

TORRES' STRAITS

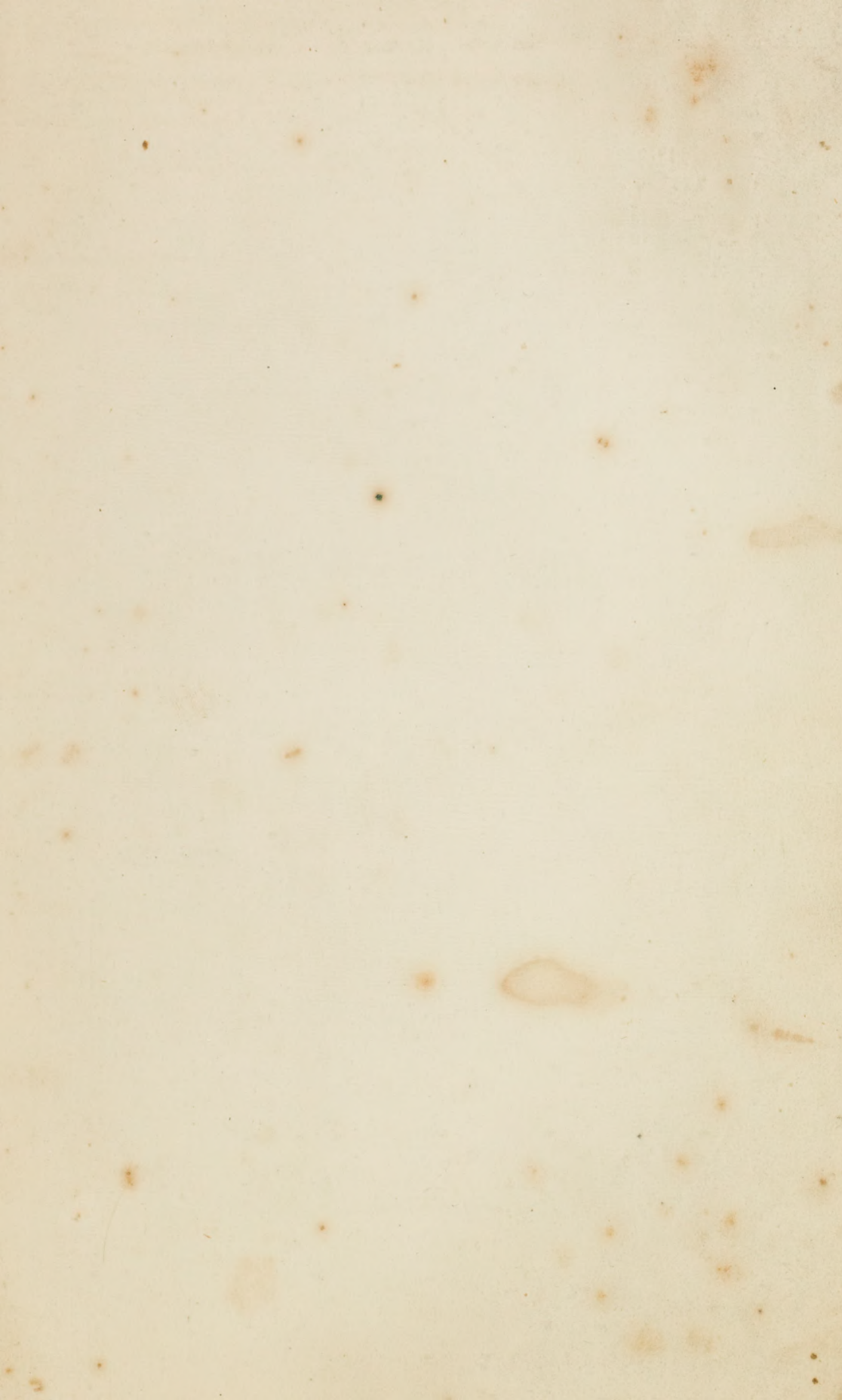
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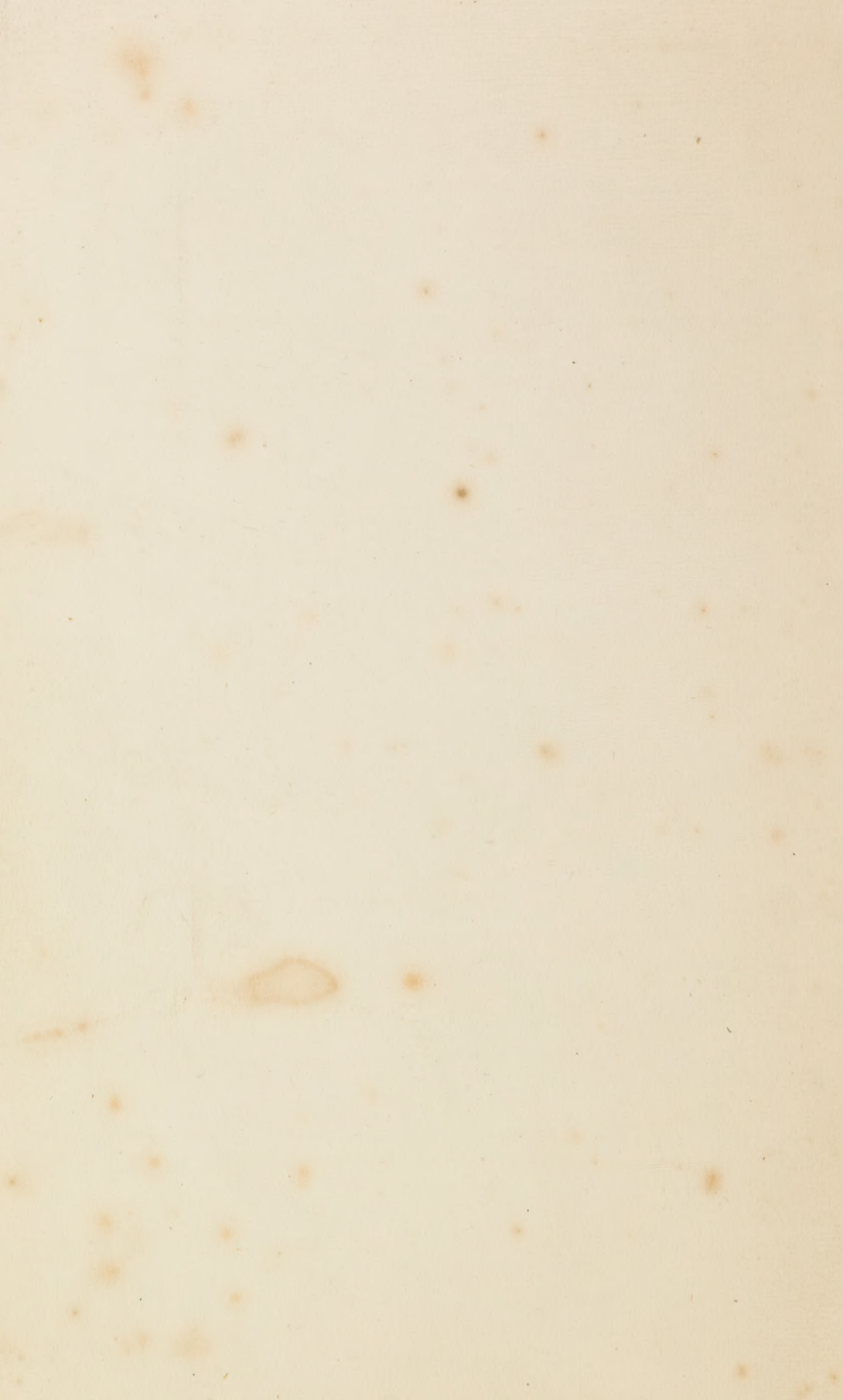
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J. Mitchell

COMPLETE SAILING DIRECTIONS

For the various Passages to and through

TORRES' STRAITS,

COMPRISING

The Inner Passage by the late Admiral King, and the Outer Routes
by Raine Island;

AND BY THE NORTH EASTERN ENTRANCE,
BY CAPTAIN BLACKWOOD, R.N.;

TO WHICH ARE ADDED

THE EXACT POSITIONS OF OUTLYING ISLANDS, REEFS, AND OTHER DANGERS,
IN THE OUTER ROUTE TO THE STRAITS, AS LATELY DETERMINED

BY CAPTAIN DENHAM, H.M.S. "HERALD."

Opinions of Navigators on the relative advantages of the various Routes,
and other useful information.

ALSO,

SAILING DIRECTIONS

For the Northern and the Eastern Passages to India and China, the
Straits of St. Bernardino,

AND THE BAY OF KOEPANG, TIMOR,

WITH A BRIEF DESCRIPTION OF THE

Winds and Currents in the Arafura and Adjacent Seas.

COMPILED BY I. WELLBANK.

SECOND EDITION.

Printed and Published

BY READING AND WELLBANK,
AT THEIR NAUTICAL STATIONERY AND CHART WAREHOUSE,
13, BRIDGE STREET, SYDNEY.

1864.



PREFACE

TO THE SECOND EDITION.

THE late elaborate surveys of the Coral Sea, and the approaches to Torres Straits from the southward, have necessitated a new edition of this work.

Captain Denham's strict examination of the Reefs and Islands, lying near the track of vessels taking the Outer passage to the Straits,—which is that now generally used,—has not only determined accurately the geographical positions of real dangers, but has been the means of expunging from the charts, those, which although not in existence, have from their supposed prominent positions, added considerably to the anxiety of seamen navigating this part of the Pacific.

This edition contains an epitome of the result of the Herald's surveys, and the track recommended by Captain Denham, as the best to pass at a safe distance between the dangers on either hand.

Advice and opinions of experienced Navigators as to the relative advantages of the various routes have been added, with a brief account of the winds, &c., in the Arafura and adjacent Seas,—Sailing Directions for entering the Bay of Koepang (Copang), should it become necessary to make that Harbor for Repairs, or from other causes; and Instructions for the Eastern Passage to India and China, from the Southern Coasts of New Holland.

It is hoped this compilation, in which great care has been taken to avoid errors, will, to some extent, facilitate the successful navigation of the Straits and the adjacent Seas.

I. W.

[The Directions for the Inner Route by the late Admiral King, and those for the Outer one, by Captain Blackwood, R.N., contained in the following pages, are out of print in England; the substance of them being incorporated in the Second volume of the Australian Directory. The latter work, however, does not include Captain Denham's latest corrections in the positions of the Barrier Reefs and outlying dangers, or the track and courses recommended by him.

For this reason, it has been thought advisable to continue the Directions in their present concise, and handy form; with the request that the navigator would correct, when required, the positions stated in them, by the more accurate determinations of Captain Denham, given in pages 33, 34, and 35.]

THE HISTORY OF

THE UNITED STATES OF AMERICA

The history of the United States of America is a story of a young nation that grew from a small group of colonies on the eastern coast of North America. In 1492, Christopher Columbus discovered the continent, and the first European settlers arrived in 1607. The colonies were established as self-governing entities, but they gradually became more independent. In 1776, the colonies declared their independence from Great Britain, and the United States was born. The new nation faced many challenges, including the American Revolutionary War (1775-1781) and the Civil War (1861-1865). Despite these challenges, the United States emerged as a powerful and influential nation. In the 20th century, the United States became a superpower, leading the world in science, technology, and culture. Today, the United States remains a major global power, with a rich and diverse history.

DIRECTIONS

FOR THE

INNER AND OUTER ROUTES

FROM

SYDNEY TO TORRES STRAIT.

BY

CAPTAINS PHILLIP PARKER KING, AND F. P. BLACKWOOD, R.N.

TO ACCOMPANY THE SURVEYS MADE BY ORDER OF THE LORDS
COMMISSIONERS OF THE ADMIRALTY.

DIRECTORS

1874

EXTRA AND OTHER NOTES

1875

SYDNEY TO TORRES STRAIT.

1876

CAPTAIN JOHN PARKER KING AND A. B. BELLERBY, R.N.

TO WHOMSOEVER THE RIGHT MAY BE ORDERED BY THE DIRECTOR
GENERAL OF THE CUSTOMS

SAILING DIRECTIONS

FOR THE

INNER ROUTE.

By CAPTAIN PARKER KING, R.N.

The BEARINGS given in the following pages are MAGNETIC.

THESE directions were printed in the year 1836, but at that period the prejudice was so great, that the generality of the masters of ships bound through Torres Straits preferred the risks and anxieties of the Outer Passage to the safer and far more agreeable one within the Barrier reef; supposing that one or two days in the length of the run might be saved,—thus placing life and property in jeopardy, for the sake of an advantage, which, even at best, is very questionable: for the shortest passage from Sydney to Booby island, that has come within my knowledge, was made by two merchant ships, which cleared Booby island on the twelfth day from leaving Sydney.

Another objection that has been made to the Inner Route, and it is the only tangible one, is the “trouble of anchoring every night;” but this, with attention and common experience, may be lessened; for no ship need be anchored until she arrives at Cape Grafton; particularly if the passage be made between the first and last quarters of the moon. The anchor will then have to be dropped four or five, or at most, six times; but in smooth water, under the lee of islands, or reefs on a muddy bottom, until the track joins the Outer Passage, or that taken by ships entering the Barrier; and in which even they have to anchor at least twice; the first time in deep water, and exposed both to a strong wind and a swell, which never happens in the Inner Route, for in most cases, between Cape Grafton and the junction of the two tracks, a light

anchor may be used with the necessary precaution of keeping a bower anchor ready to let go, if the wind should freshen so much as to require it.

The tide of prejudice, however, seems at last to be slacking, and every year a greater number of ships following that route, I have been induced again to press the matter upon the attention of masters of ships bound through Torres Strait; particularly of those carrying passengers, stock, or troops.

The season for making this passage has been supposed to commence on the 1st April, and to end with the middle of September; but I should not hesitate to leave Sydney, if time were an object, in the middle of March, or even as late as the end of September. With the east coast the monsoon has nothing to do, as the south-east trade, I believe, blows up the coast all the year round, from the S.E. in the morning to E.S.E. in the afternoon.

Currents.

In the following directions little has been said upon the subject of the current. As a general rule, it may be assumed that a current varying in strength from a half to $1\frac{1}{2}$ miles an hour, runs throughout the route. In some parts, probably, none will be felt, for its force depends upon local causes; being strong when the openings in the Barrier are numerous and large, and the reverse. The tide also considerably affects the current; the flood setting to the northward will of course increase while the ebb will decrease its rate. The state of the tide, independent of other data, may be observed in passing the islet and reef. High water takes place at full and change, between 10 o'clock and noon along the whole range of coast; but there are parts where its set is altered by local circumstances, such as the form of reefs, indentations of the coast, and opening in the Barrier Reefs. When the tide is high, more caution is required in running because the reefs are then mostly covered, but at low water there are very few which do not shew in parts. On the chart several of those reefs are described to be covered, but it is probable, that at low water, almost all of them have portions visible above water. At high water they must be very cautiously passed.

Tides.

At the end of these directions I have noticed the time when the monsoons change on the north side of New Holland.

I do not think that the passage through Torres Strait to the eastward, during the Westerly moonsoon, will ever be used with advantage for sailing vessels. In the year 1821 the ship *Lalla Rookh* made the voyage to Sydney by this route, and was near paying dearly for the attempt. She struck upon the reefs within Booby Island, but repaired the damage she sustained at Port Lihou, on the north side of Endeavor Strait. She eventually succeeded in making her voyage, but the delay of beating up against the south-east trade, between New Caledonia and the Barrier Reef, more than counterbalanced any advantage that could have been anticipated. The practicability therefore of this route is not doubted, but the advantage to be derived from it is at least very questionable; for the Space called the Coral Sea is studded with reefs, of which, it is not unreasonable to suppose, many are yet unknown.

In proceeding to the northward from Sydney, it does not seem necessary to lay down any particular directions until the ship has entered the reefs at Breaksea Spit: because the winds being variable, the navigator will use his discretion, and the coast being bold no danger need be feared. The charts will be a sufficient guide.

Having hauled round Breaksea Spit,*if in the evening, it would be imprudent to steer on through the night; after running therefore to the W.N.W. for 5 or 6 leagues, bring to until daylight: but, if the day be not far advanced, steer W.N.W. $\frac{1}{4}$ W. 32 leagues:—the ship will then be about 20 miles from Cape Capricorn: on which route she should pass about 3 miles inside of Lady Elliot Island, and of Bunker Group. The current here sets to the westward at 1 mile an hour. The passages between these isles are free from any known danger. After passing the cape, steer parallel to the coast, at a moderate distance from the shore, between the

* See E. Coast of Australia, Sheet III.

*Percy Isles.**Anchorage.*

second and third Northumberland Islands, and avoiding a low rock (bearing from the latter N. $\frac{3}{4}$ E. $5\frac{3}{4}$ miles), pass inside the Percy Group, by steering N.W. from the third island. In thick weather, it would, perhaps, be prudent to bring to under easy sail until daylight. The best ship anchorage hereabouts is on the west side of the second Percy Island,* and abreast the south end of the Pine Islets in 10 fathoms; but the bottom being rocky in some places, this anchorage ought not to be adopted but in cases of emergency. In most cases about this part of the coast, there will be no necessity for anchoring, as convenient spots may be selected to stand off and on through the night should the weather not be favorable for running. Wood and water are plentiful, and fish may be procured by a seine.

