W. of Condachi.

**Condachi**, is a sea-coast village, at the bottom of a bight, mid-way between Moderegum Point and the Aripo River mouth, bearing from the former N. by E.  $\frac{1}{2}$  E. at a distance of 8 m. The Kalar River is 3 m. S. of Condachi, and the sandy shore, between it and the Arive-ar or Aripo River, is, during a pearl fishing season, the resort of thousands of people who are engaged in the trade. Enormous mounds of shells raise this shore to a height of several feet; these are the accumulation of ages, the millions of oysters having been, year after year, flung into heaps that extend for many miles along this shore.

The **Pearl Banks** are on the outlying shoals that extend many miles W. of the shore between Condachi and Manar Island. On approaching this oyster-fishers' resort from sea-ward, the first land-mark seen is a building, erected as a temporary residence for the Governor of Ceylon, and known by the name of Doric, from the style of its architecture. A few cocoa-nut palms appear next above the low sandy beach, and presently are discerned the scattered houses which form the villages of Aripo and Condachi, 5 m. apart. During the progress of a fishery, this dreary expanse becomes suddenly enlivened by the crowds who congregate from distant parts of India, by whose skill there suddenly springs up a town of temporary dwellings, huts of timber and palm-leaves, with tents.

**KODRA-MALAI POINT**, in lat.  $8^{\circ} 32' N.$ , lon.  $79^{\circ} 52' E.$ , is on the main land, about 27 m. to the S. of Manar Fort bearing E. by N.,  $4\frac{1}{2}$  m. from the N. end of Kara-tivo, and 30 m. to the N. of Putlam, the intermediate shore taking a tolerably straight direction of N.  $\frac{1}{2}$  E. The point is steep and rocky on its N. side, and may be known by the three long hills seen over the low land of Kara-tivo. From Kodra-malai the coast runs N.E. for 4 m. to Moderegum Point, forming a bay between them; and thence more to N. towards Condachi.

**Anchorage.** Very good anchorage, in the S.W. monsoon, may be found under the lee of Kodra-malai Point. Steer for it with the N. end of the hills bearing E. by S. till the vessel is well past Kara-tivo Island; then, altering course as requisite for rounding-to, the anchor may be let go in  $2\frac{1}{2}$  to  $3\frac{1}{2}$  fathoms, sandy bottom, with the rocky promontory bearing between S.S.W. and S.W. at a distance of from  $\frac{1}{2}$  m. to  $1\frac{1}{2}$  m. No vessel ought to proceed on the Ceylon side further towards the head of the Gulf of Manar than this place, as there are many shoal places at some distance from the shore, and no good holding-ground. In the S.W. monsoon, a strong current is found setting N. over Adam's Bridge, which abates as the Indian coast is approached; a confused sea is generally found to prevail near Manar.

**KARA-TIVO, or CARDIVA ISLAND**, (the N. extreme), in lat.  $8^{\circ} 31' N.$ , lon.  $79^{\circ} 47' E.$ , bears N. by E.  $\frac{1}{2}$  E. 19 m. from the N.W. point of Calpenty Island. Kara-tivo is a long narrow strip, extending N. and S. nearly 12 m., nearly parallel with the Ceylon shore, from which it is distant on the S.  $1\frac{1}{2}$  m., on the N. about 4 m., and a channel for coasting craft exists between them. Kara-tivo is low, with sandy hillocks in some parts, and bushes or trees in others; that part which lies N.N.E. of Dutch Bay has some palmyra trees, a few of which are leafless, and these form a good mark for the outer sandy shoal patch, mentioned as lying to the N. of the entrance to Dutch Bay. On the main land, behind Kara-tivo, there are ridges of hills moderately elevated, which, being seen in clear weather at a distance of 7 m. off shore, have the appearance of being on the island. The edge of the bank of soundings is 6 or 7 m. off the sea-face of Kara-tivo; a vessel should not shoal under 7 fathoms water, as several small rocky banks lie from 2 to 4 m. off the land; to the N. of the island, shoal patches, with 3 fathoms water, extend 6 m. off. The S.W.-most of the Aripo Shoals lie 15 m. to N.N.W. of Kara-tivo Island, but that part of the Gulf of Manar is unfortunately not sounded, being exhibited as a blank space in the latest charts.

**Dutch Bay.** This is a snug little cove, formed by the two N. forking points of Long Island, which lies to N. of Calpenty Island, and from sea-ward seems to form a part of it, thus extending the island to all appearance 3 m. to N. This bay is opposite to the S. end of Karativo Island, but the water between them is shallow; it affords shelter from all winds, but more particularly from the S.W., which are the strongest. **Anchorage.** Vessels can anchor in  $2\frac{1}{2}$  to 3 fathoms, stiff mud, close inside the neck of sand that forms the W. side of the bay, with a house in a cocoa nut tope, called Paringe-torai, bearing S.S.W. The only dangers in the approach to it are a rocky patch with  $2\frac{1}{2}$  fathoms over it at L.W., lying 2 m. W.S.W. of the N. end of the neck of sand, just mentioned: and some shoal water bearing N.N.W. 3 m. from that neck, and  $2\frac{1}{2}$  m. due W. from

the palmyra trees on the island of Kara-tivo. This last shoal water extends N. and S. about 2 m., with an average breadth of 1 m., and has over it from 3 ft. to 3 fathoms, with a small patch of sand, generally dry, bearing due W. of the above trees. To the E. of this reef, between it and Kara-tivo, there is a passage with a depth of 4 to 5 fathoms; but no person, without being well acquainted with the coast, ought to attempt this.

Bring the neck of sand of Dutch Bay to bear S.E. by E., when it can be steered for and passed within 50 yards, carrying 3 to 4 fathoms, sand.

**CALPENTYN ISLAND.** This island is upwards of 40 m. in length parallel to the Ceylon shore; its S. extreme forms the N. side of the Dedru-oya River mouth; when viewed from the offing, the island appears as part of the main land. Talavilly, the N.W. point of the island, is in lat.  $8^{\circ} 12' N.$ , lon.  $79^{\circ} 41' E.$  The town and fort of Calpentyne are  $1\frac{1}{2}$  m. from the N. extreme of the island, on its land-ward side; boats have access to the town from sea by a narrow passage, called the Gut (separating Long Island from Calpentyne), as well as by the broad channel to the N. of Long Island, between Dutch Bay and Kara-tivo.

**The Coast** from Chilaw Point towards the N. belongs to Calpentyne Island, which is low and sandy, on a coral foundation, a long sweep of desolate shore; having a general direction of N. by W. for 32 m. to the W. projection of the island, then N. for 5 m. to its N.W. point; trees exist only by the villages, and these are few and far between, as the Putlam Lake and the back-water S. of it so completely cut off Calpentyne Island from speedy communication with the main land of Ceylon. **Putlam** is a large town with a fort near the S.E. corner of the lake, 6 m. away from the sea, but the strip of Calpentyne Island opposite the town is only  $\frac{1}{2}$  m. broad. The S. extreme of Putlam Lake is well defined by the 8th parallel of latitude. Off this part of the coast, about half-way between Chilaw and Calpentyne Towns, and some 3 or 4 m. off the sea-face of the island, there are uneven soundings on rock with so little a depth as  $3\frac{1}{2}$  fathoms, and 6 to 8 fathoms immediately outside. Vessels of size ought therefore to be careful not to come within 5 m. of land hereabouts, or expect to get soundings, as these shoal spots are not 2 m. from the edge of the bank of soundings; small craft, however, can at all times go over these shoals.

**CHILAW TOWN**, in lat.  $7^{\circ} 34' N.$ , lon.  $79^{\circ} 47' E.$ , which is 22 m. due N. of Negomba Point, stands on the E. bank of an estuary that runs parallel and very near to the coast, having a common mouth with the Dedru-oya River at Chilaw Point, about 2 m. N. of this town. There is a bungalow on the shore abreast of the town, conspicuous by its red-tiled roof, and seen 8 or 9 m. from a ship's deck in clear weather. Chilaw Point is 2 m. to the N. of the bungalow, and may be known by a sand-hill, having on it some bushes, and near it there is a round hummock.

**Anchorage.** The common mouth, of the Chilaw Estuary and of the Dedru-oya River, is close to the N. of the point, and vessels may anchor abreast this river mouth with it bearing S.E., in  $5\frac{1}{2}$  or 6 fathoms, mud, about  $\frac{3}{4}$  m. off shore. In coming to Chilaw from the N., a vessel should keep out of soundings, some 2 m. off the out-lying banks along the shore of Calpentyne, till half-way between these two places, when she may haul in towards the shore. There are some rocks 5 m. due N. of Chilaw Bungalow, but as they are not more than  $\frac{3}{4}$  m. off shore, they do not form an obstacle to the general navigation of the coast; they are partly above water, and lie in the line of 4 fathoms. In approaching Chilaw River from the S., a vessel may stand close along shore in the anchoring depth till abreast of the river; rocks fringe this sandy shore from the point to a distance of 3 m. S. of the bungalow.

**Kemel River** entrance is 4 m. N. of Negomba, and causes a break in the line of cocoa-nut trees which fringe this sandy coast. At Ooluwitti, a village  $3\frac{1}{2}$  m. N. of Kemel, the coast is a little projecting, but the bottom out to 5 fathoms is mud, and the shore safe to approach. Onwards to Chilaw there is the same straight sandy coast with tops of trees about the villages.

**NEGOMBA POINT**, in lat.  $7^{\circ} 12' N.$ , lon.  $79^{\circ} 48' E.$ , is nearly a mile W. of the large town of that name, and bears N.  $\frac{1}{2}$  W. 16 m. from Colombo Light-house. Canal communication exists between these places, opening out into Negomba Lake, which is upwards of 5 m. in length by 2 in breadth, and at the rainy seasons discharges a great body of water, that runs to the N. through an opening between the fort and the point. Negomba has a considerable trade, and may be known by the prominent point, which is covered with cocoa-nut trees; off it a ledge of rocks awash extends N. by W.  $\frac{1}{2}$  W., for 2 cables' lengths, and this may be traced in the same direction with depths of 3, 4, and 5 fathoms over it for  $2\frac{3}{4}$  m. farther, till it terminates in a coral patch, having 9 and 12 ft. water, at a distance of 3 m. from Negomba Point, and  $2\frac{1}{2}$  m. W.S.W. of Kemel River entrance.

Soundings near shore are more regular than further S.; shoal water extends a greater distance off shore, but, the bottom being almost all mud within a line drawn from Colombo Fort to Negomba Point (except the rocks at the mouth of the Kalani-ganga), a vessel can stand in to 7 fathoms by day in fine weather.



**Anchorage.** Small craft can cross the above ledge, and anchor in 2 or 3 fathoms, with Negomba Point S.W.  $\frac{1}{2}$  W., and the fort S.E. by E. at the distance of 3 or 4 cables from the sandy shore. For large vessels, the best anchorage is 1 m. off the rocky point, with the fort bearing E. a little N., in  $6\frac{1}{2}$  to 7 fathoms, sand; but, as this sand is not deep, and the stream of the Negomba Lake sets to the N., vessels are warned against anchoring here during the S.W. monsoon, or from May to August inclusive.

**COLOMBO.** The flag-staff, close to the light-house, in lat.  $6^{\circ} 56' N.$ , lon.  $79^{\circ} 50' E.$ , bears S.  $\frac{1}{2}$  E. 16 m. from Negomba Point, and N. by W. from Mount Lavinia, distant  $6\frac{1}{4}$  m. The coast about Colombo is low, and not visible from sea-ward more than 10 m. About 1 m. N. of the fort near Mutwal there are some lofty fir trees, which are generally seen when approaching from sea-ward before the light-house or flag-staff. They afford a good land-mark for Colombo, as, when viewed from sea-ward, they appear considerably elevated above the surrounding cocoa-nut trees, and seem as one *tope* rather thinly planted. No other part of the coast, either N. or S. of Colombo, affords a similar mark to this. The Dutch church, a large building in the bottom of the bay (to the N.E. of the fort), the upper part of which has a thatched belfry, and may be seen over the houses of the town, forms a good mark as a cross bearing for vessels coming to an anchor in the roads. There are some isolated hills at a distance in the country, and the high mountain having on it a sharp cone called Adam's Peak, 7,420 ft. above the level of the sea, has been seen in clear weather at a distance of 30 leagues. In the N.E. monsoon it is generally visible in the morning, and sometimes throughout the day, but it is rarely seen in the S.W. monsoon, through the humid atmosphere which prevails in that season.

**Sunken Rocks.** The first danger in approaching the roadstead from the S. is the Drunken Sailor, a ledge of rocks with only 6 ft. water over the shallowest part, which bears W. by S.  $\frac{1}{4}$  S. from the light tower, and is distant off shore about  $\frac{1}{2}$  m. This danger during the S.W. monsoon has a constant break of the sea; but not during the N.E. monsoon, with smooth water, and it will then be prudent not to come under 10 fathoms, water, when in the vicinity of these rocks, as there are 8 fathoms close outside them, until the Custom-house Point bears to S. of E.S.E.; then stand in for the shipping, as no advantage can be gained by steering close to these rocks at any time. A black buoy is placed, during the N.E. monsoon, from Oct. 15th to April 15th, close on the W. side of Drunken Sailor.

**Another Sunken Rock,** with 20 ft. water over it, has been discovered in the approach from the W. It lies about  $\frac{1}{2}$  m. to N. of Drunken Sailor, and bears W. by N. from the Custom-house Point, and N.W. from the flag-staff. A red buoy is placed a few yards to the W. of it, to which all vessels must give a clear berth of half a cable's length.

A ledge of rocks stretches along shore to the N. from Mutwal; but as this ledge is only about  $\frac{1}{4}$  m. off shore, and out of the usual track of shipping, it is scarcely worthy of note as a danger.

