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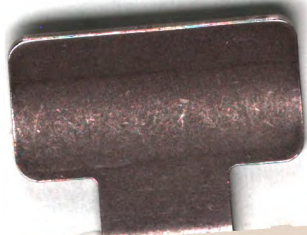
Sailing directions for

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SAILING DIRECTIONS

FOR THE

BRISTOL CHANNEL,

BY

HENRY MANGLES DENHAM,

LIEUTENANT, R.N., F.R.S.

BEING THE RESULT OF A SURVEY MADE BY ORDER OF THE LORDS
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CONTENTS.

PART I.

THE SOUTH SHORE.

	Page
Approach to the Bristol Channel	1
Lundy Island	3
Barnstaple and Bideford	7
Ilfracombe	13
Minehead	18
Watchet	20
Bridgewater Bar	24

PART II.

THE NORTH SHORE.

St. Anns Head	29
Milford Haven	30
Freshwater Bay	39
Little Haven—Stackpole Road	44
Caldy Island	47
Tenby	54
Caldy Sound	55
Saundersfoot Bay	56
Caermarthen	58
Burry Inlet	62
Porth Eimon or Skysea—Oxwich Bay	81
Swansea Bay	83
Swansea Harbour	87
Neath	88
Porth Cawl	92
Cardiff or Penarth Roads	110

PART III. FROM FLATHOLM TO KING ROAD.

Objects used for Marks	114
Directions for proceeding with fair Wind	117
————— for Working up	119
————— for Running up in thick Weather	122
————— for Running up at Night	123
————— for Welch Swatch	124

night nearer than 30 fathoms water, unless it can be so plainly distinguished that a course can be at once shaped with certainty for Lundy Island.

*and with N.W.
winds.*

3. Should the wind hang between W. and N.W., it will be advisable to gain the latitude of $51^{\circ} 10'$, so as to run direct for Lundy Island. This course leads across that great mud basin which seems to be an elongation of the Irish Channel, and which is there about 15 leagues broad. The soundings at first slowly deepen from 50 to 60 fathoms, and then decrease to 46, where the bottom suddenly changes to sand, at 12 or 13 leagues from the island. From the edge of the sand, the bank continues to slope up slowly and regularly, there being from 32 to 34 fathoms at 6 and 7 miles from the island; but unless concealed by fog, the island or the light will have been discovered long before reaching that depth.

*Nature of the
soundings.*

Ooze.

*Reddish sand
peculiar to the
Bristol Chan-
nel.*

4. Captain Martin White judiciously observes that "the soundings on a supposed radius of 16 leagues from the Smalls light-house, in any direction between N.W. by W. $\frac{1}{4}$ W. and S.W. $\frac{1}{4}$ S. are nearly wholly ooze, or sand mixed therewith. To the north-westward as well as to the eastward of these limits the bottom suddenly becomes a sort of dark reddish sand, which ground is the peculiar criterion of an approach to the Bristol Channel. In running from the westward for the mouth of the Bristol Channel, therefore, if the ground brought up by the lead be ooze, or sand mixed therewith, you cannot be to the southward of $50^{\circ} 57' N.$, but must be to the northward of that parallel and to the westward of the meridian of Grasholm, let the depth be what it may. If, on the contrary, the soundings are wholly free from ooze, you must be to the eastward of the latter meridian. The transition from ooze to sand in the neighbourhood is so evident that it cannot be mistaken."*

*Indrafts of
Irish Channel.*

Smalls.

5. The seaman must be careful, even with northerly winds, that the indraft of the Irish Channel does not set him to the northward of the Smalls, the light on which lies in $51^{\circ} 43' N.$, and about 6 leagues from St. Anns Head, or 17 leagues from Lundy Island. The survey of this cluster of rocks has not yet been completed, nor is it necessary that they should be minutely described here; but the mariner should be fully aware that the tides about them, and especially through that dangerous reef the

* White's 'Sailing Directions for the English Channel,' p. 8.

Hats and Barrels, are very strong, and that the flood or N.E. *Hats and Barrels.* stream begins two hours before high water on the shore, as well as the ebb or S.W. stream two hours before low water. He should also always recollect that, as there are 60 fathoms within 5 miles of the Smalls, they cannot be safely approached by the lead, and therefore, if the weather be too thick to be sure of seeing them, he should haul to the southward, if near their latitude, and try for Lundy Island or some other landfall. Should he succeed in making the Smalls Light, a stranger should steer so as to pass about 2 leagues to the S.W. of it, and then S.S.E. and S.E. until, by the distance run (allowing for the tide) the vessel must be abreast of St. Govens Head, where the soundings on the chart will satisfactorily show his position. As a general rule, it may be laid down that, as the depth of 35 fathoms cannot be found to the eastward of a line drawn from Lundy Island to St. Anns Head, so the stranger may feel assured, as long as he preserves the depth of 40 fathoms at *low water spring-tides* (by which standard all the soundings in these directions and charts have been adjusted) that he is fairly outside the Bristol Channel.

6. As a stopping-place for wind-bound vessels, of any *Lundy Island.* draft, going to the westward, or as a port of refuge for them if driven back, Lundy Island, though not 3 miles in length, offers a sheltered anchorage in easy water, good ground, and free from the strength of the tide; while live-stock, vegetables, and good water may be obtained from the shore. The island rises upwards of 450 feet above the sea, and on its highest part stands the lighthouse. There is a substantial farm-house near the anchorage, and the conspicuous ruins of a castle hang over the S.E. bluff, at the foot of which lies the general landing-place. A stream of good water will be found half a mile further to the northward, another near the Gannet Stone, and three more small streams fall into the sea on the western side of the island.

7. The lighthouse is placed about half a mile from the southern *Lundy Lighthouse.* end of the island, and about 100 yards within the brow of the western cliff: it is a well-proportioned tower of granite, 89 feet high, and altogether rises to 549 feet above the high-water mark. It exhibits two lights; the upper one is intermittent, appearing *Upper light.* bright for 10 seconds, and obscured for about 20 seconds; it is an excellent light, and by an eye elevated 10 feet may be clearly *Lower light.* seen in all directions at the distance of 25 miles. The lower light

Lundy Lights. is of less power and shows itself only to the westward between the bearings of N. by W. and S. by E. It is a steady fixed light, and being only 9 feet above the cliffs, it is concealed by them from any vessel that approaches too near the shore, so that it becomes a rule to vessels hovering under the western side of the island, in order to cheat the tide, that they are clear of all straggling rocks, even of the Hen and Chickens, as long as the lower light is kept in sight over the cliffs.

Hen and Chickens.

8. The Hen and Chickens are the only detached rocks about the island which can excite any anxiety, although they do not extend more than 3 cables' lengths from the north point. At low water some of their pointed heads may be seen; and as there are 25 fathoms close to them, they ought to have a wide berth given them, the more so as, from a mile to the westward, the flood tide has a tendency to set over them. The day-mark for passing them to the westward is to keep in sight the black rock which lies a cable's length off the S.W. point of the island.

Race, off the Hen and Chickens,

and on the N.W. bank.

The Race off these rocks sometimes presents an alarming appearance, though there are not less than 25 fathoms at half a mile from the island; and the water on the north-west bank has also a very disturbed appearance sometimes, though it has nowhere less than 7 fathoms. It lies upwards of a mile from the island, and as it consists of fine brown sand, and is quite out of the influence of the ebb stream, vessels occasionally drop a kedge on it in light winds; but in strong westerly winds it should be avoided. The lighthouse bears from its centre S. by E. $\frac{1}{4}$ E.

White Horses' Race.

A mile to the westward of the north end of Lundy Island there is a 12 fathoms bank of sand, which rises suddenly from 25 fathoms, with some overfalls, and it stretches 3 miles E. by S. The Race on this bank is called the White Horses, and it sometimes breaks with such fury that, without some particular motive, all vessels will find it more prudent to pass to the southward of the island, where, though there are races off both points, they are much less formidable; and as there are 12 fathoms within a quarter of a mile of the rocks, and 3 fathoms within a cable and a half of Rat Island, vessels may either pass on, or conveniently haul into the anchorage.

Rat Island.

9. Rat Island is a low green hummock, sloping to the sea from the castle bluff; but it is an island at high water only. It is not quite a mile from Shutters Point (the S.W. extreme of the

island), and in the interval there is an anchorage, called the *Rat Island*. Rattles, but adapted only to small vessels with easterly and northerly winds, from which they can obtain good shelter in 7 fathoms. A scrambling path leads from this little bay to the interior, which is scarcely the case at any other part of the island except the regular landing-place.