There are several high hills in the neighbourhood, of which the most conspicuous are the High Peaks, behind Cape Manifold and Mount Westall, to the north-west of Port Bowen. The islands are of pleasing appearance, being of moderate height, and crowned with pines.

Tides.

The flood tide sets to the south and the ebb to the north. The tide rises 13 or 14 feet. High water takes place about 11 o'clock at full and change.

Variation.

The variation here is about 7° E., and gradually decreases in proceeding to the north.

Cumberland Islands.

The route within the Cumberland Isles and through Whitsunday Passage is not to be recommended, because the breeze being unsteady, the delay would be considerable, and it will therefore be more advisable to follow either of the two outer tracks;† and passing by the three islands, k 1, k, and k 2, steer to the eastward of l 2, from whence there is a clear run along the eastern side of the Cumberland Islands, the most of which are high and thickly wooded: except l 2 and the small rocky isles to the N.E. of Pentecost Island. Among them are several remarkable peaks: of these Shaw is 1600

* See N.E. Coast of Australia, Sheet I.

† The two outer tracks, viz., the Mermaid's 1820 (—.—.—.—), and the Bathurst's 1821 (—..—..—..—), particularly the latter, were uninterrupted by digressions from the course, for the purposes of the survey,

feet, Pentecost-Island 1140 feet, and the summit of the largest island 1500 feet, above the level of the sea. The rocky outlying islets extend nearly 8 miles from the land, but are not dangerous to pass.

The northern extreme of the Cumberland Islands being bold-to, may be rounded pretty closely; whence by steering W.N.W. $\frac{1}{2}$ W. for 65 miles, the ship will be about 7 miles to the north of Cape Upstart, *Capes Upstart* having passed 4 miles within Holborne Island.* *and Bowling-green.* From Cape Upstart, found by the Beagle to be an island, to Cape Bowling-green the course is unimpeded; but the latter being very low, ought to be approached with great caution; at night coming no nearer to it than 11 fathoms. An indraught, also, which sets into the bay, must be provided against. As a matter of prudence it would be better not to pass this cape before day-dawn, since the character of the shore renders its neighbourhood suspicious.

Upon approaching Cape Cleveland, open the south *Cleveland.* extreme of Magnetic Island, in order to avoid the reef which extends for 3 miles to the eastward of the cape. There is good anchorage under the lee of the cape, off a long flat that fronts the sandy beach, and dries at half-ebb for a mile from the shore. Wood is abundant close to the beach and may be *Wood.* embarked with facility; the best place is at the north end of the beach, where a boat can ride afloat near the shore for the protection of the wooding party. The most convenient watering-place is near the centre of the beach, over which two *Water.* or three streams fall into the sea.

Mount Eliot, a remarkable hill of a round-backed form with a peak at its south end, may be seen at the distance of 25 leagues. The sharp peak of Magnetic Island, although *Magnetic Island.* not so high, is equally conspicuous.

From Cape Cleveland steer at a short distance outside the Palm Isles,† amongst which and to the westward of them

* H.M.S. *Beagle* passed to the north of Holborne Island, but it is preferable to pass within it.

† The situation of the reef on which the *San Antonia* struck is not satisfactorily known. Keep near the Palm Islands to avoid it.

there is good anchorage; and from thence direct the course to Cape Sandwich passing Hillock Point and the remarkable range of hills called by Captain Cook Mount Hinchinbrook.* Rockingham Bay lies behind Cape Sandwich, and affords excellent anchorage if required.† Passing outside and near Brooke Islands, proceed towards Barnard Group, and from thence either within or outside of Frankland Islands, to Fitz Roy Island; between which and Double Point the shore is formed by a succession of sandy bays and projecting rocky points, backed by the high land of Bellenden Ker Hills. Frankland Islands, being comparatively low, must be passed if at night, with caution, but by day all the dangers are visible.

Thus far a ship may proceed without the necessity of anchoring, but here the Barrier Reefs approach the coast, and consequently, the passage between the reefs near the shore become narrower, but the sea is perfectly smooth, and the anchor may be dropped at sunset in almost any part of the channel. Should the breeze be strong, a berth may be taken under the lee (the north-west side) of any of the islets or reefs that are at hand, at from a quarter to half a mile off. The ship may pass either between the Cape and Fitz Roy Island, or without them; the latter is the better course. Convenient anchorage may be taken under Cape Grafton, with the extremity bearing S.E.; but if water be required, it may be procured more readily at Fitz Roy Island, where the anchorage is in 9 fathoms, a quarter of a mile off the coral beach on its inner side. Both Fitz Roy Island and the Cape may be readily distinguished at a distance; the land makes like three lofty islands, of which the outermost, 550 feet high, is the island; and the middle one, on which are two small but remarkable peaks, the summit of the cape.

* See N.E. Coast of Australia, Sheet II.

† On Goold Island, on the 30th of March, 1846, Capt. F. B. Chilcott found abundance of fresh water. The ship lay in 3 fathoms at low water, off shore a short half-mile; the peak of the island bearing S.E. $\frac{1}{2}$ E., and a small island S. by W. They filled 10 tons in 4 hours. At 1 mile off shore there is good anchorage in 5 fathoms.

The two reefs to the eastward of Barnard Group, one of which the Prince Regent schooner saw, and on the other she struck, were not observed by me. They are laid down on the Admiralty chart from authorities in the Hydrographic Office, as are also the reefs to the eastward of the outer track between Cooper Point and Fitz Roy Island, with the exception of the sandy islet, bearing E. $\frac{1}{4}$ S. 8 miles from the latter, which islet was seen and placed by myself.

From Cape Grafton a N.W. $\frac{1}{2}$ N. course for 35 miles over a depth of 17, 18, and 19 fathoms, will carry a ship along the outer tracks to within a league of the Low Isles. Should it be night, come no nearer to them than 14 fathoms, and be careful, by not going to the eastward of the course, to avoid the long line of reefs, which were seen by H. M. S. Tamar in 1824, and which are possibly fringed by detached reefs. On one of H.M.S. Imogene struck; and its position, according to her log, must have been to the eastward of my outermost track, or about 7 miles E.S.E. from the easternmost of the Low Isles. Another account places it about 5 or 6 miles S.E. by E. $\frac{1}{4}$ E. from that islet; but still to the eastward of my outer track.

A shoal, carrying only $4\frac{1}{2}$ fathoms, has been laid down upon my track, from some authority unknown to me. It was probably intended for the Imogene Rock; but it could not be found by H.M.S. Beagle, and I do not believe it exists there, for the least depth that I found was 16 fathoms, on an even bottom of mud.*

From the Low Isles steer ~~N.W.W.~~ *about N by W* and pass within 5 miles of Cape Tribulation, so as to avoid the supposed position of some reefs, which have been reported to have been seen in lat. $15^{\circ} 51'$, from whence the course may be steered parallel with the coast. The better route will be within the southwestern Hope, and along its reef at the distance of three-

* This shoal was inserted in the Admiralty Chart, on the authority of Captain J. M. Laws, of H.M.S. *Satellite*, who, at 4 p.m., on the 17th of July, 1839 suddenly shoaled from 16 to 5 fathoms, and immediately saw a rock on the starboard bow; Low Isles bearing W.N.W. 5 miles.—*Hydrographic Office, February 1847.*

quarters of a mile, by which the reef a will be avoided. When abreast of its north end, a N. by W. westerly course, for 28 miles, will lead you to Cape Bedford, which may be rounded at from 1 to 3 or 4 miles. At $3\frac{1}{2}$ miles from the north end of the Hope reef, reef b will be seen; at 15 miles from it the vessel will be abreast of reef e; and 5 miles farther on she will pass Captain Cook's Turtle Reef, which has a dry sand at its northern extremity.

The reefs a and c will be to the westward of the course, and b and e to the eastward; and as the current sets to the N.W., the ship's course must be directed accordingly.

In coasting along the shore, the various summits which are marked on the chart will be seen. The high conical hill, on the south side of the entrance of Endeavour river, is Mount Cook; bearings of which, crossed with the summit of Cape Bedford, or any other of the hills or points, will give the vessel's place; by which the effects of the current will be ascertained. On one occasion we found a current in the space between Endeavour Reef and Turtle reef, of 2 miles an hour to the N.W.; generally, however, its rate is about 1 mile.

*Endeavour
River.*

Cape Bedford.

Being off Cape Bedford, and steering N. $\frac{1}{2}$ W., the Three Isles* will be seen ahead, pass between them and the low wooded island, and direct the course round Cape Flattery and Look-out Point in order to anchor under the Turtle Group; unless there be time before dark to reach the islands 4, 5, or 6 of Howick Group, under which anchorage may be found. In rounding Look-out Point, do not come within $2\frac{1}{2}$ miles of it, to avoid a reef which is in Captain Cook's chart, but which we did not see; it is supposed to be $1\frac{1}{2}$ miles north from the peaked hill at the extremity of the point. Pass on either side

Turtle Group.

Lizard Island.

of the Turtle Group, or between Lizard Island and Eagle Island, but the latter course I would not recommend; first, because the wind is generally fresher as the distance from the shore is increased, and, secondly, because the run is 10 or 12

* Look out for a shoal reported by H.M.S. *Victor*, but which could not be found by H.M.S. *Beagle*, nor did the *Beagle* see a shoal marked on the chart to the south of the low wooded island.

miles longer. There is good anchorage under the north-west side of the peak on Lizard Island.

From the Turtle Group steer N.W. by W. $\frac{1}{2}$ W. until the *Howick Group* hillock at the south-east end of No. 1 of Howick Group is visible; pass inside of it, and within a mile of 2 and 3, and between islet 4 and Cole Islands. Off the latter the water is shoal for some distance, keep, therefore, nearer to 4; also pass in-shore of 6, and of the dry sands s, t, and u. The Mermaid's track will direct the course to Cape Melville. If the day be advanced when abreast of 6, of Howick Group, anchorage had better be secured under it as there is none to be recommended, should the weather be unsettled, between it and Cape Flinders

Upon rounding Cape Melville, the islands of Flinders *Cape Melville to Cape Flinders.* Group will be seen; and as soon as you have passed between the stony reef that projects off the Cape (the extremity of which bears from it by compass N.W. by N., and from Pipon Island S.W. by W. $\frac{1}{4}$ W. nearly,) and the reef that surrounds Pipon Island, direct the course for the northern extremity of the island to the westward, which is Cape Flinders; the course and distance to it is W. $\frac{3}{4}$ S. nearly 13 miles, leaving a low woody island on the starboard hand.*

His Majesty's sloop *Satellite*, in 1822, grounded upon a *Reef a,* small reef a, bearing N. by E. (easterly) from the extremity of the cape distant about 2 miles. By attending to the following directions this danger may be avoided. On passing the low woody island, should the cape's extreme bear to the southward of W. $\frac{3}{4}$ S., haul up to the southward until it bears W. $\frac{1}{2}$ S. and pass close round it to avoid the shoal ground *Cape Flinders.* which extends for 2 cables' lengths to the westward of the extremity. If intending to stop for the night, haul up and

* Lieutenant Yule, in H.M. surveying schooner *Bramble*, has recently examined the passage between the Pipon Islands, and the low woody island to the westward of them; from which it appears that in the event of a vessel making Cape Melville in the afternoon, when the glare of the sun prevents the reefs lying between Cape Flinders and the low woody island from being seen, she has only to keep close to the edge of the reef that surrounds the Pipon Islands, which is fringed with rocks and quite steep to, and then to steer for the north end of the woody island which is also quite steep, and pass between it and Clack Island, the channel being quite clear of danger.

anchor under the flat-topped hill, at three-quarters of a mile from the shore in 10 fathoms, muddy bottom.

If daylight will allow of time to run 15 miles farther, the ship may proceed to the anchorage under reef d; in this neighbourhood, however, anchorage may be obtained under any of the reefs or islets as convenient, for the bottom is universally of mud; and by anchoring with the body of a reef, bearing S.E., the vessel is sufficiently sheltered from the sea, which is generally smooth.

On leaving Cape Flinders, steer W. $\frac{3}{4}$ N., for about 23 miles, leaving the reefs c and g to seaward, and d, e, and f, to the southward of the course; then haul up about N.W. $\frac{3}{4}$ N. and steer within the reef l and Pelican Island, and to seaward of the Claremont Islands 1 and 2, which are low and woody. The passage is quite clear to the south of d, e, and f.

*Claremont
Islands.*

When abreast of island 2,* the south-west end of the reef m will be seen, which would be passed at from 1 to 2 miles,† and the course N. by W. $\frac{1}{4}$ W. will carry you to islands 4 and 5, which may be passed on either side of, or between them. If the latter course be preferred, steer north, within the reef o, and then close within 6, to avoid a low rock that covers with the tide. Having passed this rock, which is marked on the chart, steer for, and pass within one mile of 7,

Cape Sidmouth

to avoid the shoals that extend off Cape Sidmouth. Hence the course is N.N.W. towards Night Island; and, when abreast of it, Steer N. $\frac{1}{2}$ W. until near the covered shoal v, when the course may be directed within Sherrard Islets and reef 10 (on which there is a sandy islet covered with some

Cape Direction

bushes); and then steer round Cape Direction. In passing the cape keep well to the eastward of the track, so as to avoid the shoal water which extends from it, and upon which by

* See N.E. Coast of Australia, Sheet III.

† Capt. F. B. Chilcott says, that from 1 mile west of the shoal m, he steered a direct course to pass between No. 4 and 5 islands, on which track he passed about 20 feet from a rocky shoal, not more than 7 yards in size, and not in the charts. It lies with the sand-bank n, bearing E. $2\frac{1}{2}$ miles and No. 4 island N.N.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles; and it is a quarter of a mile to the eastward of the outer track upon Capt. King's chart. It was low water, and apparently had not more than 6 or 7 feet on it.

Norman Rock, one third of a mile off the west side of No. 8 isle, is about 30 yards in extent with only 2 feet on it at low water. This rock is the more dangerous from its lying in a position which passing vessels might choose for anchorage in easterly winds.

Chilcott Rocks are two dangerous patches lying in the fair-way, and bearing respectively E. by S., and E.N.E., one mile from No. 8 isle; they lie about one third of a mile apart, north and south, with 7 fathoms water between them. Both rocks are flat-topped, about 20 to 25 yards in extent, and steep to all round; a small lump of coral, $1\frac{1}{2}$ feet dry, was seen on the southern rock. To avoid these dangers a vessel should pass to the eastward of them, rather than between them and No. 8 isle.

To face page 12.

inattention some ships have grounded. Haul close round (within) the island 10, and steer N. $\frac{1}{2}$ W. until abreast of the cape: then bear away for Restoration Island on a N.N.W. $\frac{1}{4}$ W. course, which will carry the ship within the reefs y, z, a, b, and c, and without the rocky islet that lies off Restoration Island: continuing this course for about five miles beyond that island, you will see the long reef e; then steer N.W. along its edge, which extends to abreast of Fair Cape, where it terminates in a very narrow point. Thence steer N.W. $\frac{1}{2}$ N., and pass between the two easternmost Piper Islands and the reefs h, i, and k; then on either side of l, and m,* in-shore of Haggerston Island, and round the outermost of Home Group, steering wide from it to avoid being drifted towards the group, for the tide sets to the N.W. across the course.

The anchorages between Cape Flinders and this are so numerous as not to require particular mention: the north-west end of every reef will afford shelter; but the anchor should not be dropped too near to them, because the tide sweeps round the edge with greater strength than it does at half a mile off, and the bottom is generally deeper. If the day be advanced and the breeze fresh, Night Island should not be passed; because the anchorages between it and Piper Islands are rather exposed, and a vessel getting under way from Night Island at daylight will easily reach Piper Islands or Margaret Bay before dark.

Margaret Bay is round Cape Grenvill; the anchorage being fronted by Sunday Island, is well sheltered; it is a safe place to stop at. Anchorage in 6 fathoms, with the island bearing S.E.

After rounding the Home Islands,† the course is about N.W. $\frac{1}{4}$ W. to the Bird Isles, and thence to the reef v, about N.W. by N.; the better and more direct plan is to pass within v and w (there is, however, a safe channel between

* The reef named on the chart Young Island, was so called because it formerly had a tree growing upon it. Being now without this indication to mark its position, caution should be used in passing it.

† See chart of Torres Strait, south-eastern entrance, by Captain F. P. Blackwood, R.N.

*Cairncross
Island.*

them), and when abreast of the west end of the latter, the course and distance to Cairncross Island is N. by W. $\frac{1}{2}$ W. about 18 miles. In anchoring here get the body of the island to bear S.E., and the depth will be about 15 fathoms.

Albany Isles.

Leaving Cairncross Island, steer N.N.W. $\frac{1}{4}$ W. until abreast of Escape River, when look out for reef x; steer within it about N.W., by N., which will take you inside the covered reef z. Your course then must be round the Albany Islands, and hence N.W. by N. for a, which is a rocky islet that may be seen from abreast the Albany Isles.