**PORT of COLOMBO.** The roadstead of Colombo, although exposed to the S.W. monsoon, is a safe one for vessels well found in ground tackle. Vessels generally ride out the monsoon at single anchor, with a long scope of chain. A gale of wind may occur about the changes of the monsoon, in the months of May, June, Nov., and even as late as Dec.; though a gale in the latter month is very rare, and several years sometimes pass away without any beyond a stiff monsoon breeze. These gales are seldom violent, and it is only during them that casualties occur to the shipping. Only five vessels have been wrecked within the last thirty-two years. Communication between the shore and shipping is seldom interrupted, although there are occasional spells of squally weather and a high sea during the S.W. monsoon, which make the passage over the bar difficult and dangerous, especially for small boats.\*

**The Inner Road, or Harbour,** is mostly occupied by the native coasting vessels. It is considerably sheltered from the S.W. monsoon by the N. bastion of the fort and bar, and affords good and safe anchorage for vessels drawing not over 11 ft. The bar is a shifting sand-bank, extending for about  $1\frac{1}{2}$  cables' lengths from the N. bastion, in a direction towards Mutwal Point; there are 7 to 12 ft. water on it, and  $3\frac{1}{2}$  fathoms inside and beyond it. Strangers should not enter the Inner Road without a pilot; and as the sea sometimes breaks on the bar during the S.W. monsoon, and several lives have been lost by boats being swamped, they should not use their own boats in landing, but employ one of the outrigger canoes, which are always available, until they become acquainted with the passage over it. Colombo abounds with good water, and other refreshments. The exports to Europe are cardamoms, cinnamon, coffee, cocoa-nut oil, coir cordage, ebony, pepper, plumbago and satin-wood; and the trade is increasing every year.

**Tides and Current.** The current off Colombo and in the Gulf of Manar, is subject to

\* A break-water is proposed for Colombo, and wharves and docks.

considerable variation, particularly about the changes of monsoon, when it is strongest, but generally speaking it sets with the monsoon, and is never so strong as to inconvenience vessels making Colombo. The greatest difference between high and low water recorded at Colombo is not more than 2 ft. 10 in. In the S.W. monsoon, when the mean level of the ocean is the lowest, the difference between high and low water is from 5 to 15 in. On those days when the difference between high and low water is not more than 6 in., the rise and fall has been observed to take place four times within twenty-four hours.

**Light.** A fixed white light, in lat.  $6^{\circ} 56' N.$ , lon.  $79^{\circ} 50' E.$ , is exhibited every night from the clock tower, a circular wooden building, standing in the centre of the fort. The light is elevated 193 ft. above sea-level, and visible in clear weather from a ship's poop 18 to 20 m.

**Anchorage.** A vessel may anchor anywhere in the outer roads, with the flag-staff bearing from S.  $\frac{1}{2}$  E. to S.E. by E., in  $6\frac{1}{2}$  to  $9\frac{1}{2}$  fathoms, water, and distant from the N. bastion of the fort from  $\frac{1}{2}$  to 1 m. The best anchorage is with the flag-staff bearing about S.S.E.  $\frac{3}{4}$  E., and the Dutch church E. by S., in 8 fathoms, water. Vessels arriving during the S.W. monsoon, or about the changes of the monsoon, should not anchor nearer the N. bastion than  $\frac{1}{2}$  m., or bring the rocky point at Mutwai (which is about  $1\frac{1}{2}$  m. N. of the fort) to bear N. of N.E.  $\frac{1}{2}$  E.; and they are recommended to ride with not less than 80 fathoms cable to the hawse, and to have all the shackles looked to and the small pins well secured before coming to an anchor. The constant pitching motion to which vessels are subjected, causes the cables at some distance from the hawse to beat and chafe on the ground, and the shackle pins frequently work out if not well secured. The small pins should be of iron, with large heads, and the other ends well clinched over a ring; if not clinched they invariably loosen, and work out.

The Ballast Ground during the S.W. monsoon is in 15 fathoms water, with the flag-staff bearing about E.; and during the N.E. monsoon in the same depth of water, with the flag-staff about E.S.E., where vessels may discharge their ballast overboard.

**DIRECTIONS.** Vessels bound to Colombo during the S.W. monsoon from S. of the equator, should not cross it to the E. of lon.  $77^{\circ} E.$  Between lat.  $3^{\circ} N.$  and the coast of Ceylon, a strong current (sometimes 50 m. a day) sets to the E., and the wind frequently hangs from W. until the Gulf of Manar is entered, thus making it difficult to fetch the port, if not well to windward. The coast for 30 m. S. of Colombo may be approached with safety to a distance of 2 m.

A steep bank of coral lies in a very narrow strip, parallel to the line of coast, about 8 m. off Colombo, extending a few miles S. where it is deepest, having 18 and 20 fathoms, with 25 fathoms inshore of that, and extending to the N. till nearly abreast of Negomba, where it is shoalest, having 11 or 12 fathoms, with 18 or 19 fathoms inside. With Colombo bearing S.E. by E., distant 12 m., the bank has 15 fathoms, outside of that it deepens at once to 23, and, at 2 m. from it there are 28 fathoms, greenish sand. Within the bank there are 25 fathoms opposite Colombo, gradually shoaling towards the shore. The extreme verge of the bank of soundings is only 3 or 4 m. outside this bank.

**The Coast.** To the N. of Colombo, in the cinnamon garden of Kadarani, standing 5 m. apart, are two towers, each 100 ft. high, which mark the ends of a base-line, measured in 1845, from which the trigonometrical survey of the Island of Ceylon commenced; these towers are some little distance from the sea-shore, but, being not much higher than the cocoa-nut trees of the coast, are not discernible from sea-ward. The shore-line, from the mouth of the Kalani-ganga to Negomba, runs tolerably straight for 14 m., low and sandy, and fringed with cocoa-nut trees.

**WINDS and WEATHER at COLOMBO.** Jan.—At the opening of the year the N.E. monsoon is at its height: its general effects are parching and disagreeable by day, cold, dry, and cutting at night, when, as the *along-shore wind*, it is avoided as injurious to health, and every window is shut against it. Towards the close of the month the wind gets a little W. tendency, and occasional showers fall. Feb. is dry and hot by day, but the nights are cloudless and cool. The wind is unsteady, and shifts from N.E. to N.W., sometimes failing entirely between noon and night. Rain is rare; only 2 in. fall during the whole month. In March the heat continues to increase. The winds are faint and unsteady, with increasing W. tendency; partial showers sometimes fall, and thunder begins to be heard at sunset from the stacked-up clouds amongst the hills; this month has the same amount of rain as the preceding. April is the most oppressive portion of the year, the mean temperature by day being about  $88^{\circ}$ . The wind veers between N.W. and S.W. Towards the end of the month a ground swell from the W. proclaims that the S.W. monsoon is not far distant, and the sea-breeze towards sunset brings clouds and showers.

**S.W. Monsoon.** May in the commencement is hotter than the last, and the days become more overcast; banks of clouds rise over the ocean and give warning of the approaching monsoon. At last, about the middle of the month, sudden lightnings flash among the hills, and with awful

crashes of thunder the S.W. monsoon bursts over the thirsty land in a deluge, that, in the course of a few hours, overflows river banks and inundates the plains. Fortunately this violence seldom lasts more than one or two hours, and gradually abates, when a clear sky supervenes; then for some days heavy showers continue to fall at intervals in the forenoon; and the evening sun goes down in great splendour, the wind remaining steadily in the S.W. quarter. In May the greatest monthly rain-fall occurs, viz., from 13 to 14 in.

In June the S.W. wind gains considerable strength; indeed, this is the most dangerous month for shipping in Colombo Roads, on account of the heavy swell that rolls in, though few accidents are said to occur. The fishermen seldom put to sea in this month. The temperature is much reduced by the refreshing influence of the monsoon, the heat being modified by transient clouds and frequent showers; the rain-fall, however, is only a little more than half that of May. July (though more boisterous than June near Bombay) is more moderate on the W. coast of Ceylon, and showers are less frequent, the amount of rain being only half that of June, and one-fourth that of the month in which the monsoon is ushered in. Aug. and Sept. are beautiful months, with light W. breezes, which, towards the close of the latter, begin to get unsteady and to assume a little Northing, and clouds begin to collect. The nights are always clear and cool. Sept. has twice as much rain as Aug., but not quite so much as June. Oct. has more unsettled weather, but the sea is smooth, and the wind is not strong, though it veers more to the N. There is twice as much rain as in the previous month.

**N.E. Monsoon.** In the early part of Nov. the wind veers between N.N.E. at night and N.W. by day: about the middle of the month the W. monsoon is completely over, and the N.E. monsoon is ushered in by lightning, thunder, and heavy rain, though the atmospheric disturbance is not so great as that of May. The rain-fall of Nov. is nearly 11 in., which is  $\frac{1}{2}$  in. less than is registered in the month of Oct. In Dec. the N.E. monsoon is steady and of moderate strength, bringing with it light but frequent rains, the total quantity of which, however, does not amount to half that of Nov. In this last month of the year, as in the first, the along-shore land-wind is dry and cutting, and at night very injurious to those who are so incautious as to sleep in it.

**The rain-fall in the year at Colombo** averages 72 in., about nine-tenths of the quantity that is gauged at Bombay Harbour; but that of the Malabar coast, intermediate between those places, is much greater. The rain of Ceylon is more equally distributed than that of India throughout the months of the year, but there are two periods of heaviest rain, the autumnal one corresponding with the Madras monsoon, and the other period, between spring and summer, corresponding with the Bombay monsoon, or rather anticipating it by one month. Of course the W. coast of the island presents a contrast with the E., for, while the former is drenched, the low country E. of the mountain region is sometimes exhausted with dryness, but receives its rain subsequently from the N.E. monsoon; in amount, about as much as the Madras coast, or about two-thirds of that which Colombo receives. But in the extreme N. of the island, the total in the year does not exceed 30 in.

**PANTURA.** This large town, in lat.  $6^{\circ} 42' N.$ , lon.  $79^{\circ} 54' E.$ , 14 m. to S. by E. of Colombo, and bearing N.N.W. 8 m. from Caltura Fort, is at the mouth of a river which flows from Pantura Lake. On the S. side of the entrance are two rocks above water, surrounded by others under water; the outer one stands nearly a mile W.S.W. of the town, and has a depth of 8 fathoms close outside. The anchorage is to S. of these rocks in 10 or 12 fathoms, nearly 2 m. off shore. A high tree stands behind the cocoa-nuts,  $2\frac{1}{2}$  m. N. of Pantura, nearly a mile from the beach. About 2 m. N.N.W. of this tree, there is a rocky bank of 3 fathoms, about a mile in length, lying parallel with the shore-line and  $\frac{1}{2}$  m. off, opposite the village of Digorella. **Mount Lavinia**, a rocky headland, the most prominent point between Barbelyn and Colombo, bears N.N.W.  $7\frac{1}{2}$  m. from Pantura. On it are the remains of what was once the marine palace of the Governors of Ceylon. A narrow rocky bank, with 1 fathom water, lies along-shore S. of the mount, and extending more than half-way to the Digorella Bank. Off Pantura and Caltura, soundings of 10 fathoms are not found within 2 m. of land; but abreast of Mount Lavinia that depth is less than  $\frac{1}{2}$  m. off, and W. of Colombo Fort a full mile off. To the S. of Colombo, along the shore, lies the suburb of Colpetty, with its numerous villas. A considerable space is left clear of houses on the S. of the fort; this is called the Galle-face.

**CALTURA FORT**, in lat.  $6^{\circ} 35' N.$ , lon.  $79^{\circ} 57' E.$ , on the E. bank of the Kalu Ganga river and about  $\frac{1}{4}$  m. N. by E. of its entrance, bears from Barbelyn Island N.  $\frac{1}{2}$  W.,  $7\frac{1}{2}$  m. The land on which the Fort stands, is a little elevated, and about  $\frac{1}{4}$  m. within the average line of the sandy shore which extends from Caltura two-thirds of the way to Barbelyn, to Magoona Point,  $1\frac{1}{2}$  m. to the S.W. of Beach Hill; nearly a mile off this last-named point stands a rock, called Nawelle kande, and a **sunken rock** lies  $\frac{1}{2}$  m. to the S. of that. Ships should not come under 10 or 12 fathoms, off Caltura, on account of foul ground both to the N. and S., except they intend to anchor.



in the roadstead. Steer in for the Fort about E., keeping it between two of the Hummocks at the S. end of some high land (25 m. E. of the sea); the N.-most Hummock or Knuckle is the lowest. With these marks on, a ship may run in and anchor in  $5\frac{1}{2}$  or 6 fathoms water, tolerable ground, but it is rocky out in 15 or 16 fathoms. When approaching Caltura from the S., ships may steer for the Fort when it comes on with Adam's Peak, thus giving the 2-fathom rock a wide berth of 1 m.

**Two-fathom Rock.** This is the principal danger off Caltura, lying a good mile off shore, and on the bearing of S.W.  $\frac{1}{2}$  S. from the Fort, a distance of  $1\frac{1}{2}$  m.; it has a depth of 12 or 13 ft. on it, and does not break, except in such bad weather as would forbid a ship's communicating with Caltura. The Rock is in the line of 6 fathoms, so that small vessels may pass between it and the shore in 4 fathoms, but large ships should not shoal under 10 fathoms. Another rocky patch, with 3 fathoms water, lies S.E. by E.  $\frac{1}{2}$  E., a short 2 m. from the Two-fathom Rock, and is  $1\frac{1}{2}$  m. to the N. of Nawoelle-kande high rock, off Beach Hill.

**The Coast** N. of Caltura to Pantura is low and sandy, abundantly planted with cocoa-nut trees. There is canal communication between these places and Negombo. Inland, some 25 m. E. from Caltura, is a range of hills, the two S. Hummocks of which, known also as the Knuckles, are useful land-marks in clear weather for this part of the coast. **Desaster Rock**, off a village of that name, stands close to the shore, about  $1\frac{1}{2}$  m. to N.W. of Caltura Fort; there are sunken rocks both to N. and S. of it, and a ship has no business under 10 fathoms.