Rat Island affords the most essential protection to Lundy Road *Lundy Road*. from W. winds, till they veer to the southward of S.W.; while Tibbet Point affords corresponding shelter till the wind comes to the eastward of N. Small fore and aft vessels may anchor with the farm-house in the valley bearing W., and Rat Island S., where they will be a quarter of a mile off the landing-place, in 7 fathoms sand, and whence, by slipping, they can clear the island on a sudden change of wind to the eastward, and run round under its lee for Rattles or Jenny's Cove. Moderate sized vessels should bring up in 10 fathoms, sand and mud, at half a mile off shore, with the Gannet Stone just closing with Tibbet Point, and bearing N. $\frac{1}{2}$ E., with the farm-house topping over the land and bearing W. by S., as shown in the plan and views of Lundy Island. Rat Island will then bear S.S.W., half a mile distant, leaving scope to clear either end of the island on a shift of wind. Heavy ships are recommended to bring up still further out for that purpose, with the lighthouse bearing due west, and dropping the anchor when the summit of the lighthouse dips out of sight, a rule equally available at night. The anchor will then be in 10 fathoms, sand and mud, about a mile off shore, and just within a 7 fathoms bank, which affords the advantage of dragging up hill. But as it frequently happens that the top of Lundy is capped in hazy weather, this outer anchorage must be taken by the lead and by the bearings of Rat Island, which should be S.W. by W. and N. by W.

10. The last-mentioned bank is called the East Bank; it lies *East Bank*. nearly a mile E.N.E. of Rat Island, trending on that bearing two-thirds of a mile, by a quarter of a mile in breadth. It consists of fine broken shells in $6\frac{1}{2}$ to 8 fathoms, with 10 fathoms close to, and slopes gradually into deep water. Between Tibbet Point and Rat Island there is riding room for a great many vessels, with westerly winds; and if they should be carelessly caught there by an easterly gale, vessels tenacious of slipping will experience great ease to their ground tackle by the undertow from the island.

Lundy Tides.

11. On full and change days of the moon, it is high water at 5h. 15m., and in ordinary springs the tide rises 27 feet. At 3 miles west of the lighthouse, the stream of flood branches northward and southward of the island; and the ebb stream splits at 3 miles east of it. Within that range the flood sets to the northward, along the west side of the island, the ebb yielding scarcely any stream there, nor, till clearing the extremes of the island, will it have any effect of consequence. On the east side of the island the ebb sets to the southward from half flood till low water, and, during the remaining 3 hours, the northern set does not run more than 1 knot. Off the north and south extremes, however, and within a mile range, the heat of the tide runs 4 or 5 knots, gradually decreasing to 3 knots in the springs, and 2 in the neaps, at 3 and 4 miles offing.

Lundy Island may thus be considered as a great natural Breakwater, sheltering the mouth of the Bristol Channel from the prevailing winds, and affording a most eligible stopping place for all vessels struggling to the westward. The great advantages which it offers for that purpose do not seem to have been hitherto duly appreciated, though there is no other anchorage for a loaded ship nearer than King Road, in bearing up for which she would have to run 80 miles to leeward, and to pass through 25 miles of intricate (and, in thick weather, of dangerous) navigation. Whereas, under the lee of this island, she can hold her own, replenish her water, and proceed to sea without further pilotage the moment the wind changes or moderates. Here, also, the homeward-bound vessel is sure of obtaining a pilot for the Bristol Channel, or for any of the adjacent ports.

Bearings and Distances from Lundy Lighthouse.

St. Anns Lights . . .	N. $\frac{1}{2}$ W.	37 miles.
St. Govens Head . . .	N. $\frac{3}{4}$ E.	27 $\frac{1}{2}$
Caldy Light	N.N.E. $\frac{1}{2}$ E.	28
Worms Head	N.E. by E.	27
Mumble Light . . .	E.N.E. $\frac{1}{2}$ E.	35
Nash Lights	E. $\frac{3}{4}$ S.	44
Flatholm Light . . .	E.S.E. $\frac{3}{4}$ E.	59
Hartland Point . . .	S. $\frac{1}{2}$ E.	10 $\frac{1}{2}$
Barnstaple Bar . . .	S.E.	17
Morte Point	E.S.E.	16 $\frac{1}{2}$
Ilfracombe Light . . .	E.S.E. $\frac{1}{4}$ E. southerly .	21
Foreland	E.S.E. $\frac{1}{4}$ E.	33

12. Hartland Point is the nearest land to Lundy Island, being *Hartland Point.* about 10 miles S. $\frac{3}{4}$ E. from it, and presents a remarkable feature in the coast, as the connecting cliffs trend back abruptly at right angles each way. It is of a dark brown colour, projecting from a table land, and its summit is elevated 330 feet above the sea, towards which it slopes steeply, while the adjoining cliffs are perpendicular. The extreme point is separated from the headland by a gap, which materially assists to identify it. A ridge of rocks dries out from Hartland Point for a quarter of a mile N. by W. $\frac{1}{2}$ W., called the Tings, having 9 fathoms close to; but, Sharpnose kept in sight (S.W. by S.), clears it on the west side, and as long as Gallantry Bower is visible, it will clear it on the north side, observing that the flood *Tides.* always sets a vessel off in light winds, but that the first of the ebb draws over it, when close in-shore. Midway towards Lundy, the tides set east and west, at the same time that they flow and ebb on the shore, and run at the rate of 3 knots on spring, and 2 on neap tides.

The nearest landing-place to Hartland Point is Hartland Quay, *Hartland Quay.* a small pier raised behind a ledge of rocks nearly 2 miles to the southward of the point. It consists of a single arm, curving north-eastward, and capable of sheltering a couple of 50 ton sloops and a few fishing boats, with 18 feet water at springs, and at neaps 11, on a hard bottom. To sail in, keep half a mile off shore in order to avoid some straggling sunken rocks which lie on each side of the bight leading to the pier head, and when this bears S.S.E. $\frac{1}{2}$ E. run in. The back of this little pier is exposed to a terrific sea, which, with southerly winds, causes a violent run within side. This pier is seldom frequented, but as nothing better offers between Bude and Clovelly, coasters should be aware of its situation and capacity. The flood stream only is felt in-shore off Hartland Quay.

13. Barnstaple Bay extends from Hartland Point to Morte *Barnstaple Bay.* Point, and the mischievous indraft into this bay should deter any vessel from passing within the line of those points, except in settled weather, or unless bound over Barnstaple bar, or into Clovelly; for the frequent sudden gales from the N.W. which succeed the south-westers, would expose a vessel to great risk of being driven on shore, it being impossible to claw off on the flood, or to obtain the slightest shelter while the wind hangs between W.N.W. and N.E. The soundings offer in thick weather sufficient warning to those who honestly use their lead, as 20 fathoms, with gravel, lie without the above line, and 15 fathoms,

with sand, immediately within it. With southerly winds a tide anchorage is soon taken anywhere to the eastward of Clovelly, 3 miles off shore, on good holding ground, and in 11 fathoms water.

*Clovelly Road
and Pier.*

Clovelly Road, with a small pier, lie under a thickly wooded brow, $5\frac{1}{2}$ miles S.E. of Hartland, the intermediate coast curving rather outward, and consisting of nearly perpendicular cliffs, the most conspicuous of which is Gallantry Bower, crested by a remarkable clump of trees, about 360 feet above the sea, and having 8 fathoms water at a quarter of a mile off shore all the way, with a moderate stream of tide on the ebb, though but little on the flood. The best anchorage for a heavy vessel is directly off the pier with the east end of the village on with the pier head (W.S.W.), and the western land closing with Gallantry Bower (N.W.). Here she will have 6 fathoms in blue mud, at three quarters of a mile from the shore, and sheltered from W.N.W. to E.S.E. Small vessels may anchor in 4 fathoms, as near as

Clovelly Pier.

2 cables' length from the pier. Clovelly Pier is a rude structure, and though subject to a considerable run of ground sea, is the resort of numerous fishing boats and limestone craft from Wales. Even to the embayed coaster it affords a refuge of easy access, but it has only 14 feet water at high water, and 8 feet at three-quarters flood on spring tides. Half a dozen coasters may find room there, but the ground is hard and uneven, except alongside the pier. In making Clovelly from the eastward, the village and Clovelly Court, a large freestone mansion to the north-west, help to point it out.

Bucks Ledge.

The land from Clovelly towards Barnstaple Bar continues high and clothed with stunted wood for 6 miles eastward to Rock-nose, where it suddenly alters to the flat Northam Burrows. The shore between Clovelly and Rock-nose should not be approached within a mile, there being straggling shallows, especially off Buckish Mill, which is a white building 2 miles S.E. of Clovelly, where a rocky ledge, called the Bucks, dries out half a mile in a north direction, with a shallow spit of 6 feet, a third of a mile farther out. All this, however, may be cleared by keeping in sight (N.W.) a rock called the Chapman, which is the westernmost of two sugar-loaf rocks, that show at high water-mark, between Clovelly and Hartland. There is also a rock which comes awash, abreast of Lakes-nose, and a long mile W. by S. of Rock-nose, where the high rocky coast, which we have been following, breaks down into the valley of

Chapman.

*Lakes-nose
Rock.*

Bideford. Rock-nose is the more easily recognised by an old *Rock-nose*. summer-house on one of its hummocks, called Cornborough. From thence the shore stretches in a N.E. by N. direction for 5 miles, presenting a succession of sand-hills, including Northam and Braunton Burrows, and terminating at Croyde Head, or, as it is more commonly called, Down End; but the low-water line lies half a mile outside of those sandy burrows. About 2 miles N.E. of Rock-nose, the Barnstaple and Bideford Rivers (the Taw and Torridge) issue through a broad break into the sea, and produce a variable bar of coarse sand and gravel, which extends a mile and a half from the high water mouth between the Northam and Braunton Burrows.