*Blackwood
Bay.*

There not being any very good anchorage between Cairncross Island and Mount Adolphus Island, it would be perhaps better to anchor in Blackwood Bay, or a night shelter may be had under the lee of Cape York.* The bay under Mount Adolphus, first noticed by H.M.S. Tamar in 1824, and subsequently described by other authorities, affords good anchorage on its south side, just within and near the south head. It was afterwards surveyed by Captain F. P. Blackwood of H.M.S. Hyacinth and called Blackwood bay. The anchorage is with Mount Adolphus bearing from N.E. by E. to E.N.E. and the outermost Albany Island just shut in with Dickey Point, the south point of the bay.

Cape York.

After passing round Cape York there are two modes of clearing Torres Strait, either by rounding Wednesday and Hammond Islands—the one usually adopted; or by going through Endeavour Strait, which, by the channel that was formerly used, had been thought too shoal for large ships.

* The portion of coast between Albany Island and Cape York has recently been surveyed by Captain O. Stanley, of H.M. surveying ship, *Rattlesnake*; from which it appears, that a safe channel exists between Albany island and the main land, with good anchorage, but not very convenient for sailing-vessels, on account of the strength of the tide. Albany Island would be an advantageous place for a coal depot for steam-vessels, as there is sufficient depth of water close in-shore for vessels to warp in, out of the strength of the tide, and wharves might be constructed with very little trouble or expense, as timber and sandstone may be procured on the spot. Evans Bay, under Cape York, offers a convenient anchorage, and is completely sheltered from the south-east, which is the prevailing wind during the season that vessels pass through Torres Strait, and a supply of fresh water may always be obtained.—*Hydrographic Office, April 26th, 1849.*

But Captain F. P. Blackwood having lately surveyed this strait, his directions for it shall be now given.

“ From off York Island a W. $\frac{3}{4}$ S. course of 10 miles (always making allowance for currents and tides) will lead to the islands at the eastern entrance of Endeavour Strait.*

These Islands, as may be seen by the plan of the strait, form five different passages, but that between Entrance and the Woody Islands is on every account the most preferable. It is 2 miles broad, and the course through S.W. by S. for about 5 miles, by which time Red Wallis Island may be seen bearing nearly W.S.W. distant 16 miles. The other channels are narrower, and might lead a vessel too close to the Heroine Rock, on which there are but 3 feet at low water. This mischievous rock, on which the schooner was lost, bears S.S.E. from the north peak of Entrance Island, and S.S.W. $2\frac{1}{2}$ miles from Little Woody Island.

“ Having run W.S.W. for 10 miles, the course may be changed to W. $\frac{1}{2}$ S.. so as to lead past Red Wallis Island at $1\frac{1}{2}$ miles to the northward. By carefully preserving this course, and keeping the lead going, it will lead clear out to sea, between two shallow sand-banks, which stretch out to the westward; one of them is 6 miles from Red Wallis Island, carrying only 2 fathoms, and the other 16 miles from Cape Cornwall, the S.W. extreme of Prince of Wales Island. Vessels should also be aware that these two banks or spits are connected by a kind of bar, on which they must not expect to find more than $4\frac{1}{2}$ or 5 fathoms, and may perhaps run over a sandy knoll with only 3 fathoms.

“ The general depth throughout Endeavour Strait is from 7 to 9 fathoms on coral sand, and if common caution be used either in entering or sailing out of it by Red Wallis Island, no danger need be apprehended.

“ The spring tides at Possession Island have been known to run 5 knots; the ebb N.N.E. 5 hours, and the flood, S.S.W., 7 hours; the rise and fall being $9\frac{1}{2}$ feet. The time of high water at the full and change of the moon, at the

* See Plan of Endeavour Strait, by Capt. F. P. Blackwood, R.N.

eastern entrance of the strait, is at one o'clock. At Red Wallis Island the range of the tide is but 7 feet, and the greatest velocity 2 knots, the ebb setting east and the flood west."

*Wednesday
Island.*

To use the northern route, through the Prince of Wales Channel after leaving Cape York, steer N.W. for 10 miles, passing 2 miles to the westward of rock a, and when abreast of it Wednesday Island will be in sight. In steering towards this island avoid standing too close to Strait Rock, as some sunken rocks stretch off it for about a quarter of a mile: steer round the north point of Wednesday Island at the distance of about a mile, and then a W.S.W. $\frac{3}{4}$ W. course will carry you to the northward of the rock to the northward of Hammond Island. From off this rock steer S.W. by W.; and when abreast of the south-west end of Hammond Island haul towards a reef, to the southward of that course, on which you will see some dry rocks, which you may pass within half a mile: by so doing you will avoid reef d, which is generally, if not always, covered, the fairway of this channel is 7 and 8 fathoms deep.

Strait Rock.

*Prince of
Wales Channel.*

Booby Island.

When the west end of Goode Island bears south, steer W.S.W. $\frac{1}{4}$ W. for Booby Island; by which you will avoid Larpent Bank, and when you have passed it you are clear of the strait. Hence you may steer W. $\frac{3}{4}$ S, through the night, on which course you will very gradually deepen the water. To the westward of Booby Island and to the northward of the track on the chart there are some coral reefs, the positions of which are not correctly ascertained. At Booby Island ships generally land for the purpose of noting safety in a book that was deposited there for the purpose by Colonel Hanson of Madras; and if it be worth their while to wait for the night, a few turtle may be taken on small sandy nooks on either side of the island. Vessels rounding the S.W. point of Booby Island should be careful to avoid the reef which extends from that point, for according to Captain Simpson, who struck on it in the Freak brig, in 1848, it stretches out half a mile

Variation.

The variation in Torres Strait, and off Booby Island, in

1820, was $4\frac{1}{2}^{\circ}$ easterly; but, in proceeding to the westward, it gradually decreases. Abreast of Cape Wessel it was $2\frac{1}{2}^{\circ}$ E, and off New Year Island $1\frac{1}{2}^{\circ}$ E.: off Cape Van Dieman the variation was not perceptible, nor was it worth noticing in shaping the course from the Cape to Timor.

From Booby Island to the Strait of Rottee the course is *Booby Island to Timor.* West (*true*), and the distance 1,106 miles: the intermediate distance being,—from Booby Island to Cape Wessel 300 miles; thence to New Year Island 220 miles; and from that island to Cape Van Dieman 156 miles. The coast being very low, no part of it will be seen, nor indeed are the places above mentioned visible more than five leagues; but the land of Timor is mountainous, and the higher parts, towards the south-west end of the island, will probably be seen if the weather be clear at the distance of 100 miles. The current sets about one mile per hour with the wind.

The monsoons blow with great regularity but with variable *Monsoons.* strength. The easterly one commences with the 20th March and 1st April; at first with light and increasing airs, but finally settles into a fresh wind: during the months of May, June, and July it is at its full strength: in August it is interrupted occasionally by light winds and sometimes by calm weather: but generally the wind is sufficiently steady to insure to a ship a rapid run to the westward. Off Timor the westerly monsoon commences with the latter end of October, or the beginning of the following month, and is attended with squally weather. This is the rainy season on the north coast and in the open sea the weather is unsettled.

SAILING DIRECTIONS

FOR THE

OUTER ROUTE.

By CAPTAIN F. P. BLACKWOOD, R.N.

The BEARINGS given in the following pages are MAGNETIC.

VESSELS from New South Wales, bound to any of the ports in India during the S.E. monsoon (that is, from the months of April to October inclusive), will find it more advantageous to pass by Torres Straits, as at that time of the year strong westerly winds prevail on the southern coasts of Australia, rendering a passage to the westward, round Cape Leeuwin (the S.W. point of Australia) impracticable, unless in a fast and well-found ship.

In proceeding by Torres Straits, two passages present themselves; the one called the Inner Route, or along the eastern shores of Australia, within the Barrier reefs, and entering it near Break-sea Spit in 24° S. latitude. The other by stretching off to the eastward of the Barrier reefs, steering midway between them and New Caledonia, and then entering Torres Straits by an opening through the Barrier reef in $11^{\circ} 36'$ S., where a beacon has been erected in that latitude on Raine island.

Opinions are divided as to the respective merits of these two passages; for dispatch the outer one is certainly to be preferred, but under all circumstances the inner one is generally considered as the safest.

*Inner Route.
Captain King's
Directions.*

In navigating the inner passage the charts* and directions of Captain P.P. King, R.N., will be found very accurate, and

* See Chart of Torres' Straits, South-eastern Entrance, by Captain F. P. Blackwood, R.N.

quite sufficient for all the purposes of navigation during the S.E. monsoon; but the tracks laid down by him must be strictly followed, as from the nature of those seas it is possible for many abrupt coral shoals to exist within a short distance of his lines of deep soundings.

The chief objection which has been raised by weak-handed merchant-vessels against this inner track, is the necessity of anchoring during the night, a measure which must be adopted after passing Cape Grafton, in latitude $16^{\circ} 50' S.$, though to the southward of that point a vessel may safely run the whole 24 hours in moderately fine weather. A fair passage by the inner route, from the time of leaving Sydney to passing Booby island, may be considered as occupying from 25 to 30 days; for the S.E. trade blows steadily along the whole coast; whereas the voyage from Sydney to the opening through the Barrier reefs is usually performed in 14 or 16 days; and three more, in all 19 days, are sufficient for reaching the above island.

For the outer route, vessels are recommended, after leaving Sydney, to get sight of either Cato bank in latitude $23^{\circ} 6' S.$, longitude $155^{\circ} 23' E.$; or of Wreck reef, in latitude $22^{\circ} 11' S.$, longitude $155^{\circ} 13' E.$, both of these dangers being well ascertained in position. Then steer a northerly course, but on no account haul to the westward of $153^{\circ} 0'$ of east longitude, until the latitude of $17^{\circ} 0' S.$ be passed, by which means the Alert reef, in latitude $17^{\circ} 2' S.$, and longitude $151^{\circ} 49' E.$, will be avoided. The current hereabout is variable; but for the most part a westerly set of one knot, sometimes much more, may be expected.

Having passed this danger, do not haul in for the Barrier reef until to the northward of $14^{\circ} 0' S.$, as a reef, discovered by the Osprey schooner, exists in that latitude, and in longitude $146^{\circ} 30' E.$, being near a degree east of the Barrier.

A course should now be steered to make the Great Barrier, in latitude $11^{\circ} 50' S.$, and longitude $144^{\circ} 11' E.$, by which means any possibility of being set to the northward of Raine island opening will be avoided. Then run along the outer edge of the large reef which is detached from the main

body, and the beacon on Raine island* will be seen bearing N.W. by W. †

Raine Island.

Raine island is near the middle of a large opening in the reefs, with clear channels on each side of it; the southern one being $3\frac{1}{2}$ and the northern one $2\frac{1}{4}$ miles in breadth. The island is a low narrow coral rock about a quarter of a mile in length, though without any fresh water; it carries a coarse green vegetation, and a reef runs out E.S.E. from it a long mile. The beacon, which is placed on the eastern extremity of the island, is of a circular form, 30 feet in diameter at the base, and 27 feet at the top; it is 64 feet in height, and at low water stands 75 feet above the level of the sea. It is painted with alternate red and black vertical stripes; and in clear weather it is visible from a ship's deck at the distance of 8 or 9 miles,

*Raine Island
Beacon.*

* For sketch of Raine Island Beacon, see Admiralty Chart.

† If, however, by any unforeseen current or accident, a ship should find herself close up to the Barrier reef sooner than was intended, it must be recollected that from the latitude of $12^{\circ} 20' S.$ to $12^{\circ} 12' S.$ the Barrier trends to the N.E. in an unbroken line, without one single entrance fit for shipping; and, should no observation for latitude have been obtained, it may be important to know that in moderately clear weather the main land of Australia is usually visible from this part of the Barrier.

In the latitude of $12^{\circ} 12' S.$ and longitude $144^{\circ} 0' E.$ is a very good and safe entrance for shipping marked by some very conspicuous Black Rocks, which may be safely rounded at a quarter of a mile distance; when steering about S.W. by W. $\frac{1}{2}$ W. for 9 or 10 miles, and obtaining soundings in 13 or 14 fathoms, Sir Charles Hardy islands will bear N. 41 W. (true) or N.W. by compass about 28 miles distant, and a course may be safely steered for those islands over comparatively clear ground.

In the latitude of $12^{\circ} 6' S.$ there exists a very good but narrow opening which was formerly much used by vessels, but from $12^{\circ} 6' S.$ to $11^{\circ} 36' S.$ (the latitude of Raine Island beacon) the Barrier reef forms itself into such dangerous bays that, unless compelled by necessity, no ship should attempt the entrances within that space.

It must be recollected, however, that these entrances, narrow as they are, are in almost all cases safe to sail in by; and with an ill-found or badly-working ship, close into the rocks, it will be far wiser boldly to run in for either of those openings, than to attempt to work out against the set to the N.W. which sweeps along the face of the Great Barrier, and through its numerous entrances.

As, however (unless very close in), a N.N.E. course will lead clearly along the outer edge of the Barrier, and as the wind seldom veers to the northward of E.S.E., it is strongly recommended to haul to the northward for Raine Island beacon and its adjoining safe and broad channels.

but from the mast-head at 12 or 13 miles. Its latitude is *Raine Island.* $11^{\circ} 35' 42''$ S., and longitude $144^{\circ} 6' 22''$ E.; the variation of the compass being $4^{\circ} 30'$ E., in 1845. It is high water there on full and change days of the moon at 8 o'clock, and spring tides rise 10 feet. The flood sets in from the sea about W.N.W., and the ebb runs out nearly due east, with a velocity of $2\frac{1}{2}$ knots at the springs.

The extreme points of the reefs which form the opening through the Barrier, bear from the beacon S.S.E. $\frac{3}{4}$ E., and N.N.E. $\frac{1}{2}$ E. No bottom is found with 125 fathoms in any part of this opening, nor close up to the island.

To enter by the southern passage, bring the beacon to bear *Southern Entrance.* north about $1\frac{1}{4}$ miles distant, and make a S.W. by W. $\frac{1}{2}$ W. course, by carefully allowing for the tide as well as for the current to the northward. A run of 9 miles from abreast of the beacon will carry the vessel into soundings, allowing for the set of tides and currents, and the main body of the reefs will have been fairly entered.

To enter by the northern passage, when about half or two-*Northern Entrance.* thirds of a mile from the north side of Raine island, steer S.W. $\frac{1}{2}$ S, for 6 or 7 miles, or until the beacon bears N.E. $\frac{1}{2}$ E.; then a S.W. by W. $\frac{1}{2}$ W. course for about 3 miles will place the ship in the same position as that above mentioned, when entering by the southern passage.

When the vessel has reached into soundings of 25 or 30 fathoms, a good look out must be kept from the mast-head for one or two sunken coral patches which lie near the edge of the bank, but which, being white, will be easily seen in contrast with the dark appearance of the neighbouring deep water.

The seaman must not be alarmed here by the cross and troubled sea which, just upon the line of soundings, is produced by a strong easterly wind acting on the ebb tide. The strength *Tides.* of this ebb tide in the vicinity of the Barrier reefs is, however, generally much less than that of the stream of flood, which combines with the additional set to the northward, along the edge of the Barrier reefs, this set being caused by the long continued south-east trade wind; and for this set, full allowance must be made, not only when trying to hit Raine Island

channel, but after passing through it, in order to avoid being swept up to the northward, among patches of rock that have not been yet examined.

Middle Banks. From the above soundings, a run of 16 miles will lead her to the Middle Banks, but the course should be decided on with great care, as it would be highly dangerous to fall to the northward of them. The course to make good is S.W. by W. $\frac{1}{2}$ W., which, with a strong ebb, may sometimes be adopted; but, at all other times, the northerly set should be kept in check, by steering a point or even a point and a half further to the southward

If Raine Island passage should have been entered late in the afternoon, it would be prudent to anchor for the night abreast these Middle Banks, in 12 or 15 fathoms, by which means, the next morning, the eastern sun would clearly point out to the mast-head man all the dangers in the track; and, indeed, the whole way from the outer barrier in towards the main land, a prudent seaman should have his ship under moderate sail, with an anchor ready to drop at a moment's notice.

The Middle Banks appear to be all sand, whatever they may consist of underneath, but they cover at half tide; and coral reefs, which are steep-to, extend from them a mile to the S. E. There are also outlying dangers which stretch off, 2 or 3 miles, to the northward of them, but no vessels have any business there, for we repeat that they must make sure of keeping to the southward of those Middle Banks. Even if they should lengthen the voyage by a few miles, they will escape all danger, and they will have the advantage of seeing the Ashmore Banks, which do not cover at high water, and, therefore, are always visible at the distance of 3 or 4 miles. There are three of those banks, but the southernmost is low and out of the road.

When the vessel has run the above-mentioned 16 miles, it becomes a matter of great importance to make out her exact position with respect to the Middle Banks, which she will do either by seeing them or by bearings of the Ashmore Banks, or of the Hardy Islands, for she must now make her choice, and shape a course either for the North Channel or for Pollard Channel, or for those islands,

*Ashmore
Banks.*

Directions for Clearing the SALAMANDER'S SHOAL.