**BARBERYN ISLAND.** This little island, in lat.  $6^{\circ} 28' N.$ , lon.  $79^{\circ} 57' E.$ , standing about 2 cables off the main land, to which rocks connect it, forms a prominent point of the coast, bearing from the Myimba Rocks off Cocacheira Point, about N. by W.  $\frac{1}{2}$  W., a distance of  $12\frac{1}{2}$  m. It is 3 m. N.W. by N. of Bentotte River, and most of the intermediate coast is rocky. This island, being small and so close to the shore, is not easily perceived, except when near; there is anchorage to the N. of it in 6 or 7 fathoms, and a small bay farther in, with 2 or 3 fathoms, sandy bottom, where small craft may anchor. The latest chart does not exhibit any rocks projecting from the N.W. end of the island, such as formerly described, but it will be prudent not to shoal under 14 fathoms when passing the place.

**Bentotte River** entrance is  $\frac{3}{4}$  m. to the N. of Oodapitta Point; the town of Bentotte is on the S. bank, and  $\frac{1}{2}$  m. from the bar, on which there are only 3 or 4 ft. water, but this depth varies according to the season, being much greater after heavy rains when the bar becomes navigable for the native coasting craft. Inside the river, there is a depth of 1 and 2 fathoms. As the sands on the bar frequently shift, and there is generally a surf, boats should not attempt to cross it without a pilot.

**OODAPITTA POINT**, in lat.  $6^{\circ} 25' N.$ , lon.  $79^{\circ} 59' E.$ , at 3 m. to S. of Barberyn, and bearing N. by W.  $\frac{1}{2}$  W., 3 m. from Unapaya-galle, is rocky and of moderate height, having several rocks above water lying off it. The Anderan Rocks are two rocky islets lying off this point, bearing W.N.W.,  $\frac{1}{2}$  m. from it; there is a depth of 6 and 7 fathoms close outside of them, and 4 or 5 fathoms inside, between them and the sandy point which dries off Modere-galle (the rocky point that forms the S. side of Bentotte River, and is in reality the N. extreme of Oodapitta Point); but no vessel should pass between Anderan Rocks and the point, for there are several rocks having only 3 or 4 ft. water.

**Unapayagalle Point**, bearing N. by W.  $\frac{3}{4}$  W.,  $3\frac{1}{2}$  m. from Ahungalle Point, is low and rocky, and continues so for  $\frac{1}{2}$  m. in a S. direction to Nyakandugalle Point, but between this last and Kosgodde Hill the shore is sand. Kerevanne Rock, a small white-topped rock, stands  $\frac{1}{2}$  m. S.W. of the point; and 1 m. W. of this rock, is the N. extreme of Outaree, a rocky bank having a depth of 4 fathoms, extending S. till within  $\frac{1}{2}$  m. sea-ward of Napa Rock. **Dodompapa Rocks** stand above water at  $\frac{1}{2}$  m. to N.W. of the above point, and  $\frac{1}{2}$  m. off the nearest shore, abreast of a little hill called Galbode-Kande, which is  $\frac{1}{2}$  m. from the beach; and, between these rocks and Oodapitta Point lie several others with from 3 to 6 ft. water on them, and from  $\frac{1}{4}$  to  $\frac{1}{2}$  m. off shore; outside these rocks there are 5 and 6 fathoms water, sandy bottom, with occasional patches of coral.

**Napa Rock**, lying  $1\frac{1}{2}$  m. due N. of Alut Rock, and 1 m. off shore, has 2 fathoms water on it, and 8 fathoms close outside; it forms the N. extreme of the Conda Bank, which extends to the S. till  $\frac{1}{2}$  m. in-shore of Alut Rock. There is a bank, having 30 and 32 fathoms water, with 37 and 38 fathoms inside, between it and the land. From it the Haycock Mountain (bearing about E. and 16 m. inland of Kosgodde Hill), bore about E.; the distance from shore was about 15 m., and it extended a considerable distance to the S. The latest charts exhibit a similar bank, some 20 m. in length N. and S., lying parallel to the shore and 9 or 10 m. off, between Barberyn Island and Akorale Point; and it probably extends still farther S., as there are indications of it 13 m. due W. from Point de Galle.

**ALUT ROCK.** This rock, in lat.  $6^{\circ} 19' N.$ , lon.  $80^{\circ} 0' E.$ , having only 8 ft. water on it, and

deep water all round, lies  $1\frac{1}{4}$  m. W. from Ahungalle Point. When on the rock, the Haycock Hill is in one with the house on the cliffs near Ahungalle Point. To pass outside of Alut Rock, Gindavana Islet must be kept open of Myimba Rocks, and no vessel should shoal under 12 fathoms by day, or 17 fathoms by night.

**Ahungalle Point**, bearing N., 2 m. from Muta Amarata Boka, is low and rocky, the S. extreme of some rocky cliffs  $\frac{1}{2}$  m. in length; the N. end is of considerable height, and called Kosgodde Hill; on the summit of the cliffs near Ahungalle Point stands a house conspicuous from sea-ward. Harispol Point, standing mid-way between Ahungalle and Balpitti River, is low and sandy, but has several high rocky islets lying close off it; between it and the river mouth, there are several rocks above water, surrounded by a reef, between which and the shore there is anchorage off the bar of the river in 2 fathoms, sandy bottom; the passage is between this reef and Ballapitti Modere Point. Several rocks having only from 2 to 6 ft. water over them, lie off this part of the coast, from  $\frac{1}{4}$  m. to  $\frac{3}{4}$  m. off shore.

**Muta Amarata Boka Point** (the Cocacheira Point of Captain Horsburgh), bearing N.N.W. and  $5\frac{1}{4}$  m. from Akorale Point, is rocky and of moderate height. **Myimba Rocks**, two rocks elevated a few feet above water, stand  $\frac{1}{2}$  m. W. of the point; and, close to the N. of it, is the entrance of Ballapitti Modere, a river which is small and navigable for very small boats only. A custom-house stands on the N. side of the entrance, where the shore is low and sandy, and not so prominent as the S. side, called Ballapitti Modere Point, which is rocky and slightly elevated.

**GINDAVANA ISLET**, in lat.  $6^{\circ} 14' N.$ , rocky, and of moderate height, stands at the distance of 2 or 3 cables from the shore, bearing N.N.W. from Akorale Point rather less than 3 m. Amblangodde Rest-house, a conspicuous building from sea-ward, stands on the summit of a rocky cliff,  $\frac{1}{2}$  m. S.E. by E. from Gindavana; close to the S. of the Rest-house, there is an opening in the rocks forming a cove, with a sandy beach about 100 yards in extent, and anchorage in  $2\frac{1}{2}$  fathoms water; a small river has its mouth to the S. of Amblangodde, and off it are several rocks, amongst others are two called Hiria and Tal Gaha. Off Patiagalle Point which is  $\frac{3}{4}$  m. S.E. by S. of Gindavana Islet, there is another rock called Radul. White coral is found in such quantities on this part of the coast, that an active trade exists in shipping it to Colombo and Point de Galle, where, when calcined, it serves as the only species of lime used for buildings of all kinds.

The village of Amblam is  $1\frac{1}{4}$  m. to the N. of Gindavana, and off it, nearly 1 m. from the shore, lies Wathu or Balu Bank, having 3 fathoms water; this seems to be connected with the bank on which stand the Myimba Rocks.

**Akorale Point**, called also Webille, bears N.W. by N.,  $2\frac{1}{2}$  m. from Senegamme Point; it is low and sandy, covered with cocoa-nut trees. Off the Point lies the Tung Rock, and  $\frac{1}{2}$  m. N.W. of this, the Vatang Rock; several shoal spots extend more than 1 m. off shore, with from 6 to 9 fathoms water betwixt them. **Passee Rock**, the outermost of the above dangers off Akorale Point, is a small rock above water, with a bank extending from it about 2 cables to the S., on which the sea breaks heavily; this rock bears W. from Akorale Point a large mile; there is a passage between it and the shore, but a ship should always pass outside, as another rock is said to lie 3 or 4 cables N. of Passee.

**WAAL ISLET**, in lat.  $6^{\circ} 8' N.$ , lon.  $80^{\circ} 5' E.$ , is situated 3 cables' lengths off Waal Point, and bears N.W. from Manda Islet rather more than 2 m.; this is a high rocky islet, surrounded by smaller ones. Waal Point (Ragamma Point of Horsburgh), is low, and covered with cocoa-nut trees. Hiccode Rock lies  $1\frac{1}{4}$  m. S.S.E. of Waal Islet.

**Debaha Rock** stands about  $\frac{1}{4}$  m. to S.W. of Senegamme low rocky point, and bears from Waal Islet N.N.W.  $\frac{1}{2}$  W.,  $1\frac{1}{2}$  m. This rock is elevated a few feet above the water, and has the appearance of being split into two, or as if one part had fallen from the other. Mid-way between Senegamme Point and Waal Point are the creek and village of Hickadowe, with a traveller's rest-house, which, being hidden by cocoa-nut trees, cannot be distinguished from sea-ward; a gap in the reef, which fringes the coast, affords a passage for small boats and anchorage off the town.

**Hiccode Rock**. This outlying rock, the outermost danger in Dodandowe Bay, lies  $1\frac{1}{4}$  m. W. by N.  $\frac{1}{2}$  N. from Medda Islet, and 1 m. from the nearest sandy shore; it is small, having 6 ft. water over it, 7 fathoms near it all round, and 15 fathoms a cable's length to sea-ward. Half a mile in shore of it, there are some rocks, called the Oon Reef, between which and Hiccode Rock there is a passage for vessels, but they had better keep outside of all these dangers. To clear outside of Hiccode Rock, Debaha Rock must be kept well open of Waal Islet. In passing along this part of the coast, do not come under 20 fathoms, the soundings being very irregular, and the bottom rocky towards the shore.

**DODANDOWE** is a village with a custom-house on a small river, 4 m. N.W. of Gindurab Town; the river entrance is N. of the village, and has two rocky islets off it, both are less than

1 cable's length from the sandy shore; the N. islet, called Medda, affords some shelter from S. winds to the landing-place at the river's mouth. Manda, the S. islet, is more than a cable's length from the other, and bears N.W.  $\frac{1}{2}$  W.,  $7\frac{1}{2}$  m. from Point de Galle Light-house. Dodandowe outer anchorage is in 6 or 7 fathoms, sand, 2 cables to the N.W. of Medda Islet, and with the breakers on Dodandowe Rocks about S.S.W., but small vessels may go farther in, till Manda Islet disappears behind Medda, and anchor in 5 fathoms, equidistant from Medda Islet, from the sandy shore to the E., and from the Gona Rocks to the N.

**Dodandowe Rocks**, never above water, though always breaking, lie 2 cables W. by N. of Manda, and there is a fair channel between the islet and those rocks; but Orava Rock, with 6 ft. water on it, is situated a cable's length N.N.W. of Dodandowe Rocks; and Kadul Bank (depth of water not mentioned) is  $\frac{1}{2}$  m. S.W. of Manda Islet; so it is prudent to pass W. of all these dangers in either entering or leaving Dodandowe anchorage.

**GINDURAH ROCK.** This rock under water, called Medda by the natives, lies  $2\frac{1}{2}$  m. W.S.W. of the river mouth, and W. by N.  $\frac{1}{2}$  N.  $4\frac{1}{2}$  m. from Point de Galle Light-house. On its shoalest part there is only 9 ft. water, so it is very dangerous, as it does not always break; a depth of 4 and 5 fathoms is found about a cable's length from it all round, and 15 fathoms 2 cables outside of it. A little shoal coral spot of 3 fathoms lies rather more than  $\frac{1}{2}$  m. E.N.E. of it, and there is a depth of 16 fathoms between them. The channel inside of Gindurah Rock should be avoided on account of the above shoal. To clear outside of Gindurah Rock, Akorale Point to the N. must be kept open to the left of Waal Island; or, Oonawatty Point kept open outside the breakers of the Whale Rock. From the shoalest part of Gindurah Rock, the Haycock Mountain (which is 19 m. inland of Gindurah on a bearing of N.N.E.), will be seen about a sail's breadth to the left of a small white-topped rock, called Gull Rock, near the beach, 1 m. N.W. of Gindurah Town. **Godda Bank**, the least water on which is 4 fathoms, with rocky bottom, lies  $3\frac{1}{2}$  m. to the N.W. of Gindurah Rock, and  $1\frac{1}{2}$  m. S.W. of Dodandowe Village. It may be avoided by keeping Senegamme Point (which is just inshore of Debaha Rock), open to left of Waal Island.

**Gindurah River** is nearly mid-way between Manda Rock and Point de Galle Flag-staff, and may be known by the different character of the coast on each side of it. To the N.W. of the river entrance the coast is low and sandy, while to the S.E. it is rugged and rocky; there is also a high bank of sand, about  $\frac{1}{2}$  m. in extent, where the river runs close to and parallel with the coast before breaking through to the N. of a small rocky point: there is a small red cliff on the opposite side of the river. From Waal or Ragamma Point to Point de Galle, the shore has a level appearance, covered with cocoa-nut trees, and is dangerous to approach under 20 fathoms, being  $2\frac{1}{2}$  m. distant; several rocks being situated from 1 to 2 m. in the offing, some of which are nearly dry.

**The WHALE ROCK**, under water, bears W.  $\frac{1}{2}$  N. and is  $2\frac{1}{2}$  m. from Point de Galle Light-house, and is nearly  $1\frac{1}{2}$  m. from the nearest shore; it always breaks, but in fine weather only once in 4 or 5 minutes, so that a good look-out is then necessary. There is a channel inside of it, with 5 to 10 fathoms water, rocky bottom, but the soundings are irregular; and there is a bank about half-way between the Whale and the shore, with 4 and  $4\frac{1}{2}$  fathoms on it, so that the inside channel should not be taken except in case of necessity, as there are many shoal spots within  $\frac{1}{2}$  m. of the coast. There are 7 fathoms close outside the Whale Rock, 12 fathoms at  $\frac{1}{2}$  m., and 22 about  $\frac{3}{4}$  m. off. The soundings between the Whale and Gindurah Rocks deepen gradually from 8 fathoms near both rocks to 20 fathoms mid-way between them.