14. Barnstaple Bar, so notorious hitherto for the constant *Barnstaple Bar*. wreck of life and property, will be deprived of half its terrors by the two Bideford or Braunton Lights, which have been so judiciously placed by the Trinity House on the N. side of the entrance, and which, lying within 6 leagues of Lundy Light, enable the mariner to run for them with security, and to cross the bar at night. The outer edge of this bar shoals gradually from 8 fathoms, dark sand, a mile off, where vessels in settled weather may take up an anchorage till tide time; and they may be satisfied of being that distance outside the bar, as long as Cornborough summer-house is seen open of its foreground, or that it bears S. by W. The Channel across the Bar is in some places very *Channel across the Bar*. narrow, and bounded on each side by the sandy flats which skirt the Northam and Braunton Burrows: on the former a gravel patch, called the Middle Ridge, dries to the height of 12 feet at low water, and the South Tail, to the height of 4 feet, while on the Braunton Flat the High-patch dries up to the height of 10 feet. The deepest and most direct channel is marked by the line of the Braunton Lights, about S.E. $\frac{1}{2}$ S.

15. The Braunton, or Bideford Lights, consist of two fixed *Bideford, or Braunton Lights*. lights near the high water-mark on the larboard hand going in, and their distance apart is about 1000 feet. The upper or inner lighthouse is a white tower, 74 feet high, and the light, which is 88 feet above high water, may be always seen 5 leagues from a vessel's deck. The lower lighthouse is a square wooden structure, also white, and so placed on a frame, as to admit being moved northward or southward, to preserve the line of the two lights right through the channel, according as the sands shift.

The lantern of this lower building is 48 feet above high water level, and only shows brightly when in the direction of the other.

Tides on Barnstaple Bar.

16. A flagstaff stood between the lighthouses, exhibiting a red flag, from half-flood till half-ebb, during which period there is not less water on the bar than 15 feet; but the flagstaff is now close to the eastward of the lower lighthouse, and in lieu of the flag shows a ball, which is always equally visible in a gale or in a calm. At high water springs there will be found 28 feet on the bar, and 23 feet at high water neaps. During the other half of the tide the cross-breaking sea, even in fine weather, renders the bar too dangerous without a pilot; and though persons acquainted with the localities may venture across on nights sufficiently light to see the buoys, strangers should never attempt it but by daylight, and then only with a commanding breeze, for the tide in the narrows sometimes runs at the rate of 5 knots, with a disposition to split its course towards Barnstaple when abreast of the lighthouses, whereby a vessel not skilfully handled might be swept on the Crow, or Sprat Ridges, the latter of which extends from the lighthouse shore to within $1\frac{1}{2}$ cables' length of Appledore Point.

Appledore, Barnstaple, and Bideford Creeks.

17. With a leading breeze, the rule is to run with the lighthouses in one until within 2 cables' distance of the outer of the two black can buoys, on the south-western side of the channel, nearly abreast of the lighthouses; hauling close round the north side of those buoys, and then steering so as to make a direct course for the town of Appledore, which stands conspicuously on a point a mile above the buoys on the south side. A good look-out must also be kept to avoid some perches, a little below Appledore, which denote the position of the limestone heaps constantly deposited in that bight by vessels from Wales. Close abreast of Appledore, a pool extends N.W. and S.E., about 3 cables in length by $1\frac{1}{2}$ in breadth, and in which there are always 24 feet at low water. There, if without a pilot, the vessel must be anchored as soon as Northam church (a yellow, square towered building), comes on with the town of Appledore, from which it lies S.W. a long mile. Tapley-house, a conspicuous mansion (about the same distance S. by E. of Appledore, on the east side of Bideford Reach), should also be open to the eastward of Appledore; and great care in bringing-up is requisite on account of the strong tides. This pool is, however, a valuable stopping place, whether bound in or out; and as pilots in very severe weather,

Appledore Pool.

which is the time they are most required, are not to be found *Appledore Pool.* outside the bar, it is of the utmost importance to be able to take up unassisted, the only sheltered anchorage within the bar. Further than Appledore Pool, none but coasters ought to proceed without a pilot; for the navigation of both Barnstaple and Bideford rivers is rendered very intricate, not only by the shifting nature of the sands, but from the injurious position of certain weirs. It is high water at full and change at Appledore at 5h. *Tides.* 30m., and springs rise 23 feet.

The river Taw, or the Barnstaple branch of the creek, winds *Barnstaple Creek.* irregularly for 6 miles to the town and bridge. No part of the first reach, up to Fremington, has more than 6 feet at low water, or is more than a cable wide, though the high water limits are considerable. Higher up there are but 3 feet at low water; and yet, upon springs, large coasters, and occasionally timber-ships, can get up to the town, as ordinary springs rise there 12 feet. At Barnstaple the tide flows one hour later than at Apple- *Tides.* dore, it being high water on full and change days of the moon at 6h. 30m.

The river Torridge, or the Bideford branch, trends from Apple- *Bideford Creek.* dore in nearly a straight course S.W. $\frac{1}{2}$ S. $2\frac{3}{4}$ miles to the town, retaining at low water scarcely 3 feet of depth in a channel less than half a cable wide; but the high water breadth, till near the town, is a third of a mile. At Bideford there are 16 feet water *Tides.* at springs and 8 at neaps, the tide flowing half an hour later than at Appledore.

Notwithstanding the ingenious construction of the Braunton lighthouses, which, as above stated, admit of a constant adjustment to the direction of the best channel across the bar, still all vessels of a certain draft must *bide* the tide, and may therefore be caught by one of the sudden and violent N.W. gales which are so frequent on this coast, and be thus forced into the breakers. If any control can be exerted on a vessel in such a case, the master should do his best to urge her as much as possible towards the beach, under Northam Burrows, as a life-boat is kept in readiness on that side, which, in the eighteen months after it was established, saved eleven lives.

18. To vessels proceeding eastward from Barnstaple Bay, the *Baggy Leap.* next danger to avoid is a rocky shoal off Baggy Point, 4 miles to the northward of the bar, and called Baggy Leap. It rises at

Baggy Leap. 2 cables' lengths from the point, leaving a narrow 5 fathoms' channel within it, and then stretches out N.W. $\frac{1}{2}$ N. half a mile further, forming an abrupt ridge about 100 fathoms in breadth, and sending up many pointed rocks, with only 6 feet water. One of these heads is awash at spring tides; the marks for it are Braunton upper lighthouse, just open of the western extreme of Baggy Point, and Vention, a white cottage in the southern bight of Morte Bay, on with the eastern extreme of Baggy. There are 10 and 11 fathoms, sandy bottom, at a quarter of a mile from the shoal; but a heavy, breaking sea extends half a mile without it; so that, under a commanding breeze, the safest course for coasters is between the Leap and the main. To pass outside of it to the westward, keep Cornborough summer-house in sight open of the hills, bearing S. by W. $\frac{1}{4}$ W. In steering to the eastward, do not shut Bull Point behind Morte Point. And when hauling in-shore keep Coddon Hill on or open to the southward of Downend Point; their line of bearing is S.E. $\frac{1}{4}$ S. to Coddon Hill, which is 9 miles in-shore, and rises in a conical shape behind Barnstaple.

Morte Bay. Morte Point is a league to the north-eastward of Baggy Point, and between them lies the sandy Bay of Morte, where vessels may hover in settled weather to cheat either flood or ebb, or they may drop an anchor in 6 or 7 fathoms, on a clean bottom, half a mile from the high-water shore, but observing that there are some sunken heads at 2 cables' lengths from the cliffs at each end of the bay. This little bay affords some shelter from the wind and sea, from N.E. round to S.W.; but beware of being caught by a north-wester.

Morte Point. Immediately off Morte Point, which is ragged and tapering,
Morte Stone. lies the Morte Stone, which is always above water, except at the top of spring tides; it is the highest part of a ridge which dries out from the main $2\frac{1}{2}$ cables N.W. by W., and admits no passage within it. The ebb tide sets off, but the flood may draw a vessel on the Morte Stone when coming out of Morte Bay; and in bad weather there is an alarming race off the point, which must be carefully avoided.

Rockham Bay and Shoal. Bull Point lies E. by N. $1\frac{1}{2}$ miles from Morte Point, the coast between forming a bight called Rockham Bay, bounded by straggling rocks, and including a shoal called the Rockham, which lies on the line of Morte Stone and Bull Point, a quarter of a

mile from the former: it has but 7 feet water on it, and extends *The Rockham.* half a mile to the north-eastward into 3 fathoms. To clear this shoal the points of land about Ilfracombe, Capstone, and Rillage should be kept open N. of Bull Point, bearing E. by S.

From Bull Point to Ilfracombe the coast is nearly straight, *Foul Shore.* and slopes steeply, with a depth of 11 and 12 fathoms a quarter of a mile off, but foul ground all the way.