Ships entering the Great barrier reef by the Raine Island entrance, either north or south of it, should bring the beacon to bear N. E. $\frac{3}{4}$ E. as soon after passing it as possible ; a course should then be steered S.W. $\frac{3}{4}$ W., allowing for tide and a northerly set, for the Sir Charles Hardy Islands. When the beacon is lost sight of, a ship should then be clear of the shallow patches westward of the 100 fathoms line, and on the bank. The Hardy Islands may now be looked for, and when plainly made out, the south extreme of the South Sir Charles Hardy Island should be brought to bear S.W. $\frac{3}{4}$ W., steer for it on that bearing until the easternmost sand-bank on the Middle Banks bears N.W. by W., and West Ashmore Bank, if seen, S. 28° W.; the ship will then be well to the south and to the westward of the Coral patch on which H.M.S. "Salamander" struck; a course may then be shaped for either the North or Pollard channels as necessary.

THOS. H. HAYMAN, MASTER, R.N.

PORT ALBANY and SOMERSET BAY.

PORT ALBANY is nearly the central of a succession of small bays which, with steep rocky headlands, form the south-west side of Albany island, and is situated at about $1\frac{3}{4}$ miles to the north-westward of Ulrica point. A coral shelf, with from 1 to 5 feet water on it, skirts the shore to the extent of 30 to 80 yards from low water mark, when the depth suddenly increases to 5 and 7 fathoms. A shoal, upon which the least depth of water found was 14 feet, occupies much of the north-western half of the port, but there is a space of deep water in the southern portion of the bay, from 100 to 130 yards broad within the influence of the tidal streams, which would afford excellent shelter to a steamer of any size, from either monsoon, and protection from the stream, if warped in and moored close to the shore.

SOMERSET BAY and SETTLEMENT.

On the south-west side of Albany Pass, and nearly opposite Port Albany, is a small sandy bay where a never failing supply of fresh water can be procured.

A settlement has lately been formed here in Somerset Bay under the auspices of the Imperial Government, and will doubtless become important as a naval depôt for steamers and other vessels passing through Torres Straits, and as a place of refuge for shipwrecked seamen.

SALAMANDER'S SHOAL.

H.M.S. Salamander whilst proceeding from her anchorage in the Blackwood Channel, Torres Straits, and steering towards the Middle Banks on the 20th of January, 1865, and on the route recommended from Raine Island to the Middle Banks, struck on an unknown coral patch of nearly $\frac{1}{8}$ of a mile in length in an east and west direction, and 110 yards in a north and south direction; shoalest water 7 feet, with 10 to 17 fathoms all round it, and from 15 to 17 fathoms between it and the reef connected with the eastern sand bank on the Middle Banks.

Mariners are hereby cautioned against approaching the eastern sand bank of the Middle Banks within $3\frac{1}{2}$ to 4 miles. To ensure this, the south extreme of south Sir Charles Hardy Island, kept S.W. $\frac{3}{4}$ W., leads well clear south of the patch, in proceeding either to the eastward or the westward.

The following are the compass bearings from the shoalest part of it :—

Centre of the eastern sand bank on the Middle Banks, N. 84 W. $2\frac{1}{2}$ miles.

North extreme of North Hardy Island, S. 53 W. $14\frac{3}{4}$ miles.

South extreme of South Hardy Island, S. 46 W. $14\frac{1}{2}$ miles.

Deviation, 3° E., ship's head west.

This affects sheets 21, No. 2354, North and East coast of Australia; Coral Sea sheet 2, No. 2764; Australian general chart, northern portion, 2759 a, and sailing directions, page 299.

THOMAS H. HAYMAN, MASTER, R.N.

H.M.S. Salamander.

Should Raine island have been passed early in the morning, *North Channel.* and the Middle Banks reached by noon, the North Channel will afford the shortest run to the Bird Isles, where she will find good anchorage on a muddy bottom in 10 fathoms and sheltered from the south-east. For this purpose she must steer, from the Middle Banks, W. $\frac{1}{2}$ S., about 9 miles, allowing for the tide, in order to pass between the long eastern pitch of Cockburn reef, and some detached banks to the northward. That reef always breaks, and may be safely rounded at the distance of a short half mile. The W. $\frac{1}{2}$ S. course may then be continued for 5 or 6 miles, or till the Cockburn isles are discovered, as well as the edge of Cockburn reef, which, even if it does not break, is clearly defined by the colour of the water. The edge of that extensive reef rises out of the water in 10 or 11 fathoms, and should be kept on board till its northern extremity be passed (like the eastern pitch) at the distance of a short half mile. Then alter the course to the southwestward for 3 miles, in order to avoid the rock which is marked "Awash" in the Chart, and which bears W. $\frac{1}{2}$ N., $2\frac{1}{2}$ miles from the north end of Cockburn reef; and when that danger is cleared, the vessel may either proceed to the anchorage under the lee of Bird Isles, observing to pass to the southward of the Low Islet; or she may at once shape a course to the N.W. so as to get into the in-shore track towards Cape York.

But if, when abreast of the Middle banks, circumstances *Pollard Channel.* should render it expedient for a vessel to go through Pollard Channel, she will find it perfectly safe, though narrow. She must first carefully make the eastern end of Cockburn Reef and then closely skirt that reef at the distance of a third of a mile, its edge being steep-to, and always visible. The channel is formed by Cockburn reef and another long shoal which lies nearly parallel to it, and off the north-west side of which there is a series of small sandbanks, that generally show themselves by discolouration. In some parts these banks contract the channel to the breadth of three-quarters of a mile; and therefore, to make sure of not being entangled by them, all vessels should hug the reef; taking care, however, to avoid a small coral head near its southern elbow. There are generally tide-rippings across this channel, but the depth is nowhere

Pollard Channel.

less than 25 fathoms. When the Hardy Islands are well open of each other, about E. by N., and when the largest of the Cockburn Islands bears N.N.W., all the dangers of the Pollard Channel will have been passed, and a course may be steered for either side of the Bird Isles as above mentioned.

Hardy Islands.

If the vessel should have passed far to the southward of the Middle Banks, and finds herself in the neighbourhood of the Ashmore Banks, she may perhaps find it convenient to take the open channel that leads by the Hardy Islands, or possibly she

Water.

may be in distress for water, which may be found in plenty on the southern island, especially from March to July. The spring will be seen in the beach on the southern or weather shore, nearly opposite a detached rocky islet about a third of a mile in the offing. These islands may be seen a long way, and are therefore excellent marks by which a vessel can learn her position. Each of them is surrounded by a coral reef which is steep-to, and they are separated by a narrow Channel, which is quite safe to sail through; they are covered with coarse grass, and good anchorage will be found all round them in 6 or 7 fathoms, on coarse coral sand. They are uninhabited, and would be a good position for a wrecked crew, as a smoke or other signals on their highest points would probably attract the attention of vessels passing in from Raine Island, or perhaps those coming up the inshore channel.

Tides.

At full and change it is high water at the Hardy Islands at 9 o'clock, and spring tides rise about 10 feet; and the mariner should never forget that the flood stream sets to the N.W. across all the above tracks, and when strengthened by the long send of the sea from the S.E., at the rate of $2\frac{1}{2}$ knots.

Many ships have safely run from the Hardy Islands to the Bird Isles, but the channel has not been sufficiently explored to warrant any precise directions being given for it here; and from the number of coral patches lying between the Hardy Islands and the main land, Captain Blackwood is of opinion that vessels should steer N.E. by N. from them towards the eastern end of the Cockburn reef, and then take either the Pollard or the North channel.

Bird Isles.

Supposing the vessel, by any of those channels, to have reached the Bird Isles, and to have determined to anchor there,

or to pass on, our next directions must be as to the proper courses to lead her from thence to Cape York. The first run should be N. N. W. $\frac{1}{4}$ W., 11 miles to the Hannibal Islands, *Hannibal Islands.* which are low and wooded; and, passing between them and a coral reef above water on the starboard hand, bearing due E. $\frac{1}{2}$ S., about 4 miles, from the islands. From thence the course will be N. by W. $\frac{1}{2}$ W. 23 miles to Cairncross Island, *Cairncross Island.* in 11 or 12 fathoms all the way, and leaving several reefs and patches in sight to the eastward.

From Cairncross Island a N.W. by N. course of 35 miles will lead between Albany Island and the Brothers; but before reaching them Cape York will have been seen making like a peaked island, and Mount Adolphus with its table summit. When abreast of Shadwell point and Escape River, look out for the reef X, on which there are two cays, and then the reef Z, and a small shoal to the westward of it. The Albany Isles *Albany Isles.* may be rounded at the distance of a mile, being bold to approach; and there are 22 fathoms at a quarter of a mile from Albany Rock, which has a white top.

From Albany Rock a W.N.W. $\frac{1}{2}$ W. course for 7 miles will place the ship three-quarters of a mile to the northward of York Island, which is separated from Cape York by a narrow boat channel. In this tract, however, there is a sunken rock, carrying 3 fathoms; it lies between Cape York and Mount Adolphus Island, and nearly in mid-channel. It bears about N.W. $\frac{1}{2}$ N. $3\frac{1}{4}$ miles from Albany Rock, and will be easily avoided by rounding that rock at about three-quarters of a mile distance, and then steering W.N.W. $\frac{1}{2}$ W. *York Island and Rock.*

Cape York, which is the north cape of New South Wales, *Cape York.* is in latitude $10^{\circ} 42' 25''$ S., and longitude $142^{\circ} 35' 15''$ E.

From off York Island a W. $\frac{3}{4}$ S. course of 10 miles (always making allowance for currents and tides) will lead to the islands at the entrance of Endeavour Strait.* *Endeavour Strait.* These islands, as may be seen by the plan of the strait, form five different passages, but that between Entrance and the Woody Islands is on every account the most preferable. It is 2 miles broad, and the course through, S.W. by S., for about 5 miles, by

* See Chart of Endeavour Strait, by Captain F. P. Blackwood, R. N.

which time Red Wallis Island may be seen bearing nearly W. S. W., distant 16 miles. The other channels are narrower, and might lead a vessel too close to the Heroine Rock, on which there are but 3 feet at low water. It bears S. S. E. from the north peak of Entrance Island, and S. S. W. $2\frac{1}{2}$ miles from Little Woody Island.

Wallis Island. Having run W. S. W. for 10 miles, the course may be changed to W. $\frac{1}{2}$ S., so as to lead past Red Wallis Island at $1\frac{1}{2}$ miles to the northward. By carefully preserving this course, and keeping the lead going, it will lead clear out to sea, between two shallow sandbanks, which stretch out to the westward; one of them, 6 miles from Red Wallis Island, carrying only 2 fathoms, and the other 16 miles from Cape Cornwall, the S. W. extreme of Prince of Wales Island. Vessels should also be aware that these two banks or spits are connected by a kind of bar, on which they must not expect to find more than $4\frac{1}{2}$ or 5 fathoms, and may perhaps run over a sandy knoll with only 3 fathoms.

If it be intended to call at the Post-office box, which is on *Booby Island.* Booby Island (and which all vessels should help to keep in repair) a N. $\frac{1}{2}$ E. course may be steered for it, when clearly outside the bar, and it will be soon seen from the mast-head.

The general depth throughout Endeavour Strait is from 7 to 9 fathoms, on coral sand, and if common caution be used either in entering or sailing out of it by Red Wallis Island, no danger need be apprehended.

Tides The spring tides at Possession Island have been known to run 5 knots; the ebb N. N. E., 5 hours, and the flood, S. S. W. 7 hours; the rise and fall being $9\frac{1}{2}$ feet. The time of high-water at the full and change of the moon, at the eastern entrance of the strait, is at one o'clock. At Red Wallis Island the range of the tide is but 7 feet, and the greatest velocity 2 knots; the ebb setting east, and the flood west.

Middle Channel. Nothing has been said in these directions of the Middle Channel, from Raine Island to Cape York, because it has not yet been thoroughly examined, and, till then, vessels venturing through it will expose themselves to a risk very disproportionate to the advantage of saving a few miles in the whole distance.

SAILING DIRECTIONS

FOR

TORRES' STRAITS,

NORTHERN ENTRANCES.

THE following general directions for the passage through Torres' Straits, by Captain Blackwood, R.N., H. M. S. Fly, were published in 1844, accompanied by a lithographic chart, by order of the Government of New South Wales; and, although Captain Blackwood has more fully treated of the navigation of the passage by Raine's Island Channel in his "Outer Route," the greater portion of these "Directions" containing advice for N.E. entrance and the subsequent run, will be found very useful;—many Commanders of vessels who have made use of them having testified to their general correctness.—*Compilers.*

THE season for passing through "Torres' Straits" from the eastward, is from the beginning of April to the end of October, during which time the S.E. trade blows through the Strait.

From December until March the west monsoon blows in the Timor Sea and through "Torres' Straits." Her Majesty's surveying vessels having spent all last westerly monsoon in the Straits, and the schooner "Heroine" having successfully sailed down to Sydney last January, from Singapore, the passage through Torres' Straits *from* India may now be considered as established; and, in my opinion, it is perfectly easy and practicable, if but moderate caution be used.

Having premised that no ships should attempt to take the "Outer Passage" through "Torres' Straits" without a good Chronometer, well-rated on leaving Sydney, and that the Captain is a careful seaman and competent navigator, I will briefly describe the track that he should follow, and the advantages and disadvantages, of entering by Raine's Island, or steering for the Eastern Fields by the "Northern Passage," referring him for more precise information by Chart and Sailing Directions to the Harbour Master's Office.

I believe that a ship leaving Sydney in the early part of the east monsoon, namely—from the middle of March to the beginning of May, is likely to make a fine passage, and have good weather in running through the Straits, and in making the Barrier Reef.

From May until August is the height of the S.E. monsoon, when it generally blows strong through the Straits, often accompanied by thick weather. After that time the monsoon abates in its strength till November, when calms and light winds prevail in the Timor Sea, and a long passage may be expected to be made in this month.

The first known danger in the outer track to "Torres' Straits" after leaving Port Jackson, is the "Cato's Bank," in 23° 6' south latitude, and 155° 23' east longitude. It is a coral shoal of small dimensions, and has a sand bank on it, as indeed most of the outer detached dangers have.

"Wreck Reef Bank" is in latitude 22° 11' S., and 155° 19' east lon-

gitude, by Flinder's observations; but Bird Islet* lays 7 miles to the eastward of the above-named bank, being the easternmost part of the danger.

The reef is about twenty miles long, running east and west, and appears to be separated by channels said to be safe to sail through.

"Australia Reef" has been twice seen, and appears certainly to exist, the same position having been assigned to it, viz.— $22^{\circ} 41'$ S. latitude, and $156^{\circ} 7'$ E. longitude. It is reported to be very small in extent, which may account for its having been so long unnoticed.

"Kenn's Reef" is said to be six miles in extent, composed of sand and rocks, some of which are eight feet out of water. It is in latitude $21^{\circ} 9'$ S. and longitude $155^{\circ} 49'$ E.

It will be necessary to have a good look out when in the neighborhood of these dangers, as indeed it is at all times, both by night and by day, when running up the outer passage, and should there be any doubt as to the ship's position by Chronometer, "Wreck Reef" should be sighted to correct the ship's position.

No ship should go to westward of $155^{\circ} 00'$ east longitude, until the 20th parallel of latitude be passed, or for a couple of hundred miles north of "Wreck Reef," for the Great Barrier Reef here throw itself off to the eastward in detached and dangerous patches, which have not yet been explored. Having run that distance to the north of "Wreck Reef," she may edge away a little and should leave "Lihou" and "Alert Shoals," at least a degree to the westward of her track.

These dangers are very extensive, and the eastern part extends from $16^{\circ} 50'$ to $17^{\circ} 45'$ of S. latitude; and in longitude from $150^{\circ} 00'$ to $152^{\circ} 30'$ E., which is their eastern limit.

It was, no doubt, amongst these Reefs, that the "Coringa Packet" was lost; and it is a part of the coral sea which ought never to be touched upon unless compelled by dire necessity, for it is known to be strewed with detached and dangerous patches, the current sweeping strongly to the N.W. in their neighbourhood.

Having passed the 16° parallel of latitude and being in about 154° of E. longitude, a north-westerly course may be steered, passing "Diana's Bank," in latitude $15^{\circ} 38'$ S., and longitude $150^{\circ} 28'$ east.

This danger is, however, well out of the usual track for the Barrier entrances; and the only known reef existing outside the great line of "Barrier Reefs" is now the "Osprey Reef," in latitude $13^{\circ} 57'$ S., and longitude $146^{\circ} 20'$ E.† It was discovered and twice seen in 1844, the same position being assigned to it, and appears to be 10 miles in extent.

In shaping a course for the beacon on "Raine's Island" a N.W. current of at least 1 mile per hour should be allowed for, and such a track followed as will fall in with the Barrier 15 or 20 miles to the southward of the beacon, which is in latitude $11^{\circ} 36'$ S., and longitude $144^{\circ} 7'$ E. Having then obtained a good latitude observation, and sighted the reefs, steer a north course along their outer edge, at a distance of a couple of miles from the reefs, till the beacon be seen when it bears north; and being in the centre of the channel south of the Island which is nearly 4 miles in width, steer in W.S.W. for 9 miles, which will lead into soundings of 20 fathoms, and then S.W. for Sir Charles Hardy's Islands.