**The Little Whale Rock** is a small rock above water, lying about half-way between the Whale and Point de Galle Flag-staff, in the same line of bearing. There are many rocks inside of it, with only from 3 to 6 ft. water on them. Vessels, therefore, when driven to the necessity of passing inside the Whale, should be careful to haul out between it and the Little Whale, where there is a clear channel with 8 to 10 fathoms, rocky bottom. The recent survey of Ceylon marks a small bank, called Cadra-welle, lying  $\frac{1}{2}$  m. to S.E. of the Little Whale, but no mention is made of its depth of water.

**Banks.** The Galle-ho-galle Bank, having 17 fathoms, lies at 2 m. to the S. of the Whale Rock. Latest charts show the **Behar Bank**, having 30 and 36 fathoms, situated 57 m. to the W. of Point de Galle.



## CHAPTER XV.

### POINT DE GALLE TO CALCUTTA.

GALLE HARBOUR—DONDRA HEAD—GREAT AND LITTLE BASSAS—BATTICALOA—TRINCOMALEE—POINT PEDRO—JAFNAPATAM—PAIK STRAIT—POINT CALYMERE—NEGAPATAM—CANICAL—PORTO NOVO—PONDICHERRY—MADRAS—PULICAT—ARMEGHAM—KISTNA RIVER—MASULIPATAM—GODAVERY RIVER—CORINGA—COCANADA—VIZAGAPATAM—BIMLIPATAM—SANTAPILLY ROCKS—GANJAM—POOREE—CUTTACK—FALSE POINT—POINT PALMYRAS—BALASORE ROADS—PILOT STATION—SAND HEADS—CALCUTTA.

(VARIATION AT GALLE  $0^{\circ} 30'$  E.; AT MADRAS,  $1^{\circ}$  E.; AT CALCUTTA,  $2^{\circ}$  E.)

The S. half of Ceylon Island is mostly mountain region; and from its great elevation and isolated position, by arresting the winds from all points of the compass, causes a considerable amount of rain-fall to be experienced in some part or other of the island, during every week of the year. The greatest quantity falls on the S.W. portion of Ceylon in the month of May, when the wind is interrupted and its moisture condensed by the lofty mountain ranges surrounding Adam's Peak. This maximum rain-fall anticipates that of the W. coast of Hindostan by more than a month. Thus in June and July (a time of heaviest rain near Bombay) Colombo has very little; but, in Nov. there is another large down-pour, corresponding with that of the Coromandel coast. Thus does the Ceylon climate partake of the characteristics of both Malabar and Coromandel. Since the Light-vessels have been placed near the Bassas Rocks, we learn from their journals, that they have scarcely any rain in the S.W. monsoon; the mountains of the island to the W. of them, rob the rain-clouds of their moisture.

**POINT DE GALLE BAY** is formed between Point de Galle Fort and the sloping land to the E., on the highest part of which, at an elevation of 264 ft., stands Edward's pillar, painted White; from thence the land trends to the S.E., and terminates in Oonawattý Point, which projects farther sea-ward than the true point. The inner part of the bay is between Point de Galle, which is low, and a rocky bluff to the E., named Watering Point, which has a natural red patch on the slope of its W. face, and a white tower for a land-mark. The distance between the two points is a little more than a mile in an E. by S.  $\frac{1}{2}$  S. direction, but the actual entrance is narrowed, and the anchorage within much confined, by numerous dangerous reefs, having only from 3 to 15 ft. water over them. At the head of the bay is a low sandy beach, bordered with cocoa-nut trees. Near the centre are two rocky promontories, known as Gibbet Island and Glosenburg. The present anchorage frequented by shipping is in from 6 to 4 fathoms, sandy bottom, on the W. side of the bay, abreast the fort, where supplies of every kind may be procured; but the space is too limited to accommodate the yearly increasing number of vessels visiting this port. The land in the vicinity of Point de Galle is comparatively low and ill defined; but the position of the bay may be readily known by the light-house which stands at the W. point. On this point the fort and town are built, the sea-front being rendered inaccessible by a line of coral reefs, on which the sea breaks heavily. From the light house point, extending  $\frac{1}{2}$  m. to the S., are several rocky islets, on one of which, Pigeon Island, stands a solitary cocoa-nut tree (1860). These dangers are all above water, and may, therefore, be easily avoided. But the principal dangers are the strong currents which run to E. or to W. (according to the monsoon) past the submerged outer shoals, called **Cadda Rocks**.

Point de Galle is much frequented as a port of call for orders, in consequence of the electric telegraph, which is in communication with every part of India. Supplies of every kind, including coal can be obtained. There is a life-boat stationed here. Water may be procured from a small bay within Watering Point, where there is an excellent spring and a wooden pier. Native boats and crews can be hired, to supply ships with water.

**Light.** A *fixed* White light is exhibited from a white iron tower, 80 ft. high, on the S. bastion of the fort of Point de Galle; \* the light is 100 ft. above sea level, visible in clear weather 12 m.

\* The Light-house is in lat.  $6^{\circ} 1' 25''$  N., and lon.  $80^{\circ} 12' 32''$  E.

**OFF LYING DANGERS.** **Cadda Rocks** consist of disconnected patches, nearly 2 cables in extent, N. by E. and S. by W., and having 2 fathoms on the shoalest part. There is deep water between the rocks. During the S.W. monsoon heavy breakers extend the whole length of the reef; but in the N.E. monsoon there is seldom a break. The **Outer Cadda**, on which the least water is 13 ft., lies S.  $\frac{1}{2}$  E., about  $\frac{3}{4}$  m. from the light-house, with the Pilot's Tree (on Moodliar Hill) and Sailor's Bastion in line, and the white mark on the E. side of the bay almost shut in with Watering Point. The **Middle Cadda**, with 2 fathoms on it, lies with the Pilot's Tree open of the almond tree, and the white mark a sail's breadth open of Watering Point. The **Inner Cadda** has 15 ft. on its shoalest part, from which the Pilot's Tree is in line with Flat Rock, and the signal-staff on Neptune's bastion is open to E. of cocoa-nut tree on Pigeon Island. **Para Rock**, having 5 fathoms never breaks; it lies about  $2\frac{1}{2}$  cables to E. by N. of the Outer Cadda; from it the light-house and E. end of Elephant Rock are in line; and the white mark is shut in with Watering Point.

**The E. entrance.** Steamers, or ships with a fair wind, can come in or go out with the signal-staff and light-house in line; passing about 1 cable to E. of Para Rock.

**The W. entrance into harbour** is between the Inner Cadda and Meemattia Rocks; and if beacons were placed on these, the navigation would be easy. Had there been a mark on the Inner Cadda, those on board of the P. & O. Steamer *Rangoon* (lost there in Nov. 1871) would have noticed the vessel drifting on towards it. A beacon now marks the Outer Cadda.

**Rocks on W. side of Channel.** **Meemattia Rock** is half a cable in extent, has 17 ft. on it, and breaks in bad weather during the S.W. monsoon. It lies nearly in mid-channel, between the Inner Cadda and the islets off the light-house; from it the E. turret of the church in fort is seen touching the W. side of Elephant Rock, and Flat Rock is in line with Cutchery Police Station. **Polcattie Rock**, has only 3 ft. on it, and always breaks. The marks for it are, the light-house open S. of Flat Rock, and the Button Rock on with left high shoulder of Moodliar Hill. A *Black* buoy is moored in  $6\frac{3}{4}$  fathoms, about 30 yards E.S.E. of the Rock. **Bellicatua Rock** has  $2\frac{1}{2}$  fathoms on it and forms with the inner Mata-Mada Patch (distant  $1\frac{1}{2}$  cables in an E. by N. direction) the narrowest part of the entrance to the W. portion of the bay. The marks for it are, the Pilot's Tree just open to E. of the Gull Rock, and the cocoa-nut tree on Pigeon Island on with N. end of Flat Rock. This rock breaks in bad weather during the S.W. monsoon. **Kapera Rock**, on the W. side of the bay, has on it a shoal patch of only 9 ft. water, from which the cocoa-nut tree on Pigeon Island is on with the centre of Elephant Rock, and the Sun bastion is touching the end of Schwarte Fort. A *Black* buoy is moored in 5 fathoms at  $\frac{1}{2}$  cable E. by N. from the 9 ft. patch.

**Vellicocco, or Veluvaka Reef**, consists of two rocky patches, carrying from 3 to 9 ft. water. The shoalest part of the N. patch, with only 3 ft. on it, is the spot on which the P. and O. Company's steamer *Malabar* struck, causing her total loss in May, 1860. From it the Pilot's Tree is seen just open to E. of the Gull Rock, and Edward's Pillar its own breadth to S. of the white mark; a *Black* buoy is moored in 4 fathoms, E. 40 yards from this patch.

**Rocks on E. side of Channel.** **Mata-mada Rocks** form two distinct patches about  $\frac{3}{4}$  cable apart, and always break. A *Red* buoy is moored in 6 fathoms, W. about 30 yards from the inner and shoalest patch of 6 ft., from which the white gabled chapel, on an eminence outside the fortifications, is just open of Schwarte Fort, and the cocoa-nut tree on Pigeon Island is on with the N. end of Flat Rock. **Wara Rocks** always break, having only 3 ft. on their shoalest part, from which the Pilot's Tree is in line with the arrack store; and the church in fort is on with the almond tree.

**Avareea Rock**, with 4 fathoms on it, lies directly in the channel, mid-way between the Kapera and Wara Rocks, with the light-house open of Utrecht Bastion, and the Sun Bastion on with rocks off Schwarte Fort. **Cata Rocks** consist of a long ledge, extending in a S. direction from near the W. end of Gibbet Island, towards the Wara Rocks. There are several detached patches on the ledge, with from 1 to 3 fathoms on them, and deep water around. From the W. patch in 2 fathoms, the garrison flag-staff is on with N. end of Schwarte Fort, and the light-house is seen over the angle of Utrecht Bastion; a *Red* buoy is moored in  $5\frac{1}{2}$  fathoms about 80 yards W. of this patch.

**Imburynha Rock**, with 4 fathoms on it, never breaks. It is the S. part of a rocky ridge of 5 fathoms, one cable in its length N. and S., and bearing W.N.W.  $\frac{1}{4}$  m. from Watering Point, with a general depth of 7 fathoms between. The marks for it are, the Pilot's Tree on with the middle of the arrack store, and the light-house in line with Flat Rock. **Deumba-Dava Rock** has 12 ft. on it, and breaks during the S.W. monsoon. From it the white-gabled chapel (on an eminence outside the fortifications) is just open of Schwarte Fort, and Elephant Rock is on with S. end of Flat Rock. **Cabeera Rocks** are two patches, half a cable apart, N. and S., with 5 and 6 fathoms between. From the N. and shoaler patch in 3 fathoms, the white-gabled chapel is in line with Cowedi High Rock, and the church in fort is open to N. of the almond tree. **Kette Rock**, on which the least water is 15 ft., lies with the belfry just open of Schwarte Fort, and the Pilot's Tree

open its own breadth to W. of Alexander's House. **Bocolosava Rock**, is well over by the E. shore of the bay, and is distant  $\frac{1}{2}$  m. N. by E. from the nearest part of Watering Point. The least water on it is  $3\frac{1}{2}$  fathoms, from which the church in fort appears open to N. of the almond tree.

**Rocks in Harbour.**—**Tanna Rock**, with  $3\frac{1}{2}$  fathoms on it, lies with Pigeon Island cocoa-nut tree open of Utrecht Bastion, and the Pilot's Tree nearly mid-way between the arrack store and Alexander's house (a little nearer the former). **Gull Rock** is a small round rock, about 5 ft. in diameter, and 3 ft. above the sea level. There is a large iron ring on its summit, to which native vessels secure their stern hawsers.

**Outer Anchorage.** During the N.E. monsoon, the best anchorage in the roadstead of Point de Galle Bay is in 16 fathoms, with the Pilot's Tree and church in fort in line, and the rocks off Oonawatty Point on with a point to the E. of Oonawatty. In the S.W. monsoon vessels seldom anchor in the road, but, should they do so, the best temporary anchorage will be in the same depth of water, with the light-house bearing N.E., and distant about  $1\frac{1}{2}$  m. off shore.

**Tides.** The tidal stream does not exercise any perceptible influence in this bay. It is H. W. on F. and C. at 2 h., and the rise is about 2 ft.

**Directions.** As the approaches to Point de Galle Bay are rendered dangerous by numerous sunken reefs, it is essentially necessary that vessels should obtain the services of a pilot. In most cases, the pilot-canoe, with flag displayed (*white, red, white*, horizontal) awaits a ship beyond the limits of the off-lying dangers; but as a vessel may have to seek a place of refuge when the heavy sea prevents a boat leaving the bay, the following directions, if closely attended to, will lead into safety. During the N.E. monsoon, from Dec. to March (inclusive), the bay is at all times accessible, and an anchorage can be obtained with facility; for a sea-breeze varying from S.S.E. to W., generally prevails during some part of each day. Early in the morning, the wind is generally off the land from the N., and enables vessels to leave the bay. During the S.W. monsoon, from April to Nov. (inclusive), though the wind frequently veers round even to the N. of W., there is generally a heavy swell setting directly into the mouth of the bay from the S.W.; this sometimes occasions much difficulty in bringing a vessel up in an anchorage already so overcrowded as to compel vessels to be moored by means of stern hawsers, which, if required, are supplied by the local authorities.