19. The port and town of Ilfracombe lies from Bull Point *Ilfracombe.* E.S.E. $\frac{1}{2}$ E. $3\frac{1}{4}$ miles, and is not only the first, but the safest and most accessible dry harbour on the south shore of the Bristol Channel. It has a small transverse pier, which admits vessels of 9 feet draft at half-flood, and outer shelter is afforded at a third flood by a short pier which projects to the S.E. from Lantern Hill, a rocky peninsula, which, sloping down from Capstone Hill, forms the harbour, and prevents either of these piers from being seen from the offing. On the summit of Lantern Hill stands a white dwelling-house, where, 100 feet above the sea at high water, a fixed light is exhibited from the 1st of September to the 31st of March; but it is so weak as to be scarcely distinguished from the town lights at any considerable distance. Nor does Lantern Hill clearly show itself till close in, but the port is easily made out by the terraces of white houses which rise directly over it, though at night an intimate knowledge of the coast is requisite, for fear of mistaking for it Wildersmouth Creek, a shallow, rocky bight, where the land makes somewhat like Ilfracombe, and from whence the lights of the town may be seen. The most prominent features, therefore, for guiding the coaster in hazy weather or at night are the abrupt conical hills of Helesborough and Capstone, which are about two-thirds of a mile apart. Helesborough is on the eastern side of the entrance, and rises 420 feet above the sea, with low water rocks branching off a cable's length; while Capstone Hill is on the western hand, and only 154 feet high, bold to, and sloping gradually down towards Lantern Hill. The rocks off Lantern Hill are quite up and down; therefore, having made the point out satisfactorily, it may be closely rounded, preserving as much way as possible, in order to fetch the cross pier-head, which is white, and will be seen immediately on opening the harbour's mouth. If the wind baffles so as to prevent shooting, which is often the case, drop an anchor instantly, and have a warp ready to send to the capstan

Ilfracombe.

on the pier-head. A buoy is ready to make fast to whilst sending the warp out ; but, if that should be missed, the anchor will not have time to nip before drifting on the rocks. The buoy is only intended for light winds when warping in, or to make sail from when going out with easterly winds. Having hauled inside the pier-head, moor with the stem towards the pier, and an anchor out a-head. The ground, which is an easy slope, is composed of a thin layer of mud upon sand, and is well adapted to legs or bilge-pieces. Upwards of 40 coasters may berth in this pier at a time without risk of being neaped, there being 15 feet at high water at the pier-head, and 12 feet well within on neaps, while there are 24 and 20 feet upon springs ; so that even heavy ships can be accommodated on an emergency. In settled weather vessels may take the ground between the pier and Lantern rocks.

Ilfracombe Range.

It is generally prudent not to enter the port before half-flood, in order to avoid anchoring in the Range, as it not only requires a commanding breeze to stem the flood, but the Range affords no shelter when the wind is to the northward of west. However, to

Outer Anchorage.

take up a fine weather anchorage in 6 or 7 fathoms, clean ground, at a quarter of a mile off shore, bring the eastern end of the town on with the Lantern Hill, bearing S.W., and Bull Point just clear of Capstone Hill, bearing W. by N., observing that, with the exception of the overfalls off Helesborough, no detached danger exists in the vicinity of Ilfracombe.

It is necessary to apprise the casual coaster in this channel that, when passing Ilfracombe with the wind blowing strong at S.S.W., he should avail himself betimes of the pier, if the lee tide is making or night coming on, as he may be sure the wind will head him 2 or 3 points when getting off Morte Point on the one tack, or passing Combe Martin Bay on the other tack.

Supplies, and Pilots.

At Ilfracombe stores, spars, sails, and ground-tackle may be procured, and the port charges are not high. Harbour pilots are generally on the look-out, but, being in gig-boats only, they do not go off to vessels in bad weather till nearly abreast of the port, and then they cannot board them ; they are, however, very expert in leading vessels in, and smart in securing them.

Ilfracombe Tides.

The stream of tide within half a mile of this line of coast makes to the eastward from low water till half-flood, and to the westward until the ensuing low water, thereby making 3 hours' eastern set and 9 hours' western ; but further off, in 20 fathoms, the regular

channel tides set 6 hours east and west, besides about 20 minutes *Ilfracombe Tides.* of slack water, and turn at the times of high and low water on the shore. The average rates of these outer streams are 3 knots for the springs and 2 knots for the neaps. From off Ilfracombe the ebb sets to the southward of west across Barnstaple Bay; but when near Lundy it sets out to seaward.

At full and change it is high water in Ilfracombe Harbour at 5h. 45m. The flood at the equinoctial springs rises 34 feet, in ordinary springs 32, and at the neaps 13 feet.

20. One mile E. by S. from Lantern Hill is Rillage Point, *Rillage Point.* which is low and straggling, and from which a rocky ledge extends N.W. a third of a mile. This ledge rises at a cast from Buggy Pit in 10 fathoms to 3, and causes a destructive overfall *Buggy Over-fall.* to small craft on westerly winds. It may be avoided by keeping the beach of Combe Martin Bay in sight when passing Rillage. Half a mile eastward of Rillage the sandy cove of Watermouth opens to the north, and, by an eastern turn within, affords a refuge to crippled vessels which, pressed by N.W. squalls and flood tide, have missed Ilfracombe entrance.

The depth of water between Bull Point and Rillage, at a mile off shore, ranges from 14 to 15 fathoms, rocky bottom, but increases quickly to 20 and 22.

21. From Watermouth the coast sweeps back a little, forming, *Combe Martin.* with little Hangman Hill, a bight called Combe Martin Bay, at the S.E. angle of which lies the village and creek of Combe Martin. This bay affords an occasional anchorage, out of the tide, in 8 and 9 fathoms, but only with off-shore winds, and lies directly west of the Hangman Hills, which fall abruptly to the sea. The *Hangman Hills.* Little Hangman, so remarkable for its conical shape, forms the eastern arm of the bay, and bears from Watermouth entrance S.E. by E. 2 miles.

From hence the coast assumes a more mountainous appearance, the eastern Hangman rising 1160 feet above the sea; but the shore is bold under these hills, except a fang or two near the little Hangman point and also the Copperas sunken rock, which *Copperas Rock.* lies a mile E.N.E. of that point, and half a mile off shore. This rock, which is not more than 50 yards across, comes within 6 feet of the surface at low water, and is very steep, with 12 fathoms rocky bottom at a third of a mile round its outside, and 7 fathoms between it and the main; affording thereby an inner channel

*Copperas
Rock.*

which may be taken with the Foreland just in one with the intermediate bluff of Highweer, bearing E.S.E. $\frac{1}{2}$ E. To pass outside of the Copperas rock there are both western or eastern marks, as may be most convenient; viz., Capstone Hill on with Rillage Point, bearing W. by N., leads one-third of a mile from it in 12 fathoms; and Holiday Hill, near Linmouth, in one with Highweer Point, bearing S.E. by E. $\frac{1}{4}$ E., passes at nearly the same distance. This rock has as much as 22 feet over it at half tide, but the great break of the sea on it has foundered several vessels.

*Highweer
Point.*

The coast from Little Hangman forms a slight curve up to Highweer Point for 4 miles, having 7 fathoms foul ground close to, with less stream on the ebb than on the flood. At 2 miles from this part of the coast, 14 fathoms will be found, deepening gradually to 20 at a 5 miles offing, and then 25 fathoms on shingle, which is the deepest water across to Swansea, and indicates a mid-channel position.

*Linmouth and
Linton.*

22. The land at Highweer and farther to the eastward, drops considerably from the Hangman Heights, and from thence is broken into rocky creeks, the heights of which are clothed with stunted wood up to the Boat Haven and romantic villages of Linmouth and Linton, which lie 2 miles westward of the Foreland. A shelf of rolling stones stretches off from Linmouth Creek, a third of a mile; but the river Lin scours a narrow channel through it marked by two rows of substantial posts, which enable a small vessel to warp up to a little jetty, where there are 16 feet water on spring tides, and from whence a small light is exhibited as long as there is water for a boat.

Sand-ridge.

The coast from Highweer to this place has 6 fathoms at half a mile off; but abreast of Linmouth, at the distance of a mile N. by E., and half a mile N.W. $\frac{3}{4}$ W. from the Foreland, there lies a dangerous bank called the Sand-ridge, though consisting of a narrow bank of gravel. Its western extreme comes awash on low springs, and then shelves off to 9 feet for the length of two-thirds of a mile, while its 3 fathoms' bed is altogether a mile long by a quarter of a mile wide, with 6 fathoms close to all round. There is a passage between it and the Foreland of half a mile in breadth, which a judicious seaman may easily take by keeping a quarter of a mile from the shore. Mine Head in one with the extreme of the Foreland, leads on the Sand-ridge; and Little Hangman in one with Hangman Cliffs, bearing W. $\frac{1}{2}$ N., leads a quarter of

a mile to the northward of it in 7 fathoms; but in boisterous weather from the westward it will be advisable to keep further out until Capstone Hill comes in sight over Rillage, bearing W. $\frac{3}{4}$ N., in order to avoid the dangerous overfalls occasioned by the Foreland Ledge, a rocky shelf that ranges 2 miles east *Foreland Ledge.* and west, abreast of the Foreland, at a mile distance. This ledge has but 19 feet on its S.E. part, its average depth being $4\frac{1}{2}$ fathoms. There is a 7 fathoms' channel between it and the Foreland, and close to it on the outside there are from 10 to 14 fathoms. Heavy laden coasters, therefore, should determine betimes either to give the Foreland a berth of 2 miles, or to pass close round it, sweeping Linmouth Bay, and thereby escape a *Linmouth Road.* swamping sea. Linmouth Bay affords a clean anchorage in 5 fathoms, and quite out of the ebb stream, anywhere inside the Sandridge. (*See the plan.*)

The Foreland (appropriately so called from being the northern- *The Foreland.* most projection of the south shore of the Channel) bears E.S.E. $\frac{1}{4}$ E. 5 miles from Highweer Point, and N.W. by W. $\frac{1}{4}$ W. 9 miles from Mine Head, the next bluff to the eastward. It is a high, irregular ridge, falling steeply to the sea, and connected with a much higher back-ground by a gentle saddle or hollow close within its summit, so that it only makes clearly with an eastern or western view. It bears from Flatholm Light W. $\frac{3}{4}$ N. 26 miles, and W.S.W. $\frac{1}{4}$ W. 13 miles from the Nash Lights, which are on the nearest point of the Welch shore.