* Bird Islet, according to Raper, is in $155^{\circ} 30'$ East.—*Compilers*

† Raper places South Point of Osprey Reef in Longitude $146^{\circ} 34'$ E.—Latitude, as above.

I may here observe, that if the weather be fine and the latitude well determined, the ship being in the hands of a cool seaman, any of the narrow passages south of Raine's Islet, examined by Her Majesty's ship "Fly," may be safely taken. They are as follow :—"Black Rocks" in $12^{\circ} 12'$ S. latitude (the best;) "Nimrod's Passage" in $12^{\circ} 6'$ S.; "Single Rock Entrance" in $12^{\circ} 2'$ S.; and "Stead's Passage" $11^{\circ} 55'$ S. latitude.

Should the weather be thick or blowing, a very common occurrence at the full and change of the moon, the reefs south of "Raine's Island" form themselves into such dangerous bays, that without some mark to steer for, I cannot but consider it highly hazardous to attempt any of these passages, more especially as the tides run through them with considerable rapidity.

If Raine's Island be passed, Pandora's Entrance, a good entrance of a couple of miles wide, lays eight miles to the northward of it, having a sand bank on its southern extreme, and should that be missed, it will be necessary to run down 90 miles to the northward; when having sighted "Murray's Islands," (which are high and plainly visible in moderately clear weather, being only 6 miles from the Barrier Reef,) and running along the outer edge of the reef for 15 or 20 miles to the north of Murray's Islands, when in latitude $9^{\circ} 25'$ S., a west course may be steered in, for the Great Barrier Reef here terminates, leaving a broad, safe, and clear passage between it and the New Guinea Coast.

It is necessary to observe, that on no account should any of the dangerous and narrow passages from Pandora's Entrance, in $11^{\circ} 26'$ to the termination of the Barrier in $9^{\circ} 25'$ S. latitude be used. They are all perfectly impracticable, and from the strong tides that set through them highly dangerous. It was in entering through one of these narrow channels that the "Hydrabad" was lost, having Murray's Island on a W. $\frac{1}{2}$ N. bearing.

Having got within the reefs, and obtained soundings, the great cause of anxiety may be said to be over; but a vigilant mast-head look-out must still be kept, and whether sailing in for the main land over the parts examined by Her Majesty's Surveying vessels or not, whilst running from Raine's Island or any part of the Barrier for the main land, the vessel should be anchored when the sun gets so far a-head as to dazzle the sight of the mast-head look-out man.

The great danger of the "outer route" I consider to be in making the Barrier in thick or blowing weather, when, if no observation for latitude be obtained, a ship might find herself up to the reefs before she intended it; perhaps, too, in the night, when a person having charge of a valuable ship might well be forgiven for being a little bewildered in such a situation, and it has probably been thus that most of the ships have been wrecked.

In fine weather there is no great difficulty about entering the reefs; but, I have never been in any part of the world where the ocean assumes so different a feature as it does on a fine day, and the contrary, amongst the Barrier Reefs of New Holland.

I would therefore recommend, if the weather be unfavourable for making the "Barrier Entrances," to steer up for the "Eastern Fields," still al-

lowing for a W.N.W. current of a mile per hour, and having rounded or sighted them and "Portlock's Reef," a west course will lead into what I consider the safest channel yet known through "Torres' Straits," having ample room for a ship to lay-to if night comes on, no sunken dangers, and good anchorage throughout. It has indeed received a very close examination from the surveying vessels, and I will now proceed briefly to describe this passage.

The "Eastern Fields," discovered and laid down by Flinders, who sailed through them, are a series of detached reefs, their N.E. extreme being in latitude $10^{\circ} 00' S.$; and longitude $145^{\circ} 45' E.$, and extending upwards of 20 miles to the westward.

From the "Eastern Fields" the north extreme of "Portlock's Reef" bears N. $60^{\circ} W.$, distant 63 miles, being in latitude $9^{\circ} 27' S.$; and longitude $144^{\circ} 57' E.$, and having got into this parallel of $9^{\circ} 23' S.$, and steering in a due west course, if the weather be at all clear, "Anchor Key" (a detached sand bank surrounded by a reef,) will be sighted, distant 33 miles, nearly due west, from the north extreme of "Portlock's Reef."

From "Anchor Key," Darnley Island, which is the leading mark for the passage, bears S.W. by W. 24 miles distant, and in clear weather should be distinctly visible, as the peak of the island is nearly 600 feet high; latitude Darnley Island Peak $9^{\circ} 35' 10''$; longitude $143^{\circ} 50' 15'' E.$ Steering on a due west course some breaking patches will be seen, which run out 14 miles to the N.N.E. from Darnley Island, and which may be considered as the northern dangers of "Torres' Straits," leaving a broad, safe, and clear passage between them and the coast of New Guinea.

"Bramble Key" (a large sand bank surrounded by a reef, and having a patch of detached black rocks 12 or 14 feet above high water, and separated from the sand bank by a clear passage of 3 miles in width,) is a good mark for this entrance.

The sandy Key above-named, bears N. by E. 28 miles from Darnley Island, (which is usually seen from it,) leaving a clear and safe passage of 15 miles in width between the "Key" and the breaking patches above-named, which run out from Darnley Island on the one side, and an equally broad and safe channel on the other, between it and the Coast of New Guinea, which Coast is at its nearest point 28 miles distant from "Bramble Key," thus leaving a clear and safe entrance into "Torres' Straits" of 40 miles in width.

It may be here observed that the new Guinea Coast should, if possible, be avoided, for it is low and the Soundings run off shoal to a distance of 8 and 9 miles from the land; if approached, the hand-lead should be kept going. But I would recommend the passage to the south of "Bramble Key" as quite the most preferable, either in entering or leaving Torres' Straits. The people of the New Guinea Coast are fierce and hostile to white people, and no communication should be had with them without being well armed.

The ship's position being clearly made out, a S.W. course from Bramble Key, for 30 miles, over a perfectly clear sea, will place her in the best position for sailing through "Torres' Straits," and having steered the above named course and distance, "Stephen's Island," (which is the easternmost

of the low wooded coral islets in "Torres' Straits.") should be seen bearing S.S.E., distant 3 or 4 miles.

The average depth over this track will be from 20 to 25 fathoms, with a bottom of sand and loose coral, where the anchor may be let go without any fear of losing it

It is high water at "Darnley Island" at the full and change of the moon, at 9hrs 15m.; the rise of tide being 10 feet. The flood-tide sets in from the N.E., running at the rate of $2\frac{1}{2}$ knots per hour, at that period.

Stephen's Island is higher than most of the islets of this group, being two hundred feet from the level of the sea, thickly covered with Cocoa Nut Trees, and surrounded by a coral reef, which runs out nearly 3 miles from its eastern extreme. Stephen's Island bears west-north west from "Darnley Island Peak" distant $12\frac{1}{2}$ miles.

From this position, viz —with "Stephen's Island," bearing south-south east, 2 or 3 miles distant a south-west by south course for 45 miles, (varied according to the circumstances of the tide,) is the course to pass through a numerous group of low coralline and thickly wooded Islands, which can only be described by a reference to the Chart. It may be sufficient here to say, that the passages between these Islands are all clear of sunken dangers, and that with a moderate look-out, all sail may be carried through them, recollecting that the coral reefs which surround them, always run out from their eastern extremes, and that they may be safely approached within $\frac{1}{2}$ mile on their north-western sides. They are separated by channels, varying from 6 to 3 miles in width; and the depth of water will be found to be between 11 and 9 fathoms, on a bottom of course sand perfectly clear of Coral Rocks,

These Islands are all inhabited, but I would recommend the crew of any single ship to be cautious in their dealings with the natives, and on no account to land in a boat at a distance from their vessel.

Cocoa nuts and shell fish will be found on all of them, and from the months of January to May or June, abundance of fresh water may be procured in the Bay, on the N.W. side of Darnley Island; where good anchorage may be obtained during the S.E. monsoon.

It may be observed, that neither wood nor water should be taken without having a previous communication with the inhabitants of the Island. They perfectly understand trading for Tortoise Shell, of which a very fine description was obtained by the crew of H.M.S. "Fly." For three months a very friendly communication was held with these people, and I believe, if fairly dealt with, that no cause of quarrel will arise. Knives and axes are the most favorite articles of barter.

Having steered S.W. by S. for 45 miles, the high peak of "Mount Ernest" and "Bank's Island," should be seen bearing west-south-west, and the course must be altered to south by west for 50 miles, which course, if the wind should hang to the southward, will enable a ship to fetch the entrance of "Endeavour Straits" without a tack. This latter part of the passage is perfectly clear, and there is ample room to lay-to for the night, if required.

Previous Sailing Directions having been given for "Endeavour Straits" it will be needless to say anything more upon that subject; and if the slightest caution be used, from the total absence of sunken dangers

throughout this northern part of Torres' Straits, and through Endeavour Straits, combined with the good and safe anchorage that may be everywhere obtained, I should consider that a ship would be very unfortunate if she could not sail through from "Darnley Island," at the eastern extreme of "Endeavour Straits," in 48 hours, anchoring during the night if necessary.

To sail through Endeavour and Torres' Straits," from the westward.

The Wallis' Islands form the best guide for the approach to the western entrance of "Endeavour Straits," and a ship intending to sail through this Strait from the westward, should strive to get in to the parallel of the northern of these Islands, which are two in number.

North Wallis' Isle is in lat. $10^{\circ} 51' 30''$ S. ; and in long. $142^{\circ} 5' 30''$ E. It may be easily distinguished from its appearing when at the distance of 5 or 6 miles, like two small Islets separated from each other, by about a ship's breadth.

South Wallis' Island is lower and more wooded than its namesake, from which it is separated by a channel, which is not safe to sail through, of nearly three miles in width.

In steering for the "Wallis' Isles" the high land of "Prince of Wales' Islands" will first be seen if the weather be clear, at a distance of 25 or 30 miles, and then the "Wallis' Isles," which are sufficiently elevated to be seen from a ship's deck, a distance of 10 or 12 miles in moderately clear weather.

When at that distance from "Wallis' Island," and in the parallel of the Northern Island, "Booby Island" should be seen from the mast-head, bearing N. by E., and the lead should be kept going; for a narrow Spit of Sand runs off due west six miles from the "Northern Wallis' Island."

To avoid the extreme of this Spit, bring North Wallis' Island to bear east-south-east, and steer in a due east course, by which means the above-named danger will be avoided, and North Wallis' Island will be safely passed at a distance of two or three miles.

The course through Endeavour Strait will now be from E. N. E. to N. E. by E. and N. N. E., varying according to the circumstances of the Tide.

The flood sets to the westward, and the ebb to the eastward, running at the springs at the rate of four to five knots per hour; and it is High Water at the full and Change of the moon at one o'clock at Wallis' Island, although the tides here are sometimes exceedingly irregular.

Having passed through the Possession Isles, the different passages between which are all clear to sail through, with the exception of the southern one adjoining the main land of New Holland, an E. $\frac{3}{4}$ N. course, for 18 miles, over a clear sea, will lead round the northern point of New Holland, when a course should be shaped by Captain King's Chart along the Coast to reach the "Bird Islands," and from the Bird Islands the Directions already published will amply suffice to lead a ship out to sea, through the Barrier, by the Beacon on Raine's Island.

The Courses above given are not corrected for the variation of the Compass, which is four degrees easterly in Torres' Straits.

F. P. BLACKWOOD.

DESCRIPTION OF ISLANDS AND DANGERS

IN THE GREAT NORTH-EAST PASSAGE,

And Sailing Directions for Prince of Wales Channel.

IN the preceding instructions for Bligh's Entrance, or the Great North-East Channel, Captain Blackwood's description of the Islands which serve as leading marks whilst passing through, does not extend beyond Stephens Island; those to the westward of it will be described in the order in which they are passed after leaving that island. The following article is, therefore, in continuation of Sailing Directions for the North-East Entrance:—

Campbell Isle is small, low, and wooded, with trees 105 feet in height. It is S.W. $\frac{1}{2}$ S. $4\frac{1}{2}$ miles from Stephens isle, and surrounded by a reef $2\frac{1}{2}$ miles long, N.E. and S.W., with a depth of 20 and 25 fathoms round it; a small detached coral patch lies close off the east side of the reef.

Dalrymple Isle, W. by S. $\frac{1}{2}$ S. 11 miles from Campbell isle, is low, wooded, and a mile long; it lies on the north-west side of a reef $2\frac{1}{2}$ miles in length, and a mile in breadth, with deep water round it. There is a village on the eastern side of the island. The N.E. extreme is in lat. $9^{\circ} 36'$, long. $143^{\circ} 19'$.

Pearce Cay, a sand-bank awash at high water, and N. by W. $6\frac{1}{2}$ miles from Dalrymple isle, is situated on the northern side of a reef 3 miles in circumference, with deep water round it. The channel between Pearce Cay and Warrior reef is deep, free from dangers, and $3\frac{1}{2}$ miles broad.

Keats Islet, S.S.W. 8 miles from Campbell isle, although very small, has trees 60 feet in height growing on it; it is formed on the northern end of a reef nearly 2 miles long, with from 15 to 25 fathoms water close around it.

Yorke Isles, between 3 and 4 miles to the southward of Keats islet, are low, wooded, and connected at low water by a sandy spit; they are situated on the northern side of a semicircular reef, 4 miles long E.N.E. and W.S.W., and nearly 2 miles broad. The larger island, $1\frac{1}{2}$ miles in length, is on the western end of the reef, and the other, on the north-eastern extreme. From the opening between the two islands a shallow spit extends nearly a mile to the northward; with this exception the water is deep close to the northern edge of the reef, but to the southward it has not been closely examined. The west extreme of the western isle is in lat. $9^{\circ} 45'$, long. $143^{\circ} 24\frac{1}{2}'$.

Marsden Isle, S.W. by W. $\frac{1}{2}$ W. 4 miles from Keats islet, is small and densely wooded, some of the trees being from 60 to 70 feet in height. The island lies on the south-west end of a reef $1\frac{1}{2}$ miles long, and surrounded with deep water.

Rennel Isle, nearly S.W. by W. 7 miles from Marsden isle, is low, wooded, and 2 miles in circumference; it is situated on the northern edge of a reef $2\frac{1}{2}$ miles long East and West, and $1\frac{1}{2}$ miles broad, with from 13 to 17 fathoms water close to its edges. There is a village at the south-east extreme of the isle. Centre of island $9^{\circ} 46'$, and $143^{\circ} 16'$.

Between Rennel and Yorke isles is a small reef with a sand-bank on it, awash at high water, on each side of which is a clear deep channel.

Bourke Islets, to the southward of Yorke isles, are small and wooded; the westernmost of these four islets, the only one bordering upon the channel, is encircled by a narrow fringe of coral, and lies nearly S.E. by S. $6\frac{1}{2}$ miles

from Rennel isle ; it may be approached to depths of from 19 to 25 fathoms water, on all sides at a distance of half a mile.

Arden Islet, S.W. by S. $8\frac{1}{2}$ miles from Rennel isle, is small, low, and fringed by a narrow coral reef, with deep water round it.

Aureed Isle, S.E. by E. $8\frac{3}{4}$ miles from Arden islet, is low, wooded, nearly $1\frac{1}{4}$ miles long, and like most of the neighbouring islets is fringed with coral. There is a village near its southern end, with numerous inhabitants—for so small an island,—they are considered by the Darnley and Murray islanders hostile and ferocious.

Between Arden and Aureed isles, at 3 miles from the former, is a small sand and coral patch, awash at half tide, with a deep, clear channel on either side of it.

A small, low wooded island lies W. by S. $\frac{1}{2}$ S. 10 miles from Aureed isle, on the south-west end of a reef $2\frac{1}{4}$ miles long, which, like the others just noticed, is steep-to on all sides. A native village was seen on the island.

Dove Islet, W. by S. $5\frac{1}{2}$ miles from that just described, is small, wooded, and surrounded by a reef with deep water about it.

Cocoa-nut Isle, S.E. 4 miles from Dove islet, derives its name from a high grove of cocoa-nut trees on it ; it is 1 mile in extent East and West, and situated on a reef 3 miles long, and about a mile broad, extending in the same direction as the island. Close off the east end of the reef, is a small islet also encircled by a fringe of coral ; and $3\frac{1}{2}$ miles farther to the eastward, is a patch of dry rocks and sand on a small coral reef. These three reefs are bold to approach, and there is a deep clear channel between the dry rocks and the lesser of the two isles just described. Centre of Cocoa-nut Island $10^{\circ} 3'$, and $143^{\circ} 4' 30''$.

At S. by W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles from Cocoa-nut isle is a small narrow islet surrounded by a reef, with deep water about it. A small reef with a sand-bank on it lies about E. by N. 7 miles from this islet, and several others appeared to extend in a southerly direction for about 15 miles from the reef.

Three Sisters are three low islets in line, N. by W. and S. by E. Bet islet—the northernmost of the three—S.W. by W. $\frac{3}{4}$ W. 16 miles from Cocoa-nut isle, is situated on the west extreme of a coral reef $7\frac{1}{4}$ miles long, and about a mile broad. This reef is nearly straight, and has a grassy sand-bank on its east end, S.W. $\frac{1}{2}$ W. 10 miles from Cocoa-nut isle.