Approaching the bay from the W., by bringing Point de Galle Light-house E. by N.  $\frac{1}{2}$  N., a vessel will pass clear to the S. of the Whale and Little Whale Rocks; both of which are nearly in the same line of bearing, about W.  $\frac{1}{2}$  N. from the light-house; the former being distant  $2\frac{1}{2}$  m., and the latter about  $1\frac{1}{2}$  m. The rocky islets off the light-house may be approached in safety so long as the church in the fort is kept to W. of the light-house; here the pilot's boat will generally be found.

**W. Entrance.** To pass to N. of the Cadda Rocks, keep on about an E. course, with Edwards Pillar on with the white tower on Watering Point; this will lead between the Meemattia Rock and the Inner Cadda Rock. Proceed with these marks on, until the W. turret of the church in the fort\* is on with Elephant Rock (which is a high, smooth, round-topped rock, unlike any other); then steer about E.N.E. for Gravet Point (the termination of the high land in the N.E. corner of the bay), until the signal-staff on Neptune Bastion is in line with the light-house. Then haul up for the Cutchery Police Station, N. by E.  $\frac{1}{2}$  E., which will lead through in mid-channel between the *black* buoy of Polcatte and the *red* buoy of Mata-Mada. When the light-house is shut in with Utrecht Bastion, anchor in about 6 fathoms.

To pass to the S. of the Cadda Rocks, keep the church in the fort to W. of the light-house, until the white mark is *well* shut in with Watering Point; the rocks off Oonawatty Point will then be open of the point, and in line with a distant point to the E. Then steer to the E until the Pilot's Tree (the large mushroom-shaped tree on the summit of Moodliar Hill) is on with the Polcatte *black* buoy, bearing N. by W.; the left shoulder of the hill will then be clear of the almond tree near Sailor's Bastion. Haul up for the Pilot's Tree until the signal-staff and light-house are in line, then proceed as above directed, between the Polcatte and Mata-Mada buoys.

Sailing-vessels approaching Galle should be careful to keep a weatherly position to enable them to sail in, and it should be borne in mind that the current sets along the line of coast with great velocity—to the E. during the S.W. monsoon, and to the W. during the N.E. monsoon. Vessels during the S.W. monsoon, by getting to leeward of the port, have taken weeks to regain their position, and, in some instances, have been compelled to bear up for Trincomalee.

Point de Galle is considered a safe place in all seasons of the year, but with strong S.W. winds a ground swell tumbles in. A low sandy beach, with some rocky islets near it, and cocoa-nut trees behind, forms the bottom of the bay, and in the S.E. corner of it, on the N. side of the

\* Care must be taken not to confound the white gabled chapel on an eminence outside the fortifications with the church in the fort.



high rocky point at the entrance, there is a wharf, and an excellent spring of water at the bottom of a cove, where a small ship may be careened: this bears from the light-house about E. by S.  $\frac{1}{2}$  S. nearly  $1\frac{1}{2}$  m. The best anchorage in the Road is to S.W. of these rocks, in 16 to 18 fathoms soft bottom, with the flag-staff on the point bearing from N.N.E. to N.N.E.  $\frac{1}{2}$  E., off the town nearly 2 m.; but when any articles are to be landed, or ships being in want of provisions and water, they will have a more convenient berth, by anchoring in the same depth, with the flag-staff bearing N.  $\frac{1}{2}$  E. or N. by E. When the S.W. monsoon blows strong, it is unpleasant to anchor in the road.

**Oonawatty Point**, sometimes called Bellows Point, the S.E. headland of Point de Galle Bay, is steep and rocky, conspicuous to a vessel coming from the E.; Edward's Pillar, 264 ft. above sea, is an excellent land-mark standing about 1 m. to N. of the point. There are several rocks off this point, on the outermost of which, called the **Bellows**, the sea breaks very high in bad weather. This rock bears S.S.E.  $\frac{1}{2}$  E. from Oonawatty Point, distant a little more than  $\frac{1}{2}$  m., and S.E.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  m. from Point de Galle Flag-staff. When Oonawatty Point bears N.W. 4 or 5 leagues, it may be known by a clump of trees; and if the weather is clear, the flag-staff and light-house will be seen about two points open to the W.

To approach the anchorage, the Haycock, a little open to the W. of the flag-staff N. by E.  $\frac{1}{2}$  E., is a good leading-mark, and with the same bearing, or N.N.E., is the best anchorage in 16 fathoms water, the W. Breakers W. by N.  $\frac{1}{2}$  N., and the Bellows or E. Breakers, E.S.E. From Point de Galle Road, the Haycock bears nearly N. by E., distant  $6\frac{1}{2}$  leagues. This is a high conical mountain, in lat.  $6^{\circ} 20' N.$ ; it is very conspicuous from the offing, in sailing round the S.W. part of the island from Colombo to Dondra Head. About 3 leagues E. from the Haycock there is a table-hill, with a knob or hummock on it, which is also visible from the road. The land to the W. is generally low, with cocoa-nut trees fronting the sea, but to the E. of Point de Galle, it is formed of several ridges of hills, of various aspects.

The bank of soundings extends 3 or 4 leagues to the S. of Point de Galle, on which ships may anchor with a stream or kedge, should the wind fail and the current be unfavourable. S.W.  $\frac{1}{2}$  W. 3 m. from Point de Galle Flag-staff is a bank of 17 to 22 fathoms, surrounded to sea-ward by 35, and towards the land from 24 to 26 fathoms. In such case they may anchor in from 20 to 40 fathoms on any part of it, between Point de Galle and Colombo; the bottom is often sand and gravel, but in some places rocky. In coasting along from Galle to the W., a ship ought not to come under 26 or 28 fathoms during the night, until she approach Caltura, for these depths are sometimes found within 3 or 4 m. of the shore. Between Caltura and Colombo the coast is more safe, and may be approached to 15 or 16 fathoms in the day; but these depths are too close to stand in to during the night.

Before Oct. is advanced, strong W. winds and leeward currents render it sometimes very difficult to get round the S.W. part of Ceylon, from Point de Galle to Colombo. The ship *Aurungzebe* sailed from the former place, stood to lat.  $6^{\circ} S.$  with W. winds, then tacked to the N.W. and saw the S. part of Ceylon again, in a month after; she stood back to  $2^{\circ} S.$ , then tacked and stood to the N., till in lat.  $7^{\circ} 10' N.$ , without seeing land, being to the E. of Ceylon; she tacked again to the S., and got sight of Point de Galle on the ninth week, and on the tenth week reached Colombo.

**The COAST to E. of GALLE HARBOUR.** The coast from Oonawatty Point to Belligam, or Red Bay, extends E. by S. 4 leagues. The land fronting the sea is low and woody, with hills of a moderate height inland, and about 3 leagues to the E. of Oonawatty Point, near the shore, there is a small island covered with trees, called Woody Island. This part of the coast is steep, and seldom approached under 30 fathoms. **Rassa Muna Hill**, the W. point of Belligam Bay, bears from Woody Island E. by S. 2 m.; the land between them is rugged, of moderate height, covered with jungle, with an occasional tope of cocoa-nut trees, and lined with a reef.

**Belligam Bay**, called also **Red Bay**, is of considerable depth, and about  $1\frac{1}{2}$  m. wide at its entrance: there are two small islands and several rocks above water in the Bay, also several rocks having 6 to 24 ft. on them. The W. island lies close to the beach, on the W. side of the bay; it is called Gan Island; the other, Pigeon Island, lies more toward the middle and N. side of the bay. A reef projects from Rassa Muna Hill more than  $\frac{1}{2}$  m. to E.S.E., and extends along the W. side of the bay to Gan Island. Off the inner end of this reef there is a small quoin-shaped rock, called Ruana Rock; on the beach between this and Gan Island is the custom-house and rest-house of Belligam. Paas Rock, having 3 fathoms on it, lies  $\frac{1}{2}$  m. E. by S.  $\frac{1}{2}$  S. from Rassa Muna Hill, and Cadda Rock, having  $4\frac{1}{2}$  fathoms is 1 m. in the same direction. To come into the bay, keep the high cocoa-nut tree on the point inside Woody Island well open, till you bring Ruana Rock on with Gan Island, when haul up for Varumba Rock, a conical rock, elevated about 10 ft. above the

water, and situated at the bottom of the bay between Gan Island and Pigeon Island; this will lead fair between Paas Rock and Cadda Rock, and anchor to the E. of Ruana Rock, in 5 to 6 fathoms water, sandy bottom. It is advisable not to stand too far to the N. of Ruana Rock, in consequence of some sunken rocks which lie between Gan Island and Pigeon Island. On the E. side of the bay lies the village of Mirisse, close to the N. of which are some remarkable red cliffs. There are also red cliffs at Rassa Muna Hill. H. W. on F. and C. at 2 h. 30 m., rise about  $2\frac{1}{2}$  ft. **Mirisse Point**, the E. point of Belligam Bay, bears from Rassa Muna Hill E. by S.  $\frac{1}{2}$  S.  $1\frac{1}{2}$  m. It is the N.W. extreme of a rocky peninsula, presenting a range of cliffs to the sea of about  $\frac{1}{2}$  m. in extent, off the centre of which are several rocks above water. Off the point  $\frac{1}{2}$  m. is a rocky ledge of 19 to 30 ft., also the "Deumbahullet Rock" detached to the N.W., with 9 ft. on it, with a channel betwixt the ledge and the point carrying 6 fathoms.

**Madamura Bank**, having 3 fathoms on it, 7 fathoms inside, and 8 close outside, lies about 1 m. from the entrance of Matura River, and the same distance from the nearest shore; it bears from Pigeon Island S.S.W. rather more than a mile, and from Dondra Head W.  $\frac{1}{2}$  N.  $2\frac{1}{2}$  m. This and all other dangers off Matura and Dondra Head may be avoided by keeping the highest part of the high land of Mirisse Point well open to the land to the E. of it. At  $\frac{1}{2}$  m. to the E. of Pigeon Island are some remarkable red cliffs, of considerable height, off which there is anchorage in 10 to 20 fathoms, sand, 1 to 2 m. off shore. There is also anchorage in a small cove close to the E. of Dondra Head, at the village of Kapperlewelle, in 3 to 5 fathoms, sandy bottom.

**Matura**, in lat.  $5^{\circ} 56\frac{1}{2}'$  N., lon.  $80^{\circ} 33'$  E., bears about E.  $\frac{1}{2}$  S. from Mirisse Point, distant 7 m.: the land between them is moderately elevated, and the coast very steep, having 40 fathoms water in some places within 2 m. of the shore. Matura is a considerable town with a fort, the station of an assistant government agent. It is conspicuous from sea-ward, when it bears between N.N.W. and N.E. Ships may anchor here in the N.E. monsoon abreast the town in 20 and 22 fathoms, sand, shells and ooze, off shore about 2 m.; under 20 fathoms, the bottom is generally foul. Plenty of wood and good water may be procured in the river, the entrance of which is about  $\frac{1}{2}$  m. to the W. of the fort; boats going into it to fill water, should have some of the natives as pilots, to guide them clear of the dangerous sunken rocks at the entrance, on which they might be liable to strike and upset by the strong outset. Matura Island, called also Pigeon Island, opposite the fort and near the shore, is small and rocky, resembling a haystack: boats find shelter under it, and the surf being generally high on the shore, canoes are used for passing to the main.

The coast from Matura to Dondra Head stretches S.E. by E. to S.E. by S. about 3 m., and is remarkable on account of some red cliffs about half-way between them, resembling those at Red Bay, only they are more conspicuous.

**DONDRA HEAD**, the S.-most point of land of Ceylon, in lat.  $5^{\circ} 55'$  N., lon.  $80^{\circ} 35\frac{1}{2}'$  E., is a low point of land, with a grove of tall cocoa-nut trees on its extremity, by which it may be known. A reef of rocks projects from it about 1 m. to the W., having 9 and 10 ft. water on it, upon which the sea sometimes breaks very high. To the W. of this, ships may anchor in 20 fathoms, abreast the Red Cliffs, where they will be sheltered from N.E. winds; but directly off the extreme point of Dondra Head there is no ground with 100 fathoms line, within 1 or  $1\frac{1}{2}$  m. of the shore, so steep is this headland. Directly N. from it about 6 leagues inland, there is a hill, resembling a saddle when seen from the S.E.; and the land along this part of the coast is generally of moderate height, formed of a diversity of hills, which become more elevated in the interior.

**Gandura Point**, on the W. side of **Gandura Bay**, called also **Galies Bay**, is of moderate height and rocky; it bears from the E. part of Dondra Head E. by N.  $\frac{1}{4}$  N.  $1\frac{1}{2}$  m. A rock with 3 fathoms lies close to the Point on the S. side, and about half-way between Gandura Point and Kapperawelle are some rocky islets, called Hienia Rocks, close to the shore. The coast is high and rocky, and lined with a reef. The village of Gandura (Galies) lies to the N. of the Point, at the bottom of a small cove, about  $\frac{1}{2}$  m. in depth, and one-sixth of a mile wide, having good anchorage in 3 to 6 fathoms, sand and ooze, but exposed to a swell in the S.W. monsoon. **Kapperawelle Point**, on the E. side of Gandura Bay, bears from Gandura Point N.E. by E.  $\frac{1}{2}$  E.  $1\frac{1}{2}$  m.; the coast between them is high and rocky, and lined with a reef, except at the cove and a place called Nourounee, where there is a sandy beach with a plantation of cocoa-nut trees upwards of  $\frac{1}{2}$  m. in extent. Kapperawelle Point is high and rocky, and extends in an E.N.E. direction nearly  $\frac{1}{2}$  m., having several rocky islets off its E. extremity, called Linea Rocks, inside which, in a sandy bight, is the village of Otagodde.