The soundings deepen to 21 fathoms, rocky bottom, at $2\frac{1}{2}$ miles *Soundings, and* off the Foreland, and then shoal gradually towards the Welch coast; nor does such deep water occur again to the eastward. The streams of tide at that distance, $2\frac{1}{2}$ miles, run parallel to the *tides off the* coast; but in mid-channel they set fairly up and down, E.S.E. *Foreland.* and W.N.W. according to the actual time of high and low water by the shore, at an average velocity of 4 knots on springs, and 3 on neaps, always allowing half an hour for slack water. At full and change it is high water in the vicinity of the Foreland, at 6h 10m and rises on springs 33 feet.

23. From the Foreland the coast is nearly straight for 6 miles *Gore Point.* to Gore Point, presenting a range of heights which rise to 1200 feet, and are partly covered with stunted wood; the shore is bold close to, but is not accessible from the sea, except at a rough beach under Glenthorn House, which stands close to the cliff,

2½ miles from the Foreland. Gore Point is low and shingly, and *Porlock Quay.* with Hurlstone Point, 2 miles further, forms Porlock Bay, in which a small village and boat-creek called Porlock Quay lies at the western bight. This bay curves but very slightly within the points; yet it is a much frequented anchorage, as vessels lie in some measure out of the tide, about half a mile off shore, in 5 fathoms broken shells. The beach is about 2 cables wide, and consists of rolling stones out to the low water-mark, towards which the soundings gradually shoal. A fertile valley interrupting the chain of heights extends inland to the high range of Dunkery, the summit of which (3½ miles in-shore) is elevated 1678 feet, and is the highest feature to be seen on the south side of the Bristol Channel, or indeed in all Somerset.

Hurlstone Point.

The craggy point of Hurlstone is well known to the mariner; it is the western termination of a high ridge called the North Hills, which stretches across to Minehead pier at the distance of 4 miles, and which swells out to the northward in the round and bold bluff called Minehead Land. Its boldness of approach, however, ceases at a low shelving point, one mile to the westward of Minehead Pier, called Greenaley, and peculiar in its appearance, from being the only cultivated spot in that interval. Straggling spits of rolling stones, which dry 2 cables out at low water, begin there, and long rocky spits, which trend N.W. from Minehead, make it dangerous after half ebb to pass nearer than half a mile to the high-water shore. But as long as the Foreland Point is kept in sight, or, in thick weather, if the vessel be kept in 10 fathoms

Greenaley Point.

Minehead outer Anchorage.

water, she will be clear of all danger. If, however, she intends to go into the pier, and is early upon tide, a vessel of 10 feet draft can anchor on good holding ground between the outer spits and the main, upon the line of Dunster Gazebo in one with the pier head, and Minehead Bluff just open of Greenaley Point.

Minehead Pier.

24. Minehead Pier is the first place to the eastward of Ilfracombe that offers shelter to the coaster when the wind is on shore, very few spots of the intervening 24 miles of iron-bound coast being even accessible to a boat; therefore, although of no present importance as a trading port, compared with its former consequence, it is well known to the coasters in the Bristol Channel. The stranger will find it opening out directly under the eastern extreme of the Minehead Land; and when pressed by a northerly wind, so as to render refuge essential to his labouring vessel (for

many a small collier has foundered in the chopping sea produced by the weather tide in this neighbourhood), he should know that the pier head bears from the Nash Lights, S. by W. $11\frac{1}{2}$ miles, and W. by S. 16 miles from Flatholm Light. This latter bearing leads between the Culver and the One Fathom banks, clearing the west end of the Culver $1\frac{1}{2}$ miles to the northward, and the One Fathom bank three-quarters of a mile to the southward. To those vessels also which may be about to bear up on the ebb making, before they can reach Bridgewater Bay with strong westerly winds, it will be useful to know that the new Burnham Lights kept on the bearing which they have when in one E.S.E. $\frac{1}{4}$ E., not only lead in and out of that channel, but clear the dangerous bank off Little Stoke one mile, and just strike Minehead Pier. To preserve any of the foregoing bearings, it will be necessary to steer obliquely, so as to counteract the stream; but bearing in mind, that when approaching on young flood, it will be necessary to keep to the westward of Greenaley till tide-time for pushing in, in order to avoid driving on the rocky shelf which extends half a mile from the pier, it not being safe to bring up outside unless in moderate weather.

Minehead Pier consists of a single arm, which curves to the E. and S.S.E., and in order to make it easily discernible, the parapet and outer extreme are kept whitewashed. Its base stands exactly at half tide mark, so that there is a certainty of finding 10 feet water at three-quarters flood, and till first quarter ebb at the springs, with 17 feet at high water; at neap tides there are but 9 feet at high water. On full and change days of the moon it is high water at 6h 30m; equinoctial springs rise 38 feet, ordinary springs rise 35 feet, and neaps 18 feet. (See the plan.)

When approaching Minehead Pier from Greenaley Point, the only directions that can be given is to run along shore at the distance of 2 cables from the actual high water-mark, till the east end of the Quay-town opens from the pier head, and then haul as sharply round it as possible, leaving the large mooring-posts on the larboard hand, and having a stern anchor ready if likely to shoot much, or if the pier be crowded. If the vessel is flat it is preferable to lie free of the jetty on the mud, there being good means of mooring there, with head in and stern out; but a sharp vessel should lie alongside the pier (legs will not stand), only be careful to spring her off at the pitch of tide, to avoid the chafe

Minehead Pier. during the undertow, which prevails during strong north-westers. Indeed, such a powerful sea breaks over the pier, as to carry the shingle with it in showers, and to occasion the decks to be abandoned when blowing hard at the top of a spring-tide. Nevertheless, Minehead Pier, as an intermediate refuge from stormy weather between Penarth road and Ilfracombe, has saved many a deep-laden coaster, although capable of berthing only a dozen vessels at a time. A lantern is exhibited at the pier-head during tide-time, if any vessel is observed to be hovering.

*Harbour
Light.*

*Coast E. of
Minehead.*

*Blue Anchor
Head,*

and Road.

25. To the eastward of Minehead the coast is flat for 4 miles, but projects into the sea at Warren Point, within which, at a mile distance, stands Dunster Gazebo, or tower, placed on the summit of a thickly-wooded conical hill. The flat coast-line ceases at Blue Anchor Head; but the mariner must not be deceived by the bold appearance of its cliffs, for the low-water rocks dry out a third of a mile; and between it and Minehead the shore uncovers half a mile out, all rocky, except just to the westward of Blue Anchor Head. A layer of mud extending from thence towards Warren Point has often saved vessels which were obliged either to run on shore or swamp. This resource is the more valuable, as Blue Anchor Road often tempts coasters to bring up; and as they are frequently caught there by a sudden shift of wind to the north-west, they must, if deeply laden, either slip or sink at their anchors, for this tenacious blue mud never yields. The following bearings mark the most prudent berth on this holding ground, in 4 fathoms water: Minehead Pier, just open of Warren Point, bearing N.W., and Dunkery Hill, open N. of Dunster Gazebo, bearing W. $\frac{1}{2}$ N. when Blue Anchor House (the nearest to the cliffs) will bear S.E. by S.

Watchet Pier. 26. Eastward of Blue Anchor Head, $1\frac{1}{2}$ miles, and altogether $5\frac{1}{2}$ miles from Minehead, there is another small pier at the village of Watchet, which of late years has rivalled Minehead in point of trade; but as a place of safety the preference is so much in favour of Minehead, that vessels having accomplished their trading objects, frequently run down to Minehead, rather than risk a N.E. gale at Watchet, where, in spite of an expensive breakwater of piles, a heavy swell and undertow, combining with the hard ground, often damages a vessel, however well managed.