A small reef, with a sand-bank and a few bushes on it, lies $2\frac{1}{2}$ miles to the northward of Bet islet; in line with the other Sisters. A 3-fathoms spit runs out about half a mile from its south-west side ; and some rocks awash lie $1\frac{3}{4}$ miles to the eastward of the reef ; but the water is deep all round them, and they may be easily seen, in the daytime, by a proper look-out.

Sue Islet—the middle Sister—lies 4 miles to the southward of Bet islet, on the western end of a coral reef $3\frac{1}{4}$ miles long, and from $\frac{1}{2}$ a mile to $1\frac{1}{2}$ miles broad.

Poll Island, the southernmost of the Three Sisters, lies $2\frac{3}{4}$ miles to the southward of Sue islet, and is situated on the west end of a reef about $1\frac{1}{2}$ miles long.

Two small coral reefs lie close together 5 miles to the southward of Poll islet, and with the Three Sisters nearly in line ; on the eastern or larger reef is a sand bank. The water appeared deep about these reefs, and the channel between the Three Sisters is clear and safe to run through.

Ackers Shoal, between the last mentioned reefs and Poll is the Ackers Shoal, with not more than 10 feet on it. It lies S.W. of Poll, distant about $2\frac{1}{2}$ miles.

Saddle Isle, about W. by S. 8 miles from Bet islet, is $1\frac{1}{2}$ miles in circumference, and encircled by a narrow fringe of coral. It rises to two grassy

hills, 180 feet in height, separated by level ground, which gives the islet a saddle-like appearance when seen from the eastward. There are 8 and 9 fathoms water close to this islet, which depth extends from it in all directions, with a remarkable level bottom.

Nine-pin Rock is a remarkable isolated pinnacle S. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Saddle islet; it is about 25 feet in height and resembles what it derives its name from; the water is deep close round it.

Harvey Rocks are a black cluster, a few feet above high water, nearly 5 miles to the southward of Nine-pin Rock in line with Saddle isle. These rocks should not be approached within $1\frac{1}{2}$ miles on their north, and north-west sides, as there is a rock awash at a mile to the northward, and a 2-fathoms patch lies about the same distance to the north-westward of them.

From Saddle isle, and Nine-pin and Harvey rocks to Mount Ernest and Double island, there are regular soundings of 9 and 10 fathoms, with apparently no other shoal than a $4\frac{1}{2}$ fathoms patch E. by S. $\frac{1}{2}$ S. $3\frac{1}{2}$ miles from Mount Ernest.

Double Island consists of two small islands, nearly touching each other, and situated on a reef, $1\frac{1}{4}$ miles long, and nearly half a mile broad. The eastern island, E.N.E. $8\frac{1}{2}$ miles from Ince point, the northern extreme of Wednesday island, is larger and higher than the other, and may be distinctly seen from the mast-head, at a distance of 25 miles. It is partially covered with stunted trees and scrub, with some large rocks on its summit. The western island is low and woody.

There is sheltered anchorage under the lee of the reef, but care must be taken to avoid a small coral patch a quarter of a mile off its south side, and some foul ground extending nearly half a mile from its west end.

Double Island is one of the best marks for making and leading through Prince of Wales Channel.

East Strait Islet, S. by E. 2 miles from the eastern Double island, is small and rocky, with a sand spit projecting from its north-west extreme, but as its limits were not closely examined, shoal water may extend a mile further to the westward, than at present laid down on the chart.

There appears to be a clear channel between East Strait Islet and Double Island, with 9 to 11 fathoms water.

Prince of Wales Channel, the best through the western part of Torres Strait, passes between Wednesday, Hammond, and Good islands, and North-West reef. It is bounded to the southward by Ince point, Wednesday spit, Hammond rock, and Ipili reef, all of which, with the exception of Wednesday spit, are excellent guiding marks, and may be passed at a third of a mile off, in 7 and 8 fathoms water.

The northern side of Prince of Wales Channel is formed by North-West reef, the southern edge of which extends $7\frac{1}{2}$ miles in nearly a direct line from $2\frac{2}{3}$ miles N.W. by W. of Ince point, to 2 miles N.N.W. of Ipili reef: it may be skirted in from 6 to 9 fathoms water, within a quarter of a mile, except near its eastern end, and to the northward of Hammond rock where spits of foul ground project about a third of a mile; but this edge of the reef should not be approached within a mile, except when beating through, as the clearest part of the channel is on the southern side, and some dangerous reefs and sunken patches lie across the northern portion of the western entrance.

Sunk Reef (d.) the nearest of these dangers to the course recommended, is a covered coral patch about midway between Ipili or c. reef, and the western extreme of North-West reef, $1\frac{1}{4}$ miles long, E.N.E. and W.S.W. and nearly a quarter of a mile wide; the least depth found on it was 2 feet; but there is deep water on either side.

At about W.S.W. $1\frac{1}{4}$ miles from the western end of *d.* reef, is a small 3-fathoms patch, between which and the west point of North-West reef is a chain of dangerous, small sunken coral patches, with 2 and $2\frac{1}{2}$ fathoms water on them.

Prince of Wales channel is about 10 miles long, from Ince point to abreast of Good Island, and a mile broad, with regular soundings, ranging from 7 to 10 fathoms.

Directions.—A vessel coming from the eastward should shape such a course as to pass at about a mile to the north of Ince point, and having brought it to bear South, and the highest part of Double island E. by N. $\frac{1}{4}$ N., steer W. by S. $\frac{1}{4}$ S. for Hammond rock, keeping it a little on the port bow, which will take a vessel nearly in mid-channel, and clear Wednesday spit. Pass Hammond rock at a distance of 2 or 3 cables' lengths, then haul up S.W. by W. going between *c.* and *d.* reefs, which are the only dangers in the channel, and may be avoided by keeping the north extreme of the higher Double island well on with the north point of Hammond island, until the west end of Good island bears South. Should Double island not be visible, steer the same course as before directed (S.W. by W.) after passing Hammond rock, bordering upon *c.* reef—which is always dry,—and giving *d.*, the more dangerous reef, a wider berth. When the west end of Good island bears South, steer W. by S., which course will lead about $1\frac{1}{2}$ miles to the northward of Larpent bank and Booby island.

Larpent Bank is a large covered sand-bank, extending from 5 to nearly 10 miles westward from Friday island, which, with another bank to the southward of it, appeared to be separated from Gerard bank and the shoals extending to the westward from Prince of Wales island, by navigable water. The northern side of Larpent bank is steep-to, with 7 fathoms water close to its edge.

Booby Island, the westernmost island, or land of any kind, in Torres strait, lies W. by S. $\frac{1}{4}$ S. 15 miles from Good island, and in lat. $10^{\circ} 36' 5''$ S., long. $141^{\circ} 54' 45''$ E.: it is fringed by a narrow coral reef, except at its south-west extreme, where it runs out about a third of a mile, forming a spit on which the brig *Freak* struck in 1848, by incautiously rounding it too closely. There is temporary anchorage in 7 fathoms water, under the lee of the island.

As Booby island is not inhabited, and its position is very favourable for the purpose, a supply of provisions and other necessaries, for the use of shipwrecked, or other distressed people, has been deposited in a cave at the base of the cliff on the west side of the island: this supply is renewed from time to time, by vessels passing through Torres Strait from Sydney, as at Raine Island.

A chest, with the words "Post Office," is also in the same place, in which letters and memoranda may be deposited.

Tides in the Great North-east Channel.—At Bramble Cay, it is high water full and change at 9h. 15m.; springs rise 12 feet. The flood sets to the westward, the ebb to the eastward, from 1 to $1\frac{1}{2}$ knots. At about mid-channel, between Dungeness reef and Stephens isle the Warrior reef diverts the stream into a south-westerly and north-easterly direction; the flood runs till 11h. 30m.; the average rise and fall does not exceed 10 feet all over the channel at springs, when at low water all the reefs are uncovered in this part of the channel, $1\frac{1}{2}$ or 2 knots may be allowed for at springs.

At the south-western termination of the north-east channel, from Mount Adolphus to Turtle Backed Isle, it is high water full and change at 12h. 15m.; rise at springs 10 feet.

Natives.—See Page 31.

Compiled, with alterations, chiefly from Australian Directory, Vol 2.

POSITIONS OF THE MOST PROMINENT OUTLYING DANGERS

IN THE ROUTE BY THE OUTER PASSAGE, TO TORRES STRAITS.

Determined with great precision, by Capt. Denham, H.M.S. Herald, in 1859.

Breaksea Spit.—Sandy Cape Shoal, a detached coralline knowl of 9 feet, lying $3\frac{1}{2}$ miles to the eastward of the eastern elbow of Breaksea Spit; from it the bright sand-slip of Sandy Cape bears S.W. by S. $11\frac{1}{4}$ miles distant.

This danger is directly in the track of vessels rounding Breaksea Spit; to pass inside, it is recommended to borrow on the breakers of the spit to within 8 or 10 fathoms, or to insure passing outside by night, the soundings should not be decreased to less than 35 fathoms on approaching the latitude of the shoal, $24^{\circ} 36'$ S. In the month of September the current was found to set steadily S.S.E. over the shoal, 1 to $1\frac{1}{4}$ knots per hour.

Outlying Dangers in the Coral Sea.—Sir James Saumarez Reef extends 7 leagues in a N.E. and S.W. direction, and is bold-to on its eastern side. The S.E. elbow of the reef is in $21^{\circ} 55'$ S., and $153^{\circ} 35' 50''$ E. A sandy cay at its S.W. end, is in $21^{\circ} 50' 48''$ S., and $153^{\circ} 30' 15''$ E., and one on its N.E. extreme in $21^{\circ} 38' 11''$ S., and $153^{\circ} 46' 35''$ E.

Frederick Reef is of horse-shoe shape, with its convex side to the S.E., extending 7 miles north and south, and a league in breadth. A sandy islet on the southern part of the reef, is in $21^{\circ} 1' 46''$ S., and $154^{\circ} 24' 20''$ E.; and one on the northern extreme of the reef is in $20^{\circ} 56' 43''$ S., and $154^{\circ} 26' 35''$ E.

Kenn Reef.—This fairway danger appears to have been the site of many disastrous wrecks, and its now accurately determined limits is of great value to navigators taking the Outer route to Torres Strait.

The features of this reef are similar to those already described in the Coral Sea; the chain of reefs forms two sides of a triangle, with the apex pointing to the eastward; the southern side extends eight miles in an E.N.E. and W.S.W. trend; the eastern side lies in a N.N.W. and S.S.E. direction, and is nearly eleven miles in length; both the southern and eastern sides being bold close to the breakers. The S.E. extreme, which is a salient point, is in $21^{\circ} 15' 24''$ S., and $155^{\circ} 50' 30''$ E., the S.W. extreme is in $21^{\circ} 17' 45''$ S., and $155^{\circ} 43' 15''$ E., the north point of the reef being in $21^{\circ} 6' 8''$ S., and $155^{\circ} 46' 15''$ E. A beacon was erected on a small sandy cay, $1\frac{3}{4}$ miles to the westward of the south-east projection of the reef.

Booby and N.W. Bellona Reefs are linear in shape, with their steep-to edge on the western side, and extend 6 leagues in a N.N.W. and S.S.E. direction; the N.W. horn of the former is in $20^{\circ} 57'$ S., and $158^{\circ} 31' 45''$ E., and the north horn of the latter in $20^{\circ} 47' 36''$ S., and $158^{\circ} 28'$ E.

Bampton Reef, Avon and Chesterfield Islets.—This extensive chain of reefs and small islets extend 20 leagues from north to south, and form a nearly continuous line of barrier reefs with their steep-to edge facing the west.

The extreme of the southern portion of Chesterfield group is in $19^{\circ} 58' 30''$ S., and $158^{\circ} 30'$ E. The S.W. islet of the Avon Isles, which latter occupy a nearly central portion of the barrier is in $19^{\circ} 32'$ S., and $158^{\circ} 15' 20''$ E.; and the north point of the Bampton Reef is in $19^{\circ} 1' 20''$ S., and $158^{\circ} 27'$ E.

Mellish, Young, and Duroc Reefs.—The assigned positions of the two former of these reefs were examined by Captain Denham, without finding shoal water; that officer, however, considers that the French war steam-vessel "Duroc" was wrecked on a reef, which, from its proximity midway to their positions, was doubtless the same danger; he accordingly retains the name of Mellish Reef, as given in Krusenstern's Atlas of the Pacific Ocean.

This Reef, which is steep-to on all sides, is 8 miles long, and lies in a

north and south direction. A sandy cay, in its central part, is in $17^{\circ}24' 39''$ S., and $155^{\circ} 52' 40''$ E.; a beacon from the wreck of the "Duroc" has been erected on this cay.

Lihou Reef.—Captain Denham's examination of this reef extended from its N.E. point in $17^{\circ} 10' 30''$ S., and $152^{\circ} 5' 35''$ E., to its S.W. point, in lat. $17^{\circ} 39' 13''$ S., and $151^{\circ} 22' 45''$ E.; in this distance of 42 miles the steep-to edge of the reef faced to the S.E.

REEFS IMMEDIATELY NORTHWARD OF PORT JACKSON.

NAMES.	PART.	LATITUDE.			LONGITUDE.			VARIATION.	
		°	'	"	°	'	"	°	'
Elizabeth Reef	Centre.....	29	55	20 S.	159	4	30 E.	11	0 E.
Middleton	Western elbow...	29	27	40 "	159	4	18 "	10	54 "
Fairway.....	Centre.....	21	0	15 "	161	45	9 "	10	7 "
Southern Bellona.....	Western extreme.	21	52	22 "	159	26	10 "	9	30 "
Western Bellona	Sand Islet.....	21	24	18 "	158	52	51 "	9	20 "
Wreck.....	Bird Islet.....	22	10	30 "	155	29	21 "	9	43 "
Cato.....	Islet.....	23	15	32 "	155	34	0 "	9	23 "

Reefs, &c., bounding the Track advised by Captain Denham, R.N.

REEF.		LATITUDE.			LONGITUDE.			VARIATION.	
		°	'	"	°	'	"	°	'
" Eastern Hand."	Bellona	21	52	22 S.	159	26	10 E.	9	30 E.
	Do., (Intermediate breaker)	21	26	36 "	158	47	21 "	
	Booby	20	57	0 "	158	32	33 "	9	19 "
	Bampton	19	52	22 "	158	20	3 "	9	19 "
	Mellish	17	24	39 "	155	53	25 "	8	30 "
" Western Hand."	Cato	23	15	32 S.	155	38	0 E.	9	23 E.
	Wreck	22	10	30 "	155	29	21 "	9	43 "
	Kenn	21	15	24 "	155	51	15 "	9	0 "
	Lihou	17	10	30 "	152	13	0 "	8	3 "
	Willis	16	7	0 "	150	3	39 "	7	11 "
	Osprey	13	51	0 "	146	36	0 "	6	23 "
Raine Island beacon, (Entrance of Strait)		11	35	50 "	144	2	20 "	5	21 "

N.B.—A ship from the southward has only to be placed in 24° south, 157° E., and a clear passage of 150 miles wide, free of current, with a flowing S.E. "trade" wind, will lie before her for 1,160 miles to Raine Island entrance to Torres Straits, upon the following courses, viz:—

- 1st. N. by W. $\frac{3}{4}$ W. 240 miles, to lat. $20^{\circ} 0'$ S.
- 2nd. N.W. $\frac{1}{2}$ W. 700 miles, to lat. $11^{\circ} 36'$ S. (parallel of Raine Island.)
- 3rd. W. $\frac{1}{2}$ S. 220 miles, to Raine Island, upon its parallel.

Note.—The courses are by "compass," corrected for the successive changes in "Variation," in the Coral Sea.

REMARKS ON DANGERS IN THE CORAL SEA.

FROM HYDROGRAPHICAL PAPERS.

BEARINGS MAGNETIC.

Great Barrier Reef was traced from the Herald's former position of 1859, in lat. 20°50' S., long. 152°1'20" E., to Flinders' Passage in lat. 18°53' S., long. 148°13' E. The outer margin was found to trend in a W.N.W. direction for 24½ miles, with an average depth of 100 fathoms within 3 to 6 miles of the reefs.

The position of Flinders' Reefs was determined as follows:—The south extreme in lat. 17°53'30" S., long. 148°27'50" E.; the eastern elbow, in lat. 17°39'50" S., long. 148°34' E. To the northward of these reefs a dangerous breaker, which nearly occasioned the loss of the Herald, was discovered in lat. 17°21'18" S., long. 148°28'50" E., and was named the Herald's Surprise. Captain Denham, in pursuing his route to the northward, determined the extent and position of the Holmes Reefs; the south extreme of the western of these reefs is in lat. 16°30' S., long. 147°47'41" E., from whence they extend 13 miles eastward and 7 miles northward.

A reported sounding of 17 fathoms in lat. 11°49' S., long. 145°49' E., by the brig Dragon, in the fairway track to Raine Island passage, was ascertained not to exist in the position assigned to it.