**Etala Reef** is nearly  $\frac{1}{2}$  m. in length; it bears from the E. end of Kapperawelle Point E.  $\frac{1}{2}$  N.  $\frac{1}{2}$  m., and is rather more than  $\frac{1}{2}$  m. from the shore. Half a mile farther to the E., and  $\frac{1}{2}$  m. from the shore, is a rock above water, called Bamberee Rock, from which a reef extends to the shore. There are 5 fathoms inside Etala Reef and between it and Bamberee Rock; 5 to 7 fathoms close

outside both; and 7 fathoms to the W. of the Reef. The W. end of Nourounce Beach kept open of Kapperawelle Point clears Etala Reef and Bamberee Rock.

**Nilewelle Point**, on the W. side of Nilewelle Bay, is in lat.  $5^{\circ} 57' N.$ , lon.  $80^{\circ} 43' E.$ , and bears from Dondra Head E. by N.  $\frac{1}{4} N.$  8 m., and from Kapperawelle Point E. by N.  $4\frac{1}{2}$  m.; the coast between being of moderate height, covered with jungle, with occasionally a sandy bight and a plantation of cocoa-nut trees. Nilewelle Point is rocky and of moderate height, nearly insulated, being only connected with the main by a strip of sand, over which the sea frequently breaks. There is a remarkable tope of cocoa-nut trees on the Point, which gives it the appearance of a table-land when seen from the E. or the W., and by which Nilewelle may be known. The bay is about a mile in width, its E. point, **Polonha Point**, bearing from Nilewelle Point N.E.  $\frac{1}{2} E.$  1 m.: the land on both sides the bay is high and rocky; at the bottom there is a sandy beach, but lined by a reef, which extends  $\frac{1}{2}$  m. from the shore. The village of Nilewelle stands in a small bight on the W. side of the bay, off which is the best anchorage, in from 4 to 10 fathoms water, sandy bottom; but the bank is steep, and the anchorage confined by the reef above mentioned. Vessels anchoring here should take care to shut Tangalle Fort in by Polonha Point, as outside this mark the ground is foul. At 1 m. to the W. of Nilewelle is the small bay and village of Deekwelle, having a rest-house and plantation of cocoa-nut trees near the beach; but the bay is inaccessible, as the reef which lines the coast from Kapperawelle Point to Nilewelle Point extends across it.

**Mahawelle Point** is high, steep and rocky; it bears from Polonha Point N.E.  $\frac{3}{4} N.$   $1\frac{1}{2}$  m.; the coast between forming a bight, at the bottom of which is a small sandy bay, called Sureya-tree Bay, where the coasting dhonies occasionally anchor in 3 fathoms, sandy bottom, close to the beach; in 4 fathoms the ground is foul. To the N. of Mahawelle Point lies **Mahawelle Bay**, having anchorage in its S.W. part in 4 to 7 fathoms water, sandy bottom; in all the other parts of the bay the ground is foul. E. by N.  $\frac{3}{4} N.$ ,  $\frac{1}{2}$  m. from Mahawelle Point, lie Mahawelle Rocks; they are of small extent, nearly even with the water's edge, having 8 fathoms water close to all round; and  $\frac{3}{4}$  m. from the point in the same direction, are some rocky islets, called Oonacria Rocks, having a narrow channel inside with 5 fathoms water, and 7 to 9 fathoms close to on the outside. These islets are nearly  $\frac{1}{2}$  m. from the shore. The best passage into Mahawelle Bay is between them and Mahawelle Rocks, keeping nearer the latter, to avoid a patch called Middle Rocks, one-eighth of a mile W.S.W. of Oonacria Rocks. The channel is clear, near  $\frac{1}{2}$  m. wide, with 9 and 10 fathoms water. The passage between Mahawelle Rocks and the Point is also clear, with 8 fathoms water, but is much narrower than the other.

**Tangalle Point**, in lat.  $6^{\circ} 1' N.$ , lon.  $80^{\circ} 48' E.$ , bears N.E.  $\frac{1}{2} E.$   $4\frac{1}{2}$  m. from Polonha Point, the coast between is of moderate height and rocky, and, except in Sureya-tree and Mahawelle Bays, lined with a coral reef. This is a hilly point, moderately high, and gradually sloping to the sea; on its summit stands a square fort very conspicuous from sea-ward; also the new Cutchery by which Tangalle may be known. The bay, which is of considerable extent E. and W., but of no great depth, lies to the E. of the Point; the reef extends from the Point  $\frac{3}{4}$  m. to the E. Tangalle Rocks, which are above water and steep-to, bear from Tangalle Point E.  $\frac{1}{2} S.$  1 m.; there is a passage between them and the reef, having 5 and 6 fathoms water, but it is not safe for strangers, as the edge of the reef is not always to be seen; and there is a rock, called Kadul Rock, having only 10 ft. water on it, nearly in the middle. This rock bears from Tangalle Rocks N.W.  $\frac{1}{2} N.$   $\frac{1}{4}$  m. Another rock, called Maa Rock, having 16 ft. water on it, bears from Tangalle Rocks nearly  $\frac{1}{2}$  m. On these two rocks boats are usually stationed with flags, when vessels are coming into or going out of the bay. A vessel coming in without these boats, or a pilot, should pass to the E. of Tangalle Rocks, and stand to the N.E. till Tangalle Kudde Vehare (a small white pagoda,  $\frac{1}{2}$  m. N.W. of the fort) is in one with the high cocoa-nut trees on the S.W. bank of Kunkalla Modere: this mark kept on will clear all dangers; then haul up for Kunkalla Modere, and anchor in 5 to 6 fathoms, sandy bottom, Tangalle Rocks bearing S. by E. to S.E. by S. This is the only spot of clear ground in the bay, and is a space about  $\frac{1}{2}$  m. square; farther in, the ground is sand and stones; but a small vessel, having a chain, might in the S.W. monsoon run into 3 or 4 fathoms, where she would be more sheltered by the reef from the heavy swell which sometimes rolls into the bay at that season. To the E. the ground is very foul. Kunkalla Modere is the mouth of a small river: the Kunkalla, which runs into the W. side of the bay  $\frac{1}{4}$  m. to the N. of Tangalle Point, and though generally closed by a bank of sand, except after heavy rains, may be distinguished by the gap in the trees. The Custom-house is on the W. side of the bay, between Kunkalla Modere and the Point, and the best landing-place is near it. A reef commences about 1 m. to the N.E. of Tangalle Point, and lines all the E. side of the bay, projecting in some places nearly  $\frac{1}{2}$  m. from the shore. The W. side of the bay is low, with plantations of cocoa-nut trees, in which is the town: these extend about  $1\frac{1}{2}$  m. from Tangalle Point, to the E. of which the coast is higher, sandy, and barren. **Rackova**



**Point**, the E. point of Tangalle Bay, bears from Tangalle Point E. by N.  $\frac{3}{4}$  N.  $3\frac{1}{2}$  m. This is a sloping barren point, surrounded by a reef, which projects about  $\frac{1}{2}$  m. from it. Cahandawa Point, a sandy point of moderate height, having a tope of cocoa-nut trees on it, bears from Rackova Point N.E. by E.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  m., the coast between them forming a bight, having on its E. side some topes of cocoa-nut trees at the village of Cahandawa. It is lined with a coral reef.

**CAHANDAWA ROCKS** are two rocks bearing from each other N.W. by W. and S.E. by E.  $\frac{1}{4}$  m.; the inside one, situated on the edge of the reef, is small and above water; it bears from Cahandawa Point S.W.  $\frac{3}{4}$  m. **The outer rock**, which is in lat.  $6^{\circ} 3' N.$ , lon.  $80^{\circ} 53' E.$ , is very little below the water's edge, with other rocks round it. It bears from Cahandawa S.S.W. nearly 1 m., and from Rackova Point E. by N.  $\frac{1}{4}$  N.  $2\frac{1}{2}$  m. There is a passage between these rocks nearest the outer one, having 5 and 6 fathoms rocky bottom, but it is not safe. Close outside these rocks there are 7 and 8 fathoms water.

**Calamatta Point** is high and rocky, with a chain of rocky islets lying off it: it bears from Cahandawa Point E. by N.  $\frac{1}{4}$  N.  $2\frac{1}{2}$  m.; the coast between being sandy and barren.

**Levay Rock**, very little under water, bears from Calamatta Point S.W.  $\frac{1}{4}$  S., nearly 1 m., and is about  $\frac{1}{2}$  m. from the shore. The reef runs from this in a line with the coast to the inner Cahandawa Rock to the W., and to the E. inclines towards the shore to Calamatta Point. **Watta Rock**, the outermost of the chain of islets above mentioned, bears from Calamatta Point S.E. more than  $\frac{1}{2}$  m. Some rocks project from its outer part S.E.  $\frac{1}{4}$  m. There is a passage between Watta Rock and the next rocky islet, having 7 and 8 fathoms sandy bottom. At  $\frac{1}{2}$  m. to E.  $\frac{1}{2}$  N. of Calamatta Point, and about  $\frac{3}{8}$  m. to N. of Watta Rock, there is a rocky patch, nearly even with the water's edge, called Calamatta Rocks; between these and the chain of islets there is anchorage in from 5 to 7 fathoms sandy bottom, and between them and the shore to the N. anchorage in 4 to 6 fathoms sand and ooze off the small village of Calamatta. All the ground to the E. of Calamatta Rocks is very foul: the only landing-place is close to the N. of Calamatta Point; a reef lines the coast of all the other parts of the bay, which projects from its E. side  $\frac{3}{8}$  m. Dhonies call here for salt. **Oulandhe Point**, the E. point of Calamatta Bay, is high, sandy, and barren; it bears from Calamatta Point E. by N.  $\frac{1}{2}$  N.  $2\frac{1}{2}$  m., and from Watta Rock N.E. by E.  $\frac{3}{4}$  E.  $2\frac{1}{4}$  m. E.N.E.  $\frac{3}{4}$  m. from Oulandhe Point are some reddish cliffs, of moderate height, called **Rattana Point**. Some rocks above water lie close off these points inside the reef, which here projects  $\frac{1}{2}$  m. from the shore.

**Waluwe River** bears about E. by N.  $\frac{1}{2}$  N.  $4\frac{1}{2}$  leagues from Tangalle; the coast between them is low and barren close to the sea, but high inland, and may be approached to 25 fathoms within 4 or 5 m. of the shore. **Godawoy Point** is high, rocky, and barren, and bears from Rattana Point E. by N.  $\frac{1}{2}$  N. 4 m.; the coast between is low and barren, except about half way, where there are some topes of cocoa-nut trees, at the mouth of the river Waluwe, and lined with a reef.

**IBHAA ROCK**, in lat.  $6^{\circ} 4' N.$ , lon.  $81^{\circ} 2' E.$ , is very dangerous, being very little under water; it bears from Hambantotte Tower about W.S.W.  $4\frac{1}{2}$  m., and from Godawoy Point, the nearest land, S.S.E.  $\frac{1}{2}$  E. 1 m. There is a clear passage inside the rock, with 6 and 7 fathoms near the shore, and 8 or 9 near the Rock, irregular rocky bottom; between Nehinde and Ibhah Rocks there are 9 and 10 fathoms, and close outside both 10 fathoms. From the form of the land no good marks can be given to clear these rocks, which generally break: a ship should not, therefore, come under 16 fathoms in the night, when near them; nor even in the day, unless the rocks are seen, until Hambantotte Tower bears N.E. by N. or N.N.E.; this depth will be about  $\frac{3}{4}$  m. outside the rocks: there are 20 fathoms in about  $1\frac{3}{4}$  to 2 m. outside of them. **Nehinde Rock** is very dangerous, being nearly level with the water's edge, and steep all round; it bears from Hambantotte Tower S.W. by W.  $\frac{1}{4}$  W.  $3\frac{1}{4}$  m., and is 1 m. from the nearest shore. There is a clear channel inside it, having in it 5 fathoms near the shore, and 8 or 9 close to the Rock.

**Hambantotte Point**, in lat.  $6^{\circ} 7' N.$ , lon.  $81^{\circ} 7' E.$ , is high, sandy, and barren. It bears from Godawoy Point E. by N. 5 m.; on its summit stand a round tower and several houses, among which are the residences of the commandant and the assistant government agent of the station. To the N.E. of the Point is the small **Bay of Hambantotte**, with anchorage in it from 4 to 7 fathoms, sand and ooze. To the E. of the Point there is also anchorage in 8 or 10 fathoms, sand. The town is at the bottom of the bay, near the Point. This is the principal place of export for salt, and vessels calling here for that article should, in the N.E. monsoon, anchor to the E. of the Point; but in the S.W. monsoon they should run farther into the Bay, so as to be in some measure under the lee of the Point, where they will be less exposed to the swell, and where the boats can pass to and fro with greater facility. All dangers are visible. **Levay Point**, the N.E. point of Hambantotte Bay, bears from Hambantotte Point N.E.  $\frac{1}{2}$  N.  $1\frac{1}{2}$  m. **Patterajah Point** is of moderate height, sandy and barren; it bears from Hambantotte N.E. by E.  $\frac{1}{4}$  E.  $6\frac{1}{2}$  m.; the coast between being sandy and barren, and lined with a reef.