Watchet Pier (*see the Plan*) has the same shape as Minehead Pier, and is likewise whitewashed; the back walls also of the

village form its inner face ; but in hazy weather it may be distinguished from Minehead, by there being no high land nearer than the Quantock Hills, which are 2 miles to the eastward, and by the lofty steeple of St. Decuman, which rises conspicuously at half a mile inland. The approach to the pier is obstructed by a shelf of rock and beds of rolling stones, which dry out at low water half a mile, in a N.E. direction. The clearest and deepest passage is on their N.W. side ; to effect which the pier must be brought on a south bearing before running for it ; and the beacon perch, which stands a cable's distance without the pier, must be left on the larboard hand. Then round to the vessel between the pier-head and pile breakwater, and moor in the same way that was recommended at Minehead ; but observe that, if the weather be moderate, legs may be used here. A lantern is occasionally shown at the pier-head when vessels appear to be approaching ; and if it be their intention to go in, they are to reply by dipping a light three times ; which intimation is acknowledged the same way on shore. This little harbour has the same depth of water as Minehead ; namely, 10 feet from three-quarters flood, *Watchet Pier.* to a quarter ebb on springs ; 17 feet at high water springs, and 9 feet at high water neaps. The ebb stream makes one hour before high water between Watchet and Minehead ; and the mid-channel stream sets up and down at the rate of 5 knots on springs, and 3 upon neaps, tide and tide, according to the time of flowing or ebbing on the shore ; but half an hour may be allowed for slack water. At 7 miles N.N.E. of Watchet, the Severn and Bridge-water flood streams begin to diverge or separate. *Watchet Tides.*

The approach to Watchet by the lead differs much from that of Minehead, as in the latter there are 9 fathoms, gravel, close to low water-mark, and 12 fathoms, rocky bottom, at $1\frac{1}{2}$ miles off ; while off Watchet a 3-fathom shelf of gravel extends two-thirds of a mile from the shore, and then deepens regularly to 8 fathoms, sand, at 5 miles off. Though a belt of loose ground begins at Minehead and spreads 2 miles off shore with only 4 fathoms, yet there are no detached dangers nearer than the west end of the Culver (which bears from Watchet Pier N.E. $\frac{1}{2}$ N. 6 miles), till we advance towards Little Stoke. *Approach to Minehead and Watchet.*

27. From Little Stoke Point, which bears E. by S. 5 miles from Watchet, a rocky spit with a broad shallow flat extends $1\frac{1}{2}$ miles out in a N.W. by N. direction, with from 3 to 9 feet water on *Little Stoke Point and Spit.*

Little Stoke. them; and about half a mile of the inner part of the spit dries at spring tides, being generally covered with loose rolling stones.

Kilve Patch. An ill-defined 4 fathoms' channel succeeds, and then Kilve Patch, on which, however, the least water is $2\frac{1}{2}$ fathoms. Outside of all a flat shelf with 4 fathoms extends to the eastward across Bridgewater Bay, passes the Gore Bank and reaches to Brean Down. To pass to the northward of Kilve Patch, in 4 fathoms, the Saddle of the Foreland should be kept a quarter of a point open of Minehead Land, bearing N.W. by W. $\frac{1}{4}$ W., or, if at night, the Burnham lights kept in one, bearing E.S.E. $\frac{1}{4}$ E. When Kilve church, which is the westernmost of three white churches, bears S.W. $\frac{1}{2}$ S. the vessel will be abreast the N.E. extreme of Stoke Patch, on which there are $2\frac{1}{2}$ fathoms, and will be fast approaching the shoal water off Bridgewater Bar; the lead should therefore be kept going, though the breaking down of the cliffs into a flat valley will have warned the sailor of his position. From the western margin of Bridgewater Bar, Flatholm bears N.E. $\frac{1}{4}$ N.

Stoke Patch.

*Burnham
Lights.*

*Upper Light
intermittent.*

28. The Bridgewater or Burnham Lights stand 1500 feet apart, in the direction of E.S.E. $\frac{1}{4}$ E. The upper or inner lighthouse is a white tower 96 feet above high water. This light is intermittent, showing brightly for only half a minute, and then obscured for three minutes and a half; it may be seen at low water, by an eye elevated 10 feet, from the distance of 16 miles on any bearing between E. by S. and S.S.E.; to the S. of which it is masked, in order to lead between the Culver Sand and Steepholm; N.N.W. passing a third nearer to the latter than to the Culver. The outer or lower lighthouse is constructed of wood, white and square, with a black streak down its centre, and stands 450 feet outside of the high water-mark on the strand. It being 21 feet above high water-mark, and 59 feet above low water, it may be seen 12 miles by an eye raised 10 feet, so that both lights are visible to the westward of the Culver Sand as well as of Little Stoke Point.

*Lower Light
bright only in
the Channels.*

The lower light is fixed; that is, it does not revolve like the other; but in order to render the approach to this flat shore and dangerous bar more secure, it is so constructed as to shine brilliantly only between the bearings of E. by S. and S.E. by E. $\frac{1}{4}$ E.; the former passing $1\frac{1}{2}$ miles to the southward of the Culver, and the latter between Stoke Spit and Kilve Patch. In like manner it only shows brightly throughout the proper passage across the bar and the mid-channel between the Stert and Berrow Flats, and

therefore, inside as well as outside of the bar, any diminution of its usual strength shows at once that the vessel is approaching too near to either one side or the other.

29. The River Parret winds through an extensive tract of alluvial ground scarcely raised above high water, and makes its exit *Approach to Bridgewater Bar.* between the Berrow and the Stert Flats, which extend more than 3 miles from the high water shore, and which, in some places, dry at low water to the height of 15 feet. To search therefore for the mouth of the river at 5 or 6 miles outside of the lighthouses would be a dangerous task were it not for the fortunate position of Brent Knoll, a table-topped hill of 883 feet in height, which stands 2 *Brent Knoll.* miles to the eastward of the lighthouses, and, by a most fortunate coincidence, on their exact line of bearing. Brent church, which stands at the foot of the hill, is also on the same line, and though the steeple is dark, it may be often seen before the lighthouses; bring, therefore, the southern and highest shoulder of the Knoll on the proper bearing, E.S.E. $\frac{1}{4}$ E., and the church and the two lighthouses will gradually rise into view. As may be readily supposed, a high lone hill like Brent Knoll makes at a distance like an island, but so does Brean Down; and the only way of distinguishing them, when seen separately, is, that the summit of the Knoll is nearly flat, while that of the other, and likewise of Steepholm, are hog-backed.

At Inkey Point the high water shore forms a deep and extensive recess, which is filled up, as far as the bed of the Parret or Bridgewater River, by the Stert Flats. They consist of deep mud, and are upwards of 4 miles in length from the above point to Stert Island, drying out at least two miles in breadth from high water-mark. On their northern edge stands the Chisel Rock, *Chisel Rock.* surrounded by clusters of huge stones and shingle, which cover at one hour flood.

The northern side of the river's mouth is bounded by the great *Berrow Flats and Gore Sand.* Berrow mud flats, which stretch away to the northward as far as Brean Down, and project 4 miles to the westward, where they terminate in a broad tongue of fine sand called the Gore. The whole of this extensive bank dries at low water sometimes to the height of 13 feet; and from the outer extreme of the Gore, which at low water forms an acute angle, Flatholm Light, and also the western point of Steepholm, bear N.N.W. $\frac{1}{8}$ W. From thence

Brent Knoll is seen over the Burnham lighthouses bearing E.S.E.

*Gore-sand
Buoy.*

A buoy has this year been judiciously placed by the Trinity House off the pitch of the Gore-sand. It is black, and lies in 3 fathoms, with Burnham high lighthouse its own length to the northward of the low lighthouse, and Flatholm its own length to the westward of Steepholm.

*Bridgewater
Bar.*

The whole of what is called Bridgewater Bay has been over-spread by the vast quantity of silt which the river Parret deposits at its mouth; and the Bar may be said to extend $1\frac{1}{2}$ miles outside of the Gore and Stert banks, being not more than 3 feet deep at low water spring tides. A vessel intending to cross the bar should obtain, as already stated, an early sight of the Brent Knoll, and bringing it to bear E.S.E. $\frac{1}{4}$ E. she will be in the fair-way track between the Culver and the foul ground off Little Stoke. If the buoy of the Gore-sand is seen, so much the better; but the above course to the Knoll will lead in with certainty till the lighthouses are seen and brought in one. When Flatholm shuts in with Steepholm, she will be approaching the narrow channel between the flats, and will then require very nice steerage to keep the lighthouses in one, and to counteract the flood stream, which sets obliquely across towards the Chisel rocks. When Flatholm opens half its length to the eastward of Steepholm, she will have passed the Chisel group, and she will then experience a still stronger indraft setting on the sands which enclose Stert Island, and which are called the Larks or Stert Spit. From abreast the Chisel rocks the water will have deepened considerably, and the channel will have narrowed proportionably, so that the leads should be briskly plied on both sides of the vessel in order to keep in the middle of it. (*See the plan of Bridgewater Bar.*)

The Larks.