In the passage from Raine Island to the westward for Torres Strait, the Tynemouth Shoal, as laid down in the charts with the west sand of the middle banks bearing E. $\frac{1}{2}$ N., and Sir Charles Hardy north island S.S.W. $\frac{1}{2}$ W. (the reported bearings), was not seen by Captain Denham. It is therefore, recommended that mariners keep a vigilant look out from aloft in this part of the route.

The Herald found good anchorage out of the strength of the tide in the small bay on the north-west side of Hummond Island, Prince of Wales Channel. The longitude of this bay, as given in the Charts, was verified in 142°11'40" E., and navigators in passing this locality, but more especially at Booby Island, in lat. 10°36' S., long. 141°54'45" E., may test the rates of their chronometers from the time of leaving Sydney or other port in New South Wales.

Notwithstanding the now accurate delineation of the Barrier and outlying reefs, no ship should pass westward of the reefs forming the western boundary dangers of the fairway track, unless compelled to do so by unfavourable winds.

The Proudfoot, a coral shoal with 9 feet of water over it, lies W. $\frac{1}{2}$ N. 26 $\frac{1}{2}$ miles from Booby Island. It will be avoided by keeping on the parallel of 10°36' S., being that of Booby Island, or by not going into a less depth than 11 fathoms. A shoal marked in the charts as seen by the ship Aurora in this parallel, was not observed by the Herald; its position, therefore, if not its existence, must be considered doubtful.

In proceeding to the westward on the same parallel for 500 miles, Captain Denham carried regular soundings over muddy bottom of not less than 50 fathoms, and free from current; but from the meridian of Cape Van Diemen, the soundings were most irregular, varying from 12 to 250 fathoms within a distance of 3 miles; the shoal soundings denoting coral cones or ridges.

ON THE COMPARATIVE ADVANTAGES OF THE ROUTES THROUGH THE STRAITS BY RAINE ISLAND, AND BY THE N.E. PASSAGES,

BY A COLONIAL COMMANDER.

To the Editor of the Sydney Morning Herald.

SIR,—The only advantages (that I know) by Raine Island, are, that you can probably sail through without tacking, and save a few hours, but neither of them are by any means certain. Then, the disadvantages are, that you

frequently find yourself thirty or forty miles at noon from Raine Island, and too late to enter; and, as is frequently the case this time of year, the day is fine, with every appearance of continuing, but in less than twelve hours there is a gale of wind from E.S.E., and thick weather continuing two or three successive days. And, again, I have been running for Raine Island passage in July, with a whole sail breeze from S.E., and a fine clear day, and when abreast of Raine Island the wind diminished and eventually came from the westward, baffling and showery. This is not by any means a solitary case, as I have on three successive voyages through, experienced westerly winds in or near Torres' Straits,—namely, as above, in July, 1855, in September, 1856, westerly winds continued forty-eight hours in Torres' and Endeavour Straits; and in the latter end of May, 1857, after cirri moving for thirty-six hours from N.W. and fresh S.E. gales, the weather became threatening from N.E., and a rotary gale, or cyclone commenced; the wind veered to N.E., heavy rain, thunder and lightning, wind gradually veering to N.W., and increasing gales, ship reaching under two close-reefed topsails forty-eight hours. At sunset cumuli, changing to dark nimbus of a deep purple. This gale continued for four days, eventually coming round to S.W., with fine clear weather. Lat. $11^{\circ} 10' S.$, long. $146^{\circ} 20' E.$ There was no indication of this gale in the Marine Bar; it continued its regular fluctuations with the atmospheric tides, $29^{\circ} 80'$ to $29^{\circ} 84'$. I believe with Captain Jennings, that much the larger majority of losses are through ships overrunning their distance, and not sufficiently allowing for a current, but I do not think a light on Raine Island a remedy. Were it possible to erect a lighthouse or beacon on the east part of the great detached reef, I believe it would be preferable to Raine Island, it being the part first made by all vessels coming on the usual track. Each time I have gone through I have seen the breakers on the great detached reef before I saw the beacon; but placing a light anywhere in this passage would lead to fatal consequences. In reference to Cockburn's Reef, I sounded on the spit growing to N.E. end of it, and found four fathoms on it, but I believe it is gradually growing; the rock awash to the westward of Cockburn's Reef, I consider very dangerous. Respecting the northern passage, the first time I was through was in consequence of the erroneous rating of my chronometers in Sydney; when at sea, after grave deliberations in my own mind, I resolved to attempt it, notwithstanding it had been unfavourably described to me—such as the New Guinea blacks being troublesome, a heavy sea, no anchorage, and so far to leeward—the last only of which I acknowledge. But I have passed through twice in forty-eight hours, and felt no inconvenience through being so far to leeward. After passing between New Guinea and the Eastern Fields, I consider the greatest causes of anxiety are passed, as you can then run on and enter Torres' Straits, *if necessary*, by that truest monitor, the lead; and with a light on Bramble Cay I believe there would be less danger entering here, than Bass's Straits in the night time. Darnley Island, which is high, makes a double mountain east and west, and is plainly visible twelve or fourteen leagues from the deck on a fine clear day, and serves as an excellent finger-post for sailing through this passage. Bramble Cay I consider the best land fall to make here, as you can get on the parallel of latitude and run; it points a mid-channel course; whilst Darnley Island plainly visible, and the black rocks of Bramble Cay, makes you sure of your position from whence you can take a departure. The white sand bank, and detached banks, N.E. and N. of Darnley Island are plainly visible at high water. Another great advantage in this passage, is, the islands are much higher and larger, consequently affording greater shelter and *generally* sandy bottom; there is no hidden danger in this passage before

arriving a little south of Arden Island. I have passed within a cable's length of it, and I believe it to be very small, with brownish white water indicating its position, it can be avoided altogether by passing on the other side of Arden Island. Having arrived here, it is necessary to be attentive to the tides, which run strong, especially at full and change of moon, remembering the flood tides setting westward comes with great effect on your weather beam.

After passing Cocoanut Island, I found the ebb tide setting E.N.E. two and a half knots per hour, which enabled me to weather Poll, Bet and Sue without a tack. A canoe with some natives here came towards the vessel, holding up some tortoise shell, probably wishing us to barter it, as they were uttering some broken English. Not wishing to be troubled with them just then, fired a musket in the air, when they all dropped as though a ball had entered their respective heads, some overboard, others into the bottom of the canoe. I conclude by observing that, with very ordinary care, this passage may be used by steamers or sailing vessels, with fifty per cent. less risk than navigating the Java or other Eastern Seas.

Where every danger is visible, and safe anchorage at all the numerous islands, I cannot imagine why it is considered such a bugbear.

The above valuable Letter appeared in the "Sydney Morning Herald" of June, 1858, in reply to one from Capt Jennings, ship "Contest," to the Times, advocating the exhibition of a Light on Raine Island.



WINDS AND CURRENTS IN THE ARAFURA SEA.

"In the sea lying between New Guinea and Timor, the Easterly Monsoon commences in April and continues until the beginning of October, then, after a few weeks of variable winds, the Westerly Monsoon sets in and continues without intermission until the beginning of March. In the southern part of the Indian Archipelago generally, the Easterly Monsoon is attended with fine weather; but on the S.W. coast of New Guinea, and among the islands to the westward, as far as the east coast of Celebes, frequently squalls, with heavy rain, are experienced at this season, often accompanied by a considerable swell from the southward, while during the remainder of the year the weather is fine. This rule, however, does not extend farther to the westward, for from Celebes to the western extremity of the Archipelago, and also on the north coast of Australia, the westerly is the rainy monsoon. The monsoons, when at their height, usually blow in an E. S. E. and W. N. W. direction; but towards the change they draw round more to the southward, sometimes continuing several days at S. W.

During the Easterly Monsoon, the current sets to the N. W., along the western coast of New Guinea and between the Ki and Arrü Islands, and thence eastward along the south coast of Ceram, at rate of a mile, or a mile and a-half per hour, according to the strength of the wind, the velocity being greatest along the coast of New Guinea.

At this period an easterly current prevails on the north side of the islands, extending from Timor, to Timor-Laut, so that a moderate fast vessel would experience no difficulty there in beating up against that monsoon. In the Westerly Monsoon the current in these seas usually sets with the wind, but its velocity is not so great as during the other seasons.

DIRECTIONS FOR ENTERING THE BAY OF KOEPANG, ISLAND OF TIMOR.

Koepang Bay, on the W. side of Timor, is very extensive, and the town of Koepang, built on its S. side, is the chief settlement on Timor belonging to the Dutch. The flagstaff of Fort Concordia at Koepang is in $10^{\circ} 10' S.$ and $123^{\circ} 35' E.$

The N. point of the bay is low and may be known by a tree, which stands separate from the others and is visible long before the low point can be discerned. Tikoes is a small, round, wooded isle, situated on the edge of the reef which lines the N. point of the bay, and when the point bears E.S.E. $\frac{1}{2} E.$ it is seen just touching the islet. Kera is a low, sandy isle in the middle of the entrance of the bay, surrounded by an extensive reef, on either side of which there are clear channels. When this island bears S.S.E. 1 mile, and Tikoes E.N.E. 3 or 4 miles, soundings will be got in 60 fathoms, sand and coral, decreasing to 50 and 38 fathoms about half a mile from Kera; come no nearer to it on account of its surrounding reef, which projects much farther from the W. and S.E. sides; it is partly dry at low water, which is always discoloured.

Selamo peak, in $9^{\circ} 57' S.$ and $123^{\circ} 41' E.,$ has a remarkably rugged appearance, and may be seen long before Semao and Rotti are discerned in coming from the westward.

H.N.M. frigate Boreas entering the bay of Koepang in March, 1838, Kera Island came in sight from the deck, when it bore S.S.E. distant 6 miles, at the same time the N. point of the bay, just touching Tikoes, bore E.S.E. $\frac{1}{2} E.$ From thence she steered S.E. till Kera bore S.W., and the flagstaff of Fort Concordia S.; the reefs off Kera and off the N. point of the bay being clearly visible by the discoloured water on them. As it was blowing strong from W.N.W., she stood in E. and E.N.E., passed Tikoes at the distance of $2\frac{1}{2}$ or 3 cables' lengths in soundings of 32, 30, 25, 22, 18, and 16 fathoms, bluish clay, and came to an anchor in the latter depth, Koepang bearing S.W. $\frac{1}{3} W.,$ Tikoes W. $\frac{1}{4} N.,$ and Boerong N. by W. $\frac{1}{4} W.$

The reefs between Tikoes and Boerong, and those which project to the south-eastward of the latter isle, are partly dry at low tide, and they are steep-to from 10 or 8 fathoms to 2 or $1\frac{1}{2}$ fathoms. To avoid the first, these islands ought not to be brought in opposite bearings.

Good water may be easily got to the N.N.W.-ward of Boerong, where boats can approach close to the beach; there is also a small river near the village of Selamo, but boats cannot approach unless at high water.

The Boreas, in running over the anchorage under Fort Concordia, had regular soundings from 16 to 32 fathoms, soft bottom, when 2 miles distant from Koepang; and from thence decreasing fast to 24 fathoms, bluish clay, where she anchored with the flagstaff, bearing S. $\frac{2}{3} W.,$ N. point of Semao W.N.W. $\frac{1}{2} W.,$ Kera N. by W. $\frac{3}{4} W.,$ and Tikoes N.N.E. Ships ought not to go nearer in than 16 fathoms, as it shoals rapidly from 9 to 2 fathoms. When it is blowing weather from the N.W., ships are often obliged to leave this anchorage and to search for shelter near Boerong or under Semao; but the latter anchorage is foul, rocky, and steep, and as the currents set with great strength through the strait of Semao, ships are liable to be driven into deep water if the anchor should drag.

It is very easy to water here during the eastern monsoon, near the projecting point on which the Chinese church is standing, as the water is led thither through iron pipes. Ships may procure here cattle, poultry, and fruits.

The channel to the southward of the island of Kera, is also safe, and the

reefs which surround that island are easily perceived by the colour of the water; they project about $1\frac{1}{2}$ miles to the westward, and the sea generally breaks heavily on the northern edge. The northern passage is, however, preferable, there being soundings in it from 40 to 25 fathoms, which will enable ships to anchor when overtaken by a calm. In the southern passage the first soundings are got about 3 miles from Koepang.

PASSAGES BETWEEN THE NORTH COAST OF
AUSTRALIA AND CHINA.

A ship proceeding from the north coast of Australia to China, from April to September, when the S.E. Monsoon prevails to the southward, and the S.W. monsoon to the northward of the equator, should pass to the southward of Timor and Sandalwood Island, and from thence through the Carimata Passage, and up the China Sea to Canton, by which she will have a stronger monsoon and a clearer sea than by passing to northward of Timor, and through the Flores Sea; or than by running through at once to the northward, through the Molucca passages. By this latter route, instead of a fair and steady wind all the voyage, difficulty would be experienced in passing between Borneo and Palawan into the China Sea, from the variable winds and numerous shoals which lie to the westward of the Balabak passage. The passage by the north of Palawan to China is also attended with difficulty during the S.W. monsoon; and an additional inconvenience to these routes is, that the navigation of the Molucca Sea will be performed during the bad monsoon.

Ships returning from China to the north coast of Australia during this season should pursue the track usually adopted by vessels bound to Europe, namely, by standing to the eastward, round to the north end of the Philippines into the Pacific, and so to the southward towards New Guinea. When past the parallel of 5° N., S.E. and S.S.E. winds, with a strong current to the westward, will probably be felt, by which she may easily pass through Dampier Strait, or the Jilolo Passage, into the Molucca Sea. She may then pass between Ceram and Buro, and across the Banda Sea to Wetta, when no difficulty will be found in getting to the eastward along the north side of the Serwatty Islands, as the current there sets to the eastward during the S.E. monsoon. When off Baba, she may stand southward for the coast of Australia, and if she should fall to leeward of her port, she may easily gain her easting by taking advantage of the land and sea breezes.

Again, if a vessel is bound from the north coast of Australia to China, from October to March, when the western monsoon prevails to the southward of the equator, and the N.E. monsoon in the China Sea, she should, on leaving the coast, keep close to the wind, and as the monsoon often blows S.W. and even S.S.W. between Australia and Timor, she may be able to pass between Timor and the Serwatty Islands and through Pitt Passage into the Pacific, and thus pursue the eastern route to China adopted by ships at this season. If unable to get far enough to windward to pass between Ceram and Buro, she may run at once to the northward, between Ceram and Ceram Laut, and from thence into the Pacific by Pitt or Dampier Straits. The only difficulty that an indifferent ship would be likely to encounter in this route would be on the passage between Ceram Laut and the N.W. end of New

Guinea, where the winds would probably be from the N.W., but even then she would have the advantage of fine weather. The route from the north coast of Australia, through the Flores and Java Seas, and up the China Sea to Canton, would be impracticable at this season for a fast sailing vessel, as she would have a dead beat and a lee current the whole way.

A ship returning from China during this season may steer a direct course through the Mindoro Sea, and thence by the Molucca Passage, and past the N.E. end of Timor to the north coast of Australia.

PASSAGES BETWEEN AUSTRALIA AND SINGAPORE.

A vessel bound to Singapore from April to September may pursue the route recommended above for ships bound for China at that season, namely, to the southward of Timor, through the straits of Allas and Carimata, and thence through Rhio Strait to Singapore. The return voyage at that season, through the Java Sea, against the S.E. monsoon, would be tedious and difficult, even for a smart ship; it would, therefore, be advisable to run across the China sea, and round the north end of Borneo, where she would probably have the advantage of S.W. and S.S.W. winds, to traverse the Sooloo Archipelago. When near the Molucca Passage, though the winds will be mostly from the southward, yet but little difficulty will be experienced in passing through it, if the directions given by Horsburgh be followed; and when through, the route to the north coast of Australia, already recommended for vessels returning from China at this season, should be adopted.

From October to March, the passage to Singapore through the Java Sea, against the N.W. monsoon, would be tedious and difficult; a ship bound there during that season should therefore proceed to the northward by the Molucca or Jilolo passage, where she would have the advantage of fine weather, and, and when to the northward of Jilolo, the wind would probably come from the northward and eastward, with a westerly current, which would enable her to proceed round the north end of Borneo, and so with the N.E. monsoon down the China Sea to Singapore. A ship returning at this season should pass through the Carimata Passage, through the Java and Flores Seas, and then to the southward of Wetta, and between Timor and the Serwatty Islands, to the north coast of Australia. It would be unadvisable to proceed through the strait of Allas, and to the southward of Timor, as light airs and calms, with squalls from the S. and S.S.W., are often encountered to the southward of the Islands east of Java, while in the Flores Sea the N.W. monsoon blows steadily.

The passage from Sydney, Van Diemen's Land, and the Gulf of St. Vincent, to the northern coasts of Australia, may be made with facility at all seasons. From April to September the route through Torres Straits should be pursued, while, during the remainder of the year, ships should run to the westward round Cape Leeuwin, and then across the S.E. trade, to the parallel of about 10° N., when the westerly monsoon will carry them to their destination.

DIRECTIONS

FOR

INDIA AND CHINA BY THE SOUTHERN AND THE EASTERN PASSAGES.

(From the *Nautical Magazines* for 1858-9).