**Dorava Point**, called also **Mago Point**, a flat rocky point of moderate height, bears from Hambantotte E.N.E. about 12 m., and from Patterajah Point E. by N.  $\frac{3}{4}$  N. 6 m., the coast between being moderately high, sandy, and barren. About  $1\frac{1}{4}$  m. to the N.E. is the mouth of the small river Kirinde, near the village of Mahagam: this river is shut by a rocky bar; about S. by E.  $\frac{1}{4}$  E. 8 m. from the Point, breakers were said to exist. **Lanceeya Rock**, a small rock above water, bears from Dorava Point S.  $\frac{1}{4}$  m. Rocky patches extend from hence to the shore with 5 to 7 fathoms betwixt them. **Dorava Rock**, having on it 3 fathoms, with 10 and 11 all round, bears from Dorava Point S.E.  $\frac{3}{4}$  m. and from Lanceeya Rock E. more than  $\frac{1}{2}$  m. This may be avoided by not coming under 13 fathoms till the highest peak (1,972 ft.) of the Katteragamme Hills (a ridge of undulating hills nearer the sea than any other high land) is in one with Kirinde Point. **Kirinde Point** bears from Dorava Point N.E.  $\frac{1}{2}$  N.  $1\frac{1}{4}$  m.: this is a rugged, rocky point, of moderate height, having several large rocks on its summit, one higher than the rest; near which, on a mound of earth, a temporary flag-staff is sometimes erected. There are the remains of an old tank close to this, which still contains good water. Several detached rocks lie off this point, above and under water, off shore nearly  $\frac{1}{2}$  m. This is a place of export for salt, but it is uninhabited, except by the people employed by Government in the shipping of salt, and who are sent from other stations when required. The salt-stores are on the beach at the bottom of the small bay to the N. of the Point, off which dhonies and small craft anchor, in 3 to  $3\frac{1}{2}$  fathoms, water; but a patch of sunken rocks, and Kerinde Rock, with 7 ft. water on it, lie in the passage, rendering this anchorage difficult of access. The best anchorage is in 9 to 10 fathoms, with the N. end of the salt stores open of the high part of the Point, but not so far out as to be on with the outer detached rocks;—the high rock on the summit of the point above mentioned will then bear W.N.W. to N.W., and the outer detached rock from N.W. to N.  $\frac{1}{2}$  W.; to the N.E. of this the ground is foul. The **Great Basses Rocks** bear from Kirinde E. by S.  $8\frac{1}{2}$  m., the channel between them being clear of danger, with from 10 to 18 or 20 fathoms in it.

**Paltopane Point** is low and sandy, and bears from Dorava Point N.E. by E.  $3\frac{1}{4}$  m., the coast between them being barren and sandy, lined with a reef. About  $\frac{1}{2}$  m. to the N.N.E. of Paltopane Point, on the summit of the rising ground, near the beach, where the coast forms a sort of bight, stands Paltopane Fort. **Elephant Hill** bears from Dorava Point nearly N.E.  $\frac{3}{4}$  E., distant  $4\frac{1}{2}$  leagues; it is very remarkable, being a high isolated rock on the low land close to the sea. The coast from Dorava Point to Elephant Hill is rather low, barren and sandy near the sea, and may be approached in daylight to 24 or 25 fathoms, but not under 32 fathoms in the night, particularly in the vicinity of the Great Basses.

The **GREAT BASSAS** or **BASSES**, called **RAMANPAAJ** by the natives, is a dangerous reef of rocks, in lat.  $6^{\circ} 10' N.$  lon.  $81^{\circ} 28' E.$ , 6 m. distant from the nearest part of the S. coast of Ceylon, about  $\frac{1}{2}$  m. broad and a mile long, in a N.E. and S.W. direction, and being nearly 8 ft. above the surface of the ocean. The reef is one continuous rocky field, portions only showing here and there in the wash of the sea; the N.E. part is the highest and broadest, where there is a large rocky ledge forming its E. end, partially detached from the S. part or main body of the reef. It has deep water on all sides to within  $\frac{1}{2}$  m. of it; thus there are 16 to 19 fathoms on the S. side, 11 and 12 fathoms on the W., 9 and 10 fathoms on the N., and 7 and 8 on the E. sides: but beyond these depths, on the W. side, about 1 m. off, there is a patch of 8 fathoms; and on the E. side, at  $1\frac{1}{2}$  m., there is another of 5 fathoms, with deeper water between it and the reef. From the N.E. part, Katteragamme Peak bears N.W. by N.; Elephant Hill about N.; and Nipple Peak N.  $\frac{3}{4}$  E. This line of direction also passes a little to E. of the Little Elephant, a round-topped hill, of 105 ft. elevation, close to the beach.

A **Light-vessel**, in lat.  $6^{\circ} 11' N.$ , lon.  $81^{\circ} 28' E.$ , showing a Red light, *revolving* once in 45 seconds, has been placed in 12 fathoms, at  $\frac{3}{4}$  m. to N.N.E. of the rocks (whilst the light-house\* on them is being built). The light-vessel has two balls vertical at the main-mast head.

The **LITTLE BASSAS**. The centre of this reef, in lat.  $6^{\circ} 22\frac{1}{2}' N.$ , lon.  $81^{\circ} 43' E.$ , bears N.E.  $\frac{1}{2}$  E., distant 20 m. from the N.E. part of Great Bassas, and being only 2 ft. above water is even more dangerous. It appears to consist of large boulders, which even by daylight are scarcely perceptible from a ship until close up to them. The extent of that portion usually shown by breakers is not more than  $\frac{1}{4}$  m. across, about E.S.E. and W.N.W., but on a bearing of W.S.W. from its W. part, there are many sunken patches, breaking much in heavy weather, so that occasionally the sea covered with surf is  $1\frac{1}{2}$  m. in extent.

\* Light-houses are now being erected upon both Great and Little Bassas. That on the Great Bassas is expected to be lighted from this year (1873), showing a Red light, *revolving* once in 45 seconds, elevated 110 ft. above the sea, visible about 16 m. in clear weather. In foggy weather, a bell will be sounded at intervals of  $7\frac{1}{2}$  seconds. This will supersede the light-vessel at the Great Bassas.

The Little Bassas is not more than  $4\frac{1}{2}$  m. from the nearest part of Ceylon, and on its N. and W. sides there are patches of shoal water, one of which, named the 3-fathom tail, carrying the least water, 3 fathoms, bears N. by W. distant  $1\frac{1}{2}$  m. from it. It is of very limited extent, with  $3\frac{1}{2}$  and 4 fathoms water close around it. There was much difficulty sometimes in discovering the Little Bassas, especially when approaching them from the W., while the sun is to the E. When sounding off the coast in 1860 H.M.S. *Cyclops*, on hauling in from deep water for the mark, the Chimney, had no bottom with 110 fathoms of line, and almost the next cast soundings in 9 or 10 fathoms, with the breakers just perceptible close aboard of her—a practical proof of the steep nature of the bank in the vicinity of the reef on its outer side, and of the danger in approaching from the E. and S., on any course from W.N.W. to N. by E., inclusive.

The following bearings are taken from the reef:—Chimney Hill, N.W.; the Nipple, N.W. by W.  $\frac{1}{2}$  W.; the Elephant, W.  $\frac{1}{2}$  S.; Katteragamme Hill, W.  $\frac{1}{2}$  S. By seeing one of the above objects on the bearing stated against it the mariner will know that the Little Bassas Reef is in the same direction. No ship, by night, should be within a distance of 4 m. with no bottom at 150 fathoms nor, by day, within 2 m.; and no ship should ever attempt to pass between the reef and the Ceylon shore. The *Dædalus Shoal* bears N.N.W. 3 m. from the Little Bassas.

The *Atlas Reef*, bearing N.E.  $\frac{1}{2}$  N.  $1\frac{1}{2}$  m. nearly from the centre of the Little Bassas, is another patch of 3 fathoms with 4 and 5 fathoms, water, close around it; being most probably where the *Atlas* grazed the second time in getting out clear of the shoal water. Between the *Atlas* and Little Bassas, and clear of the 5-fathom line around the reefs, is a space at least  $\frac{1}{2}$  m. wide, with depths varying from  $5\frac{1}{2}$  to 8 fathoms, water. This being good holding-ground, is the position best adapted for a light-vessel for the Little Bassas; and if moored in 6 fathoms of water nearly, about half-way and a little to W. of a line from this reef to the *Atlas Shoal*, it would be sufficiently clear from tailing into shoal water in either the S.W. or N.E. monsoon.

A *Light-vessel*, in lat.  $6^{\circ} 23\frac{1}{2}'$  N., lon.  $81^{\circ} 43'$  E., carrying a *fixed* light, 33 ft. high, which *flashes* once every  $1\frac{1}{2}$  minutes, is now moored there in 5 fathoms, about 3 cables to N.E. of the Little Bassas, with the rocks above water bearing S. by W.  $\frac{1}{2}$  W.

**CEYLON S.E. COAST.** The first land seen from a ship approaching the Bassas from the W., is the Katteragamme range of hills, the nearest and highest of which is 7 m. distant from the sea. These hills are sometimes conspicuous both from the E. and W., when others nearer to the sea are hardly discernible. Their summit presents an irregular ridge, the N.E. peak of which is the highest, 1,972 ft. above the sea. The next to the E. is the *Elephant Hill*, conspicuous from standing alone on the low land near the shore, and bearing a remarkable resemblance to the animal from which it is named. It is 2 m. from the beach, bare and destitute of trees, and is 480 ft. above the level of the sea. Farther inland, and bearing from *Elephant Hill*, N.  $\frac{1}{2}$  E., about  $9\frac{1}{2}$  m. distant, is *Nipple Peak*, 903 ft. above the sea. Rendered conspicuous by its elevation, which places it as if alone, this peak is also distinguished by a flattened summit, with two lumps (one at each end) in a direction about W.S.W. and E.N.E.; the W. nipple is the higher. This hill may also be known by a remarkable cone W.S.W. of it, generally distinguishable, but more so from the E., although only 520 ft. above the sea. *Chimney Hill*, or Peak, of much service to a ship formerly, in ascertaining her position in reference to the Bassas, is 445 ft. above the sea, being the highest part of a low range, which takes an E. and W. direction. It appears to be separated from the W. part of the range, and bears N.W. from the Little Bassas. It is  $4\frac{1}{2}$  m. from the nearest beach, and is very conspicuous.

**Potana Point**, (having a sand-hill 105 ft. above sea) in lat.  $6^{\circ} 21'$  N., lon.  $81^{\circ} 33'$  E., is situated more than one-third of the distance along the coast, between *Elephant* and *Chimney Hills*; and off this point is the only anchorage in-shore that was found available. This anchorage was in from 5 to 6 fathoms water, with the point bearing about W.S.W. *Potana Point* forms perhaps the deepest bay on this coast, and would afford shelter in the S.W. monsoon for small craft not drawing more than 10 ft., but a heavy sea always setting into it throws the surf up to the head, permitting no one to land or embark without getting wet. Off the point, and also to the S.W. of it, the shore is beset with detached rocks for a mile out, with some showing and others covered, on which the sea is always breaking; a rocky sandy shore wherever there is a point.

**ELEPHANT SHOAL.** The S.W. end of this shoal bears N.  $\frac{1}{2}$  E. from the N.E. part of the Great Bassas, distant nearly 7 m. From thence its heavy breakers extend N.E.  $\frac{1}{2}$  E. above  $1\frac{1}{2}$  m., and from 150 to 250 yards across. There is a channel between it and the shore of Ceylon of 8 and 9 fathoms, being  $1\frac{1}{2}$  m. broad, but reduced to  $\frac{3}{4}$  m. by some rocks off *Annadowe Point*, and the next point to E., on which is the Little *Elephant Hill*. About E.N.E. from the N.E. end of the *Elephant Shoal*, is the centre of *Potana Shoal*, a rocky patch about  $\frac{1}{2}$  m. broad, on which the sea always breaks. No broken water was seen between it and the *Elephant Shoal*.



**Cyclops Reef**, bearing E. by N.  $\frac{1}{2}$  N., about  $1\frac{1}{2}$  m., from the centre of the Potana Shoal, is from  $2\frac{1}{4}$  to  $3\frac{1}{4}$  m. off shore, extending at least 4 m. in an E.N.E. direction, with 12 to 18 ft. thereon, and is very dangerous. Its E. end bears W.S.W., and 7 m. from Little Bassas.

**Dædalus Shoal.** This shoal is a small narrow patch of 15 ft., bearing N.N.W. 3 m. from the Little Bassas, and  $1\frac{1}{2}$  m. off shore, with Chimney Hill bearing N.W. by W. It is steep-to. There is a good channel within all the shoals, that may be taken in case of necessity, by keeping about a mile off shore.

**NAVIGATION of the S. and S.E. COASTS.** There is deep water between the Great Bassas and the land, the shore of which is clear at the distance of 2 to 4 m. from it all the way to Galle. A ship bound to the W., after clearing the Little Bassas, and certain of daylight, if keeping a good look-out, may haul in to pass the Great Bassas, and may do the same going E. to pass the Little Bassas, after passing the former. But should a ship from any unforeseen circumstances by night find herself on any part of the coast inside of them, without seeing the lights on both Bassas, it would be better to anchor instantly and wait for daylight, to get her position and soundings; but the S.E. part of Ceylon must not be approached within a distance of 6 m., to avoid a long narrow shoal on the S. point of which was found a cast of  $4\frac{1}{2}$  fathoms. It is not improbable there may be less water than this, for in standing along shore close outside for 4 m. in 7 to 9 fathoms, discoloured water was distinctly seen, with the appearance of a deep channel inside. The coast is clear as far as Galle, and may be approached safely to 2 m. distance, but only in daylight, as it is impossible to judge of distances accurately by night.

**The Currents** about the S.E. coast of Ceylon appear to gain strength with the wind, and about the Bassas are most irregular: they cannot be allowed for; and the only way of avoiding danger was to give the rocks a wide berth, although it incurred a great loss of time. But the lights now render navigation more easy; and, with a good chart, much time may be saved in a steamer by going inside the Bassas. Currents from Nov. to April are constant to the S.W.; from June to Sept. they run with the S.W. monsoon to the E. past the Great Bassas, whilst the Little Bassas Light-vessel occasionally swings to a S. current which is mostly felt between Point Pedro and Trincomalee during the S.W. monsoon.

Under the Little Bassas, or within them, a set of tide directly to windward has been occasionally felt, the wind blowing strong enough at the time to keep the ship quite broadside on; but this seldom or never lasted more than two hours. At the Great Bassas it was never felt, and only occasionally as far W. as the anchorage off Potana, and the greatest strength found at the Little Bassas was  $\frac{3}{4}$  knot per hour.