*Change of
course.*

So far the lighthouses in one must be rigidly preserved; but when the vessel has advanced sufficiently to bring Burnham church on the bearing of S.E. by S. she must at once quit that course and steer for the church, in order to avoid the weirs and the steep edge of the Berrow Flat. The leads will prevent her approaching too near the eastern shore, and when abreast the church she should drop her anchor. If the vessel be short she can lie afloat in a permanent pool of 12 to 15 feet water anywhere off the Burnham sand-hills, in the direction of the creek called

Huntspill, and in the line of Berrow church and the outer rise of *River Parrett*. Brean Down in one; but if a long vessel, and if fit to take the ground, she must haul close over to Stert Island, so as to ground about half tide; for at the anchorage there would not be sufficient space for her to swing to the young flood, and she would therefore be exposed to a violent rush of the tide.

Long, however, before her arrival there, she would have been *Pilots*. boarded by the pilots, who are very alert and well regulated, and the only reason for dwelling so long on these directions is, that cases may be imagined when no communication can be had, and when absolute necessity may force the most cautious man to run the hazard of such a narrow and intricate navigation, in order to save both crew and vessel.

In the hands of a pilot we will therefore here leave her, only *Stert Island*. adding that Stert Island is a low shelf of earth; that a mile higher up Fenning Island presents the same appearance; and that the *Fenning Island*. distance by water is about 11 miles from Burnham to the quay of Bridgewater, where it is high water at full and change at 8 *Bridgewater & Burnham tides*. o'clock, with a rise of only 18 feet on the spring tides, and of 6 feet on the neaps, though at Burnham they rise 35 feet at high water, which takes place at 6 h. 50 m.

30. In sailing outward from Burnham Pool at high water, the *Berrow Swatch*. same instructions apply, but in a reversed order, and the vessel must be again prepared to counteract the oblique set of the ebb towards the Gore-sand. If bound up the Severn, or across to Cardiff Road, she may haul directly across the Berrow Flats eastward of the Gore, in 12 feet at high water neaps, or in 21 feet at springs, with Flatholm Island completely open to the eastward of Steepholm, so as to leave an interval between them of half the length of the former, which will then bear N. $\frac{1}{2}$ E.; and when Worle windmill comes on the south end of Brean Down, bearing E.N.E. $\frac{1}{4}$ E., the vessel will be clearly outside of all these flats. The Gore-sand not only has less water on it than the above *Gore Sand*. swatchway, but it is much more dangerous to ground upon, and when a vessel rounds it to the westward she should not approach its tail nearer than 12 feet water at 2 hours flood, with the east end of Flatholm and west end of Steepholm just locking. To cross Bridgewater Bar at night requires a thorough local knowledge, a strict attention to the lights, and a brisk lead.

31. The Culver Sand, 3 miles of which dries at low water, with *Culver Sand*.

Culver Sand. long spits at either end, is one of the most obnoxious shoals in the Bristol Channel, and will be again mentioned in the Second Part of this work, in connexion with the detached shoals off the Welch shore. It will be sufficient here to state that two buoys have been lately placed on it, one at each end, and 5 miles from each other; and that the eastern point of the sand, which dries, lies 4 miles N.N.W. from the dry tail of the Gore. The leading mark between the Gore and the Culver is Weston church, just clear of the outer extreme of Brean Down, bearing E. $\frac{1}{4}$ N. (See View Q.) This mark leads across one patch of the Graham

Banks. Banks, but not into less than $3\frac{1}{2}$ fathoms at low water. On either side of these last-mentioned banks there is a deeper channel, which may be easily adopted with the aid of the chart, but for which no very obvious marks present themselves. The soundings shoal gradually towards the Gore, from 4 fathoms, mud and sand, at $1\frac{1}{2}$ miles off.

Brean Down. 32. Brean Down is the first bold projecting headland to the northward of Bridgewater Bar: it is an insulated ridge of land $1\frac{1}{2}$ miles long, trending N.W., and rising 300 feet above high water. Its outer end slopes to the sea, from which a reef or ledge of rocks extends a quarter of a mile. The highest of these rocks is called the How, and may be cleared by bringing the tower of Woodspring Abbey on with Brean Rock, bearing E.N.E. $\frac{1}{2}$ E.; but considerable overfalls reach to some distance without it. Steephelm bears from Brean Down N.W. $\frac{1}{4}$ W. $2\frac{3}{4}$ miles, having a clear channel between them of 8 fathoms water.

How Rock.

Uphill Creek. Immediately to the eastward of Brean Down is the mouth of the Uphill river, affording a snug creek to run a coaster in at half-flood. The entrance is to be found, and the first mile of channel may be pursued, by bringing a remarkable black rock on its eastern side in one with a white mark in the cliff a little westward of Uphill church, bearing S.S.E. $\frac{3}{4}$ E.: that line must be run upon until within a cable's length of the black rock, which must be left half that distance on the larboard hand; and when Flatholm Lighthouse shuts in with Brean Down the vessel must anchor, and even then she can lie afloat only at neap tides.

Anchor Head. Two miles E.N.E. of Brean Down, Anchor Head projects boldly from the line of coast, with the Brean Rock about 2 cables further out; and half a mile still further out, bearing W.N.W., there

Brean Rock.

lies a patch of foul ground half a mile in circumference, and within 3 feet of the surface, called the Weston Ledge.

Weston Ledge.

The watering-place and rising town of Weston-super-Mare appears in the eastern bight of Uphill Bay, and, immediately under Anchor Head, the rocky islet and buildings called Knightstone Baths, project so far that at spring tides a coaster can find shelter under their lee. Directly over the conspicuous yellow church of Weston the ridge which forms Anchor Head stretches E.S.E. for 2 miles, and on its eastern extreme, at the altitude of 270 feet, stands Worle Windmill, a favourite mark among the pilots for all this part of the coast.

33. Swallow Cliff is the next point to the northward of Anchor Head, the coast between forming into a bight called Sand Bay, very similar to Uphill Bay, being headed by low sand-hills, from which the flat mud extends a mile out at low water, flush with the points. From Swallow Cliff a ridge of rocks, which dry at low water, extends out a quarter of a mile, and affords an excellent anchorage, in 6 fathoms, to cheat the ebb, but taking care to keep Walton Castle open of Swallow Cliff, in order to insure being clear of the tail of the ridge.

Swallow Cliff is the western point of a bold ridge of hill and rock called St. Thomas Head, which lies E. and W., about 2 miles in length, and terminates to the eastward in Woodspring Point. About half way along the northern face of this head, the cliffs break down into a little bay, called Middlehope Beach, which, in one with Worle Mill bearing S., is the mark for being to the westward of all the high and shoal parts of the English Grounds. In the second part of this work directions will be given for vessels coming up the northern shore of the Bristol Channel, and for taking the midway passage between the Welch and English Grounds, and to those general directions the mariner is referred; for it could answer no useful purpose to endeavour to lead him through the intricate maze of shifting banks, shoals, and flats, which form what is called the English Grounds, and which reach out 3 miles to the northward of St. Thomas Head.

34. From St. Thomas Head a low, marshy shore, with numerous streams and small creeks (in that country called Pills) sweeps up to Clevedon Brow and church, the whole bight being filled with the Longford Grounds, which dry at low water a mile from the shore. Clevedon village, with its terraces and villas,

succeed, and then Walton Castle, and at nearly 3 miles from
Pigeon House. Clevedon Brow stands a building called the Pigeon House, where the northern edge of the English Grounds nearly falls back to the shore. From thence to Blacknose, a distance of about 2 miles, the coast is comparatively bold, and may be approached by the lead to within a quarter of a mile ; but the whole channel is here not more than a mile in breadth at low water, the Welch Hook stretching $3\frac{1}{2}$ miles across from the Monmouth side towards the Pigeon House.

Blacknose. Giving a berth of a short quarter of a mile to Blacknose, a vessel may safely steer so as to pass at the same distance
Portishead. from Portishead (commonly called Posset), where, however, the channel is still further narrowed by the Newcomes, some shoal patches of sand which project from the Welch Grounds.

Having passed Posset, it is to be brought in -one with Black-
King Road. nose, and will thus clear the Horseshoe and lead into King Road, at the entrance of the Avon, where the best anchorage is in the above line, with Blaize Castle in one with Dunball Island, bearing S.E. by E., and in 4 fathoms at low water.

PART II.

THE NORTHERN SHORE OF THE BRISTOL CHANNEL.

HAVING described the best manner of approaching the Bristol Channel from the westward, having also pointed out the merits of Lundy Island as a stopping-place, and given all the details necessary for a vessel to advance by the southern shore from Hartland Point to King Road, the same process will now be adopted in tracing the northern shore, from St. Anns Head to the same anchorage.

35. ST. ANNS HEAD is a bold promontory advancing from a *St. Anns Head.* back-ground of nearly table-land, with dark rocky cliffs deeply indented, and with a large black rock at its extreme point, which is always above water. It forms the western point of entrance to Milford Haven, and is distinguished by two whitewashed light-houses, the outer one standing close to the pitch of the head, the *St. Anns or Milford Light-houses.* other 610 feet N. by W. $\frac{1}{4}$ W. from it. The base of the outer or lower lighthouse is 142 feet above the high water level of the sea, which, with 17 feet, the height of the lantern from the ground, gives the light an elevation of 159 feet. It is a strong, fixed light, and is seen from Skomer Island all round seaward at the distance of 17 miles, as well as up Milford Haven. The upper light is also fixed, but shows only from Gateholm Island round seaward to Sheep Island, and not up Milford Haven. The base of this lighthouse is 148 feet above the level of high water, which, with 44 feet, the height of the lantern from the ground, gives the light an elevation of 192 feet, so that it may be seen at the distance of 19 miles by an eye elevated 10 feet.