Ports on the East of Australia to India,—Southern Route.—A ship leaving Port Jackson or any port on the East coast of Australia for India, may take the route through Bass' Strait or round the South coast of Tasmania, when commencing her voyage between the beginning of September and the first of March. In January, February, and March, near Tasmania, she will find S.E. winds more prevalent than during all the other months. She will profit by these winds in making to the Westward, but must give a wide berth to the Australian coast, in order not to lose by a change of the wind, and not to be caught too near the shore by heavy S.W. squalls, which prevail at this period.

Some vessels bound to Europe also take this route during the winter months, June, July, and August. It is true they suffer much from bad weather, but the passage is not impossible even during this season. As much as possible she would endeavour to reach the trade winds, and when found would shape the most convenient course for the port to which she is bound. Under favourable circumstances a passage from Port Jackson to Bengal may be effected in two months; some vessels have been fifty days in going from Bass Strait to False Bay; but during the summer months (October, November, and December) the best passages have been made.

Northern Routes, through Torres' Straits.—From March to September the passage from Port Jackson to Bengal or ports of the inland seas, is made through Torres' Strait. In this route the ship runs to the Northward along the coast of Australia as far as Sandy Cape; and then takes the inner passage. A ship taking the outer passage on leaving Port Jackson should make the best of her way to the meridian of 155° and should then pass West of Howe and Middleton Islands; then stand on to the North, keeping a look out for Wreck Reef and the Bampton Shoals, the Minerva, Bellona, Ball, and Kenn Reefs, &c.; which must be passed between Lamb and Bass Islands, all lying between the parallels of 24° and 20° S. lat. Great care must also be taken to allow for a N.W. current, or Westerly, of at least one mile an hour, sometimes more. When Wreck Reef is passed, the course should be shaped so as to pass about sixty miles East of the Diana Bank for Torres' Strait.

Port Jackson to India, East of New Guinea.—The best route for a ship bound to India or China from Port Jackson, not taking the Southern route by Bass' Strait, nor the Northern by Torres' Strait, will be to pass East of New Guinea and take Pitt Passage, and then cross the Java Sea or take the Strait of Ombay. But this route, like the Northern route, should only be taken from March to September, that is, when the S.E. monsoon prevails South of the equator. On leaving Port Jackson or Tasmania she would make to the Eastward, keeping also a little North till she reaches the meridian of 160° E.; then stand to the Northward, keeping nearly on this meridian, and passing away East of Howe and Middleton Islands, Wreck Reef, and the Cato Shoals.

Capt. Bristow considers it preferable, on leaving Port Jackson, to stand to the Northward as far as the latitude of Sandy Cape, passing West of the above mentioned dangers. A ship would thus pass New Caledonia in the East, taking great care to avoid the dangers of those latitudes, and then steer for Cape St. George, the South point of New Ireland.

If desiring to enter the St. George Channel and Pitt Passage, the ship should keep well in to the coast of New Guinea, to avoid the Easterly currents and light N.W. winds that are frequently found North of the equator, and which set vessels out to sea. Having therefore reached the meridian of 134° , she would keep near the coast of New Guinea when approaching Pitt Channel in the S.E. monsoon from March to September.

Instead of taking the St. George Channel the ship may use that between New Britain and King William Cape, passing on either side of Rooke Island; from thence she would steer so as to pass between Lottin and Loupee Islands, or this last may be rounded on the West, according to circumstances. She would then continue along the coast of New Guinea, passing North of the off-lying islands from the Astrolabe Bay as far as Isle Dumont Durville, and continue along the coast as far as the point of this name. From this point she would stand on so as to pass North of the Traitor Islands, Mysory, and Providence, and then make the coast of New Guinea at Cape Mamori, steering along the coast as far as Cape Good Hope, and then make for Pitt Passage through Dampier Strait. This route is shorter and more direct than that by St. George Channel, and there are fewer dangers to guard against in it.

The ship having reached Pitt Passage through Dampier Strait, or by any that appears more suitable, would be guided by the general directions for proceeding to China through Pitt Passage, passing East of the Philippine Islands.

When the N.W. monsoon prevails South of the equator, a ship bound for India should not keep near the coast of New Guinea as above directed. In November, December, and January, it is better to get to the Northward as far as latitude 5° N., near which the N.E. trade may be expected. At this season, also, the ship would pass South of Mindanao, through Basselan Strait, and cross the Sooloo Sea, and then enter the China Sea by the strait of Balabac, North of the isles of Benguey and Balambangam. Then crossing the China Sea she would take the strait of Malacca. This route is doubtless the best

for India during the N.E. monsoon from the East coast of Australia or Tasmania.

Eastern routes for China or India, from the East Coast of Australia.—A ship from the same coasts bound to China or India, while the N.W. monsoon prevails South of the line, (from September to March,) and not adopting the Southern route by Bass' Strait, would encounter heavy winds if she takes the Eastern route, that is, a route still more Easterly than the last mentioned. In this case either one of two routes is generally adopted; the first passing West of New Caledonia, the New Hebrides, and the Santa Cruz Islands, and East of the Solomon Isles. The second passing East of New Caledonia, the New Hebrides, and Santa Cruz Islands. These two routes are nearly the same as those given for the Great Eastern passage from the Cape of Good Hope to China.

First Eastern Route.—A ship adopting the first of these routes on leaving Port Jackson, would steer E.N.E. to profit by the regular breezes prevailing out at sea, and having reached the meridian of 160° E. long., would then pass to the Eastward and Northward of Howe and Middleton Isles, and as off New Caledonia S.W. winds are often found, it must not be approached too close. After rounding this island to the Westward the ship would continue Northward, keeping on the meridian of 164° , so as to enter the channel between the islands of Santa Cruz and the Solomon Islands. This group being passed, if in the first months of the monsoon the ship is to be in China, a Northerly course should be adopted to cross the Caroline Archipelago, having cleared which a course must then be shaped for Guano Island, reaching which one of the channels of the Marianne Islands would be taken for the Bashee Islands Channel.

In case the ship should not reach the Solomon Isles till after January, when the N.E. monsoon is less strong in the China Sea, the ship may pass between the islands of Guap and Goulon, or between this latter and the Pellew Isles. From thence she would round the N.E. point of Luconia, and take the most suitable channel for crossing the strait of Formosa and reaching China.

Second Eastern Route.—The second Eastern route from the Eastern coast of Australia or Tasmania to China is longer than the foregoing; but has not so many dangers to avoid, besides possessing the advantage of more regular winds than those found West of New Caledonia and the New Hebrides. But in passing to windward of these islands the Westerly currents found in crossing the zone of the S.E. trade winds must be carefully provided for.

On leaving port it will be best to make Norfolk Island, or else to pass a short distance West of it, and then make for Isle Matthew, which may be seen at the distance of twenty-four miles. The ship would then pass East of New Caledonia, the New Hebrides, and the neighbouring isles, leaving those of Viti to the Eastward, and giving the New Hebrides a good berth, would keep on the meridian of 171° or 172° . If the ship cannot round Erronan Island, the Easternmost of the latter, the channel separating it from Tanna may be taken, from whence she would steer North as far as latitude 13° S. If the New Hebrides have not

been sighted the ship must endeavour to make Tipokia Isle, or Fataka, and then continue her Northern course to cross the equator between 160° and 168° E. As the current generally sets strong to the Westward, the ship should endeavour to reach the Carolines on the meridian of 163° , and if she has crossed the line in 160° or 162° E., she should endeavour to cross this archipelago between the meridians of 154° and 153° . On leaving the Carolines, she would pass South of the Mariannes, or through one of the channels formed by these islands, and then make for the Channel South of Formosa to enter the China Sea.

In the tracks abovementioned should any unforeseen circumstance prevent a ship from reaching China before the end of the N.E. monsoon, when she is North of the equator the latter part of the route should be changed. She should then pass South of the Mindanao and take Basselan Strait; she may also in this case cross the Philippines, taking Panaon or Surigao Strait, or that of St. Bernardino. The first is North of Mindanao, the second North of Samar. By the first the Sooloo Sea, is entered; by the second the China Sea is entered North of Mindoro. She may also pass South of this last island, taking the strait of Mindoro. In entering the China Sea from the Pacific Ocean the strait of St. Bernardino is generally preferred to that of Surigao.

ADDITIONAL DIRECTIONS AND ADVICE FOR THE PASSAGE THROUGH TORRES' STRAITS BY RAINES' ISLAND ENTRANCE.

We are indebted to Captain Harrold for the following advice to Ship-masters in respect to the above route—they first appeared in the columns of the *Sydney Morning Herald*, shortly after the publication of the foregoing part of this work; and having been revised by him, are added, and confidently recommended to Strangers to the passage, as valuable and trustworthy; being the result of much experience and observation.

A ship leaving Sydney early in the season, from the beginning of April to the middle of May, should at once get an offing; later in the season it is better to keep the land on board, and with strong westerly winds as far as Solitary Isle or Mount Warning; but should the wind veer to the southward with a rising glass, shape a course at once to pass forty or fifty miles to the eastward of Cato's Bank, steering on a northerly course, pass at least a degree to the eastward of Kenn's Reef, after passing which, a north-westerly course may be pursued, taking care to give the Alert and Lihour shoals a good berth of fifty or sixty miles. After passing these dangers there is nothing on the track to the Great Barrier, the Osprey Reef and some others to the southward are quite out of the way, and a ship has no occasion to go near them.

In approaching the Great Barrier great care is necessary, if no observations for latitude have been taken, and an allowance must be made for the north-westerly set, so as not to get to the northward of the beacon. The plan I always adopted was *not* to run down on the barrier and work to windward all night, but should the ship be upwards of two

hundred miles off at noon, and not be able to enter the next day, I would reduce sail at once and steer slowly on a course, from two to five knots, according to distance, so as to reach within thirty miles of the Great Detached Reef by the second morning, at daylight. Should no observations for latitude have been taken, or whether or not, when breakers are sighted from the masthead, ahead of the ship or a little on the port bow, as you draw towards the reefs, should you see them on the starboard bow as far as can be seen from the masthead, you may be sure you are to the northward and should haul up immediately on the port tack; and if the wind is far enough to the eastward to lay along the reef, you will soon see clear water and sight the beacon from the masthead, but should it be the Great Detached Reef that you sight, clear water will be seen on the starboard bow, and by edging to the W. N. W. you will shortly see the beacon. I have always found this a good guide for Raine's Island, for if you get too far down towards the reef before you find out your mistake you will have great difficulty in working to windward. Should you be to the southward, which will rarely happen when steering for the Great Detached Reef, you will be sure to see Yule's Reef, and could then take Stead's Passage.

After making the beacon and steering down with it, a little on the starboard bow, the edge of the Great Detached Reef will be distinctly seen, also the reef off Raine's Island; when the beacon bears north, haul up S. W. by W., after a few miles a very small bank will be visible from the masthead, on the starboard bow, and if you see it plain from the deck of a small vessel you are falling to leeward, and should haul up more to the southward. This is one place I think should have a mast with a sort of basket-top placed on it as a beacon; it would be a good guide for ships entering late in the afternoon; for, after passing this, you are near the edge of soundings, and with night coming on, after getting on soundings, you should haul well to the southward and bring up at dark, taking care to give at least sixty or seventy fathoms of cable, as the holding ground here is very bad (hard coral). From this anchorage keep well to windward of the course until you sight either Ashmore's Bank or the Middle Banks. Ashmore's Banks show much higher out of the water and whiter than the Middle Banks, which latter are at high water nearly covered; this also would be an excellent place for a mast-beacon. If sufficient daylight to reach Ashmore's Banks or under lee of Cockburn's Reef, a better anchorage may be obtained or if it should be blowing a gale with squally weather, good anchorage in smooth water may be obtained under the lee of Sir Charles Hardy's Isles; in going in, keep close to the Weather Island and anchor well to windward in a small sandy bay, by so doing you will be in a better position for weighing in the morning. In anchoring here one voyage the chain fouled on the windlass, and before the other anchor was let go we were mid-channel. Next morning the tide would not let the ship cant any other way than head to the northward, the top-sails were single reefed and yards hoisted to the masthead before commencing heaving, the ship broke ground with the fifteen fathom shackle in the hawse, and before we got the anchor off the ground and sail made we were close down on the leeward island, and only cleared it by scarcely a stone's throw. In coming out from here you

will have to keep N. E. by N. for a few miles, and might have to tack should the wind be to the eastward, but you can see the "Middle," and Ashmore's Banks quite plain in coming out. If sufficient daylight to reach Cockburn's Reef, (a still better anchorage than under Ashmore's Bank), haul round the end of the Reef until the breakers on the end bear about E.N.E., Cockburn's Isle will be seen bearing W. by S. This anchorage is quite smooth, especially at low water, although you require a good scope of cable as the ground appears to be hard coral. In weighing from here you will soon see the edge of the reef that stretches to the N.W., and you may run down towards it until you can see the edge plain from the deck; then edge away along the reef, and, as you draw towards the end, you will see two sandbanks; the nearest one is small, and probably may be covered at high water, although I have never seen it quite covered, but you will be sure to see it from the fore-yard before you get too close, and very likely before they see it from the mast-head. If bound to Bird Island, haul close round the small sandbank, leaving the large bank on the starboard hand; this bank is high out of the water, with an extensive reef running off the weather side of it, which is also distinctly seen from the deck. This track I prefer to going close round the end of Cockburn's Reef, and having to haul to the southward. If bound on to "Cairncross" leave the large bank also on the port hand, and, steering for the Hannibal Island, Reefs V. and W. will be seen with a small sandbank on Reef V., also the Boydong Keys. After passing V. and W. Reefs, the greatest danger of Torres Straits is past, and all sail may be carried down to Cape York, or anchor at Cairncross, and the next day, with a fresh breeze, you will get out in good time. If intending to pass through the Prince Wales Channel, which is as-good-as-buoyed-and-beaconed by the Hammond Rock and the Ipili and north-west reefs, with no danger excepting a strong tide, should the wind be light and contrary. After passing the Albany Isles steer to pass Point Ince half a mile off; the north-west reef can be seen from the mast head a long while before you reach the point; at any rate, should it be hazy or squally, by passing Point Ince close, the north-west reef will be avoided, and Hammond's Rock will be seen; steer to pass close to, and before reaching it the Ipili Reef can be distinctly seen, the rocks on it sticking up above water. Borrow towards this reef to clear the sunk reef; after passing this danger, the last in the Straits, Booby Island will be seen. Should you intend to anchor, leave the island on your port hand as the reef extends to some distance off the other side. The landing is very bad at low water, but you can pull close to the entrance to the Cave at high water. I was once detained from noon till 9 p.m. to land a few casks of water sent by the Government. If the wind should be light, and a ship not able to reach Cape York or Mount Adolphus before dark, anchor close under the lee of a small sand bank at the end of reef X, which is far preferable to Turtle Island; but should the night be fine and moonlight, having reached thus far, a ship could run on and round the Albany Isle, and anchor round Cape York. If rounding this cape in daylight, anchor abreast of two rocky islets, a short distance past the cape, in seven or eight fathoms water—Cape York bearing E. half N., Peaked Hill S.S.W.—this is a very good anchorage, and you will be in

a position to choose either Prince Wales Passage or Endeavour Straits. If intending to go by Endeavour Straits, which is quite safe, and after passing the Possession Isle you are soon out of the strong tide. I have always passed close to a high rugged island (Entrance Island) West of Great Woody Isle, as far preferable, and leads you clear of M'Kenzie and Gibson Rock. My last voyage I towed through with the boat ahead, and shortly after a breeze came from the S.W., and squally, and we worked down within three or four miles of Red Wallis Isle, and brought up when the tide turned. Should the weather be fine and clear as you draw abreast of Red Wallis Island, a good mark for mid-channel is Cape Cornwall on, with Peaked Hill on the main at the entrance of the Straits. For Steads passage no better directions can be given than those of Captain Towns, which he wrote upwards of twenty years ago, and which have, I believe, been printed in Horsburgh's Directory.* The other passages to the southward are no doubt very good, but I cannot see the advantage of going by them, except a good channel were surveyed in-shore towards the Bird Islands, without having to go via Hardy Isles and Cockburn's Reef. The Black Rock, Captain Blackwood says, is the best passage, but gives no directions for proceeding after entering.

In conclusion, I again repeat that in running for the Barrier twenty-five to thirty-five miles is quite close enough to come to it until daylight; for if a ship get to Ashmore's Bank or Cockburn's Reef the first night, or even only just on soundings, she will reach Cairncross the next day, and out clear the following, and she would not do any better by getting in earlier; she might reach Bird Island the first night, but she would have to anchor under Cape York the next, excepting she were a very fast ship with wind and tide in her favour, she then *might* get through, but it rarely happens that a ship gets through with once anchoring; and it is certainly not worth the risk of running down close on the Barrier for the sake of twelve hours. I have often gone through in 48 hours—viz., 26 at anchor and 22 underway. I am satisfied that nearly all the wrecks have taken place through the anxiety of the masters to get in early, and running down too close on the Barrier, and those inside I attribute to going off the tracks laid down, and running in squally and thick weather. Great improvement might be made by placing a few mast beacons (with basket-tops to distinguish them by) and bouys at various places, and the passage by Raine's Island rendered much easier for a stranger going through the first time.

CHARLES HARROLD.

Balmain, April 11th.

* Page 746, Vol. II.

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