**The Course from Dondra Head** to the Great Bassas is E. by N.  $\frac{1}{2}$  N., distance  $18\frac{1}{2}$  leagues; but the prudent navigator ought not to place much confidence in the distance run by the log during the night, for the currents are frequently strong, and their direction uncertain. In the S.W. monsoon, when the wind blows strong along the S. coast of Ceylon, the current runs with it to the E.: a ship passing then from Dondra Head will be sooner abreast of the Great Bassas than expected. In a run of 24 hours from Point de Galle, the log gave only 46 m. from thence to the E. part of the island. These strong E. currents are not constant in the vicinity of the Great and Little Basses; for there, and along the E. side of the island, the current frequently sets to the S. in the S.W. monsoon, and almost constantly so during the other monsoon.

If a ship, in settled weather, in the daytime, adopt the inside channel, she ought to proceed as the direction of the wind may render necessary, borrowing towards the Basses to 12 or 14 fathoms, and to 8 or 9 fathoms near the main. Some ships, after passing Dondra Head, steer in the night E. and E. by S. in the S.W. monsoon, to give the Basses a good berth, which carries them so far off the land that they are obliged to haul to the N.W. at daylight, close to the wind, on purpose to regain it; and the whole of the following day is sometimes spent before they are enabled to approach the coast along the E. part of the island. Other ships steer a course inclining towards the shore, and are thereby liable to run into great danger during the night; some have narrowly escaped destruction, whilst others have been wrecked. His Majesty's ship *Dædalus* was unfortunately lost on the rocks, about midway between the Little Bassas and the main, and several of the 1,200 tons ships under her convoy, bound to Madras and China, were nearly sharing the same fate. The dry haze, which prevails greatly about this part of Ceylon, deceived them in their distance off the land, thinking themselves farther from it than they really were; and without great caution strangers are very liable to make this mistake.

To avoid disasters, a ship being abreast of Dondra Head, at 2 to 4 leagues' distance in the S.W. monsoon, ought to steer about E. by N., or E. by N.  $\frac{1}{2}$  N., according to the distance from the land, taking care to sound in time, if it be night. Although the coast near Dondra Head is steep, with deep water near the shore; about 10 leagues to the E., soundings extend farther out, and from

thence to the Great Basses are pretty regular; the bottom sandy, often mixed with mud. From the Great Basses to the distance of 8 or 10 leagues to the W., the depth is usually 30 fathoms about 2 or 3 leagues off shore, towards the Basses; and the same depth about 3 to 5 m. off shore farther to the W. Where the depth is more than 40 fathoms, the bank in general shelves quickly to no ground. Having run in the night 8 or 10 leagues to the E. of Dondra Head, the lead should be attended to as the best guide, keeping under moderate sail if the wind is brisk, that good soundings may be obtained by heaving-to, or otherwise. Having got soundings, a ship should not come under 36 fathoms, in steering a course parallel to the coast, and should keep the lead going, particularly when approaching the meridian of the Great Basses; then haul out a little on the edge of soundings if the night be dark, and the light not seen, or the weather unfavourable; but if the night be clear, with settled weather, she may keep in soundings between 34 and 40 fathoms, taking care not to come under 36 fathoms; she will then pass about 2 m. outside the Great Basses Light, which is as near as can be done with prudence in the night.

The passage inside the Great Basses may now be easily taken, but all vessels should pass outside of the Little Basses. In daylight, with a steady breeze, a ship may borrow towards them, but not approach the light-vessels on the S. and E. nearer than  $1\frac{1}{2}$  m. Having passed the Great Basses in the night, a course may be steered about N.E. by E. to pass the Little Basses, which are distant  $6\frac{1}{2}$  leagues from the former, attending particularly to the lead, and not coming under 60 fathoms until the light-vessel is seen. Coming from the N. in the night, with the wind fair, or from the land, keeping on the edge of the bank of soundings may be adopted, keeping a good look-out for the Lights, and in dirty weather not to come nearer than 40 or 50 fathoms. As a ship may sometimes be greatly retarded or accelerated in her progress by uncertain currents, it will be prudent not to borrow under 70 fathoms in the night, on any part of the S.E. coast of Ceylon; more particularly as they sometimes set towards the shore about the Basses, but generally to the S. or S.W.

**General Remarks on the S.W. and S. Coast.** The coast from Bentotte to Dondra Head presents a succession of sandy bights covered with cocoa-nut trees, with intervening rocky points or cliffs; the land near the sea is generally low, but increasing in height inland in ridges of irregular hills; the most conspicuous of these is the Haycock, a conical mountain, in lat.  $6^{\circ} 20\frac{1}{2}'$  N., lon.  $80^{\circ} 17\frac{3}{4}'$  E. From Dondra Head to Tangalle, the coast assumes a more rugged, rocky appearance, the plantations of cocoa-nut trees are fewer and of less extent. To the E. of Tangalle the coast is sandy and barren; a few topes of cocoa-nut trees are to be seen between Tangalle and the Waluwe River, but none to the E. of the latter. The hills fall farther back as you advance to the E., leaving a level space between them and the sandy hillocks near the sea, in which are salt and marshy grounds.

The bank of soundings gradually extends farther from the shore as you increase the distance from Dondra Head: off Bentotte, at a distance of 3 m., there are 20 fathoms, at  $4\frac{1}{2}$  m. 30 fathoms. At  $1\frac{1}{2}$  m. off Akorale there are 20 fathoms with coral shoal patches, and 30 fathoms at  $2\frac{1}{2}$  m. Off Galle the soundings are more regular. From the vicinity of Gindura and Whale Rocks at  $2\frac{1}{2}$  m. off shore, are 26 fathoms, while at a distance of 3 m., or  $\frac{3}{4}$  m. outside these rocks, there is a depth of 33 fathoms. Off Belligam, at  $1\frac{1}{2}$  m. distance, are 20 fathoms, and 30 fathoms at  $1\frac{1}{4}$  m. At  $\frac{3}{4}$  m. off Dondra Head there are 20 fathoms, 30 at  $1\frac{1}{4}$  m., and 50 at 2 m. distance. Three miles off Tangalle there are 20 fathoms, and 30 at  $3\frac{1}{2}$  to 4 m. Off Hambantotte, at  $3\frac{1}{2}$  m. distance, are found 20 fathoms, and 30 at 5 m. from the shore. From 30 fathoms the water deepens less rapidly, 40 fathoms being the depth at 2 and 3 leagues from the land, except in the vicinity of Dondra Head. To the W. of Dondra Head, 25 fathoms will carry clear of all dangers; but it would not be prudent to approach the shore so close in the night, when in the vicinity of some of the dangerous rocks described above. To the E. of Dondra Head, as far as the Great Basses, 20 fathoms will clear all dangers. To pass outside these rocks in the night, a ship should haul out when approaching them into 40 fathoms water. In fine weather, when the land and lights can be distinctly seen, a ship may pass inside the Great Basses in the night, keeping about 3 m. from the shore; but care must be taken not to pass during the night inside the Little Basses Light. By day a small steamer, having a good chart, may do so, but she must borrow towards the Light-vessel, to avoid the Dædalus shoal; the channel between them is not  $1\frac{1}{2}$  m. broad. When passing *inside* the Great Basses, and steering to the E., be careful not to shoal under 15 fathoms off the *Cyclops* Reef, which lies from 7 to 11 m. on a W.S.W. bearing from the Little Basses, and 4 m. off Potana Point.

**THE COAST from Elephant Hill**, extends about N.E. by E.  $5\frac{1}{2}$  leagues, to the high sandy point of Julius Nave, being low, barren, and sandy, fronting the sea; but this part is seldom approached, as few ships pass inside the Great Basses, unless by accident or in a case of necessity. A large ship ought not to pass between the Little Basses and the shore, on account of the rocks in that channel, already mentioned in the description of those dangers. From Julius Nave Point,

in lat.  $6^{\circ} 29\frac{1}{2}'$  N., lon.  $81^{\circ} 43'$  E., and nearly 7 m. due N. of the Little Basses, the coast lies N.N.E.  $\frac{1}{2}$  E. 16 m., to another small projection, called Magame, which bears from the Little Basses about N. by E.  $\frac{1}{2}$  E.  $5\frac{1}{2}$  or 6 leagues, and is said to have shoal water extending from it  $\frac{3}{4}$  m. This part of the coast is also low and sandy, facing the sea, with Chimney Hill, 445 ft. high, and others, a little inland to the W., already described. The soundings on the bank stretching along this part of the coast are generally regular, and give sufficient warning when it is approached in the night; the depths are 17 and 26 fathoms from 1 to  $2\frac{1}{4}$  leagues off, and between 40 and 50 fathoms near the edge of the bank, from 4 to 5 leagues off shore.

**Aganis, or Agaus**, in lat.  $6^{\circ} 50'$  to  $7^{\circ}$  N., is a space of land with some hillocks near the sea; the most prominent point of this, called **Saukiman Kandy**, is the E.-most part of Ceylon Island, in lat.  $7^{\circ} 2' N.$ , lon.  $81^{\circ} 53' E.$  Off this point, and for 3 or 4 m. to the N., H.M.S. *Cyclops* found a shoal bank of 4 fathoms. Between the hilly land of Aganis and the hills to the N.W. of the Little Basses there is a considerable space of land, all low, except an isolated mount, which has a regular peaked appearance when viewed from the E., but resembles a saddle, having a gap in it, when seen from the S. From the Little Basses to the land of Aganis the course is about N.N.E., and the distance 9 leagues; between them, the coast may be approached with safety to 19 fathoms, about  $1\frac{1}{2}$  leagues off shore, the depths on the bank being pretty regular, generally sandy bottom; and the edge of it, where there are 45 and 50 fathoms, is distant  $4\frac{1}{2}$  or 5 leagues from the shore. At 22 m. inland from Aganis, there is a table-mount, called **Westminster Abbey**, in lat.  $7^{\circ} 5' N.$ , lon.  $81^{\circ} 29' E.$ , with a large square knob or turret on its N. end, and there is a peaked hill near the sea, generally called **Aganis Peak**, 767 ft. high; these are in one with each other, bearing W.  $\frac{1}{4}$  S. The general outline of the S.E. coast of Ceylon is convex to the sea, rounding gradually without any conspicuous headlands. Between lat.  $6^{\circ} 30'$  and  $7^{\circ}$  N. is an advisable place to make the land, for ships running towards the E. part of the island in the N.E. monsoon, taking care in the night to fall in with it to the N. of the Little Basses.

The coast between Aganis and Baticolo River is generally very low near the sea, interspersed with plantations of cocoa-nut trees, and some houses or small villages. In this space a ship may generally borrow to 19 or 20 fathoms, these depths being from  $2\frac{1}{2}$  to 3 or 4 m. off shore, and the bank of soundings extends from it to the distance of  $2\frac{1}{2}$  or 3 leagues, where the depths are from 45 to 70 fathoms, but not always regular; for in a few places, within 4 m. of the shore, there are 35 and 38 fathoms. In working during the day, a ship may in some parts venture into 16 or 18 fathoms, and tack within 2 m. of the shore; but 20 or 22 fathoms is as near as it should be approached in the night; for in these depths, if the moon shines bright, the surf will be seen breaking on the sandy beach, or the noise of it may sometimes be heard with the land-wind. From some of the small projecting points foul ground is said to extend about 1 or  $1\frac{1}{2}$  m., rendering it prudent not to come under 20 or 22 fathoms near them, particularly in the night. Nearly abreast of the Friar's Hood Mountain, but rather to the S., in about lat.  $7^{\circ} 16' N.$ , is the entrance of Singaratopu River, which extends a great way inland, having to the S. a pagoda, among a grove of cocoa-nut trees, at a place called Tricoll.

**Kara-tivo** is in lat.  $7^{\circ} 21' N.$ , and to the N. of this place, the coast consists of islands, with lagoons or back-waters, which extend beyond Baticolo. The coast contiguous to Baticolo is low, but several mountains or hills inland are conspicuous in sailing along this part of the island. The most remarkable and highest of these, 1,563 ft. in height, is the **Friar's Hood**, in lat.  $7^{\circ} 26\frac{1}{2}' N.$ , lon.  $81^{\circ} 28' E.$ , at  $6\frac{1}{4}$  leagues from the sea, and leaning over to the left, resembles a friar's hood when bearing to the S.W., but has the form of a pyramid when it bears to the N.W.. To the S. of it there is another mountain, somewhat similar in appearance, called the False Hood, which is not so high as the former. Five and a quarter leagues to the W.N.W. of the Friar's Hood there is a round conical hill, called the Kettle Bottom, visible in clear weather, in lat.  $7^{\circ} 32' N.$ , lon.  $81^{\circ} 13\frac{1}{4}' E.$ , about 10 leagues W.S.W. from the entrance of Baticolo River, and W. by N.  $\frac{1}{4}$  N. from the entrance of the river, is a sharp isolated cone, 532 ft. high, called the Sugar Loaf, in lat.  $7^{\circ} 49\frac{1}{4}' N.$

**Alphee Shoal**, in lat.  $7^{\circ} 24' N.$ , lon.  $81^{\circ} 50' E.$ , where the large French steamer (of that name) struck, in 19 ft., lies about 3 m. to N. of Kara-tivo.

**BATICOLO, or BATTICOLOA RIVER**, in lat.  $7^{\circ} 44\frac{1}{2}' N.$ , lon.  $81^{\circ} 40\frac{1}{2}' E.$ , is narrow at the entrance, not discernible except from the N., the opening being in that direction; but it may be known by a house and flag-staff, where the colours are usually shown to passing ships. There are 6 ft. on the bar at L. W., and the tide rises and falls about 2 or 3 ft.; H. W. at 5 h. on F. and C. of moon, but not always regular. A shoal-spit of 3 fathoms extends off the point  $\frac{1}{2}$  m. There is a small rocky bank, having 12 ft. water, which lies nearly  $1\frac{1}{2}$  m. to N.E. by E. of the flag-staff. The fort is  $2\frac{1}{2}$  m. up the river, on an island, where water may be procured from a well; buckets must be taken on shore to draw up the water, and the casks are landed at the wharf, and rolled to