Sheep Island lies 2 miles S.E. $\frac{1}{2}$ E. from St. Anns Head, and *Sheep Island.* about a quarter of a mile from the adjacent shore, to which it is connected at half-tide by a rocky isthmus. It is surrounded by shelving rocks, which to the westward project under water nearly

2 cables, having $4\frac{1}{4}$ fathoms on their extremity. Its profile shows three grassy hummocks, the outer one being the lowest.

Between these two points (St. Anns Head and Sheep Island) lies the entrance to Milford Haven, of which it will be necessary now to give a detailed account.

MILFORD HAVEN. (*See the Plan.*)

36. Although the term haven is locally given to almost every nook on the coast of Pembrokeshire, yet to no part of it can that term properly apply except to Milford; indeed, no safe harbour can be found between the Land's End and Holyhead, not even in the whole Bristol Channel, where a single moderate-sized ship can lie afloat protected. In Milford, however, the largest fleet will find shelter and security, with easy access, and good working room as far up as Milford town. Though a fall of 22 feet at spring tides produces much contraction in the working way when above the Stack Rock, yet by daylight the leading marks are so clear that any vessel can run up to the dockyard without a pilot, even should the buoys be taken away; and at night a first-rate may find her way in to a land-locked anchorage by a few bearings of the light. But in thick weather the entrance would be too dangerous for a stranger, and nothing but absolute necessity should induce any one to attempt it, some fatal instances having proved the bad consequences of not preferring a good offing under such circumstances.

*Access easy by
Day or Night,*

*except in thick
Weather.*

Entrance.

The mouth of Milford Haven opens to the S.W., and bears from Cape Clear E.S.E. 164 miles, from Lundy Island N. $\frac{1}{2}$ W. 36 miles, and from the Smalls Light S.E. by E. $16\frac{1}{2}$ miles. Precelly Mountain, which is plainly seen long before the objects on the coast, being brought to bear E.N.E., will lead a ship from the offing to the entrance.

*Strength of the
Tides.*

It should be further premised that, as Milford Haven receives the necessary flood-tide for filling seventeen creeks, so the returning ebb, uniting with the streams from the Cleddi* and several smaller rivers, runs fully 3 knots in the springs and 2 in the neaps, but more or less according to the freshes.

*To enter by
Night.*

To run into Milford Haven with a fair wind at *night* (any time before half-ebb), give St. Anns Head a quarter of a mile

* Pronounced Clethi.

berth on the larboard hand, in a depth of 12 or 11 fathoms, *To enter by Night.* steering so as to bring the lower light (the only one that shows in the haven) to bear W. $\frac{1}{2}$ S., and, after running E. $\frac{1}{2}$ N. about $1\frac{3}{4}$ miles, the depth will decrease to 8 and 7 fathoms. Still keep the light on the same bearing, but the lead briskly going, looking out on the starboard hand for Thorn Island, a quarter of a mile off, and when it bears S. by W., or the water deepens to 11 or 12 fathoms, steer E.S.E. till the light disappears behind Thorn Island; you may then bring up in 12 fathoms, mud and shells, just to the northward of the western end of the Quarantine Ground, and a third of a mile to the southward of the Stack Rock. Or, if requiring a better shelter, go on E.S.E., opening the light behind Thorn Sound; and the moment it is eclipsed by Thorn Point you will again have 12 fathoms, mud and shells, and will be off the eastern third of the Quarantine Ground. Should, however, the ship be under frigate size, and that you feel confident, continue on the E.S.E. course till Milford town lights bear N., when you may round to, to the northward, but not so much as to open the light again. There you will have 9 and 10 fathoms water, good muddy ground, in what is called Man-of-War Road. Further than this no man would be justified in going after dark, unless in a small craft, and intimately acquainted with the place.

With still greater facility, in the day-time, can a large ship *To enter by Day.* take this haven, and even with a working wind; for between half-flood and half-ebb not less than 31 feet will be over the Chapel and Harbour Rocks, and these are the only dangers detached from the main.

37. The Chapel Rock is in the fairway of the entrance, lying *Chapel Rock.* on the line of St. Anns Head and Rat Isle, and W.N.W. $\frac{1}{4}$ W. exactly half a mile from the latter. Its 4 fathoms' boundary extends north and south, rather more than a cable in length, and rather less than one in breadth; but from its northern end a rocky shelf, with 5 fathoms on it, stretches 3 cables' lengths further; the whole having 7 fathoms close to, and 12 fathoms between it and each shore. The shoalest spot of these rocks is towards their southern end, having 18 feet over it at low water ordinary spring tides. The marks for it are, the Stack Rock exactly in the middle of Thorn Sound, Linney Head a little open to the westward of

Sheep Island, and the high water-mark at the north end of West Angle Bay just open of the southern point of that bay, E. $\frac{3}{4}$ S.

Harbour Rock. The Harbour Rock is a patch lying directly off Thorn Island, from whence its outer edge bears N.W. by W. 3 cables' distance. Its 5 fathoms' boundary is about a cable in diameter, with 6 fathoms close to all round; and its shoalest water is 24 feet, the marks for which are, the outer extreme of Sheep Island in one with the East Blockhouse Point, and Hubberston Observatory just clear of the south side of the Stack Rock.

DESCRIPTION.

General Description of the Objects in Sight. 38. A brief account of the several objects which are the most conspicuous, and most used as marks for the navigation of Milford Haven, will save future repetition. They are the East and West Blockhouses, Rat and Thorn Islands, the Stack Rock, Gellyswick Mill, Hubberston Observatory, Milford Church and town, and, in the distance, the ship-building sheds, the dockyard, &c. &c.

Blockhouses. The West Blockhouse is a low and small mass of ruins, standing on the pitch of the first point, within St. Anns Head. The bight between them is called Mill Bay, where vessels often stop a tide in 5 and 6 fathoms, sandy bottom.

The East Blockhouse is a similar ruin on the opposite point, within Sheep Island, having directly under it a detached piece of the cliff, called Rat Island, from which a ledge of rocks shelves 2 cables out, with only 12 feet water.

Thorn Island. 39. Thorn Island is green and peaked, and of the same height as the contiguous cliff, from which it is separated by a channel of

Thorn Sound. half a cable wide, called Thorn Sound, where there is never less than 2 fathoms. The island is not more than a cable in length, but a ledge of rocks extends from its western point, towards the Harbour Rock, with only 15 feet water.

West Angle Bay. The bight between Rat and Thorn Islands is called West Angle Bay, and affords a convenient roadstead for small craft with S.E. winds, in 3 fathoms on sandy bottom.

Dale Bay. Directly opposite Thorn Island, and forming the second point within the West Blockhouse, Dale Point projects to the eastward, and forms the south side of Dale Bay, where there is excellent anchorage for vessels waiting for an easterly wind. But in order to insure shelter and still water, with not less than 15 feet, the

vessel must borrow on Dale Point, and just shut in Sheep Island with it.

40. The Stack Rock is a small conical islet capped with green. *Stack Rock.* It stands about one quarter of the breadth of the harbour from the north shore, with a clear passage of 16 feet water between it and South Hook Point, which bears N.E. a third of a mile. *Stack Channel.* There is also that depth all round the islet, except off its eastern point, where there are some rocky heads which uncover, but they do not extend a cable's length.

In Sandy Haven Bay, to the westward of South Hook Point, *Sandy Haven Bay.* vessels can lie snugly with a northerly wind, or wait there for the tide, in 5 fathoms with clean ground, by bringing Dale Castle on Great Castle Head, and East Blockhouse seen through Thorn Sound. Small craft get into the creek at the head of this bay on spring-tides.

41. A mile above the Stack is Gellyswick Windmill, of a dark *Gellyswick Mill.* stone colour, and standing on the edge of the cliff. Half a mile above this mill, on the heights near Hubberston, there stands a round and ruined building called the Observatory, to which, from *Observatory.* its conspicuous situation, frequent reference will be made as a sailing mark.

Opposite Gellyswick, on the south shore, is Angle Bay, forming *Angle Bay.* an extensive mud flat, which dries at low water to its outer points. This bay, however, affords shelter to wind-bound coasters, and is a safe resource to such as arrive without anchors; observing, that a patch of flat rocks lies at the low water-mark, a quarter of a mile from the western point. It is denoted by a cask buoy, which may be passed close to on either side. A church stands near the head of each bight of this bay; the eastern one is Rosecrowther, the western one is Angle Church, with a village; and on that side of the bay will be found the best sheltered ground. A broad flat of sand and mud called Angle Shelf, *Angle Shelf.* slopes off from this shallow bay nearly half a mile, with only 6 feet water on it; but by keeping Thorn Island clearly open of the south shore, a vessel will range along it in safety.

The Quarantine Ground lies parallel to the above shelf, and *Quarantine Ground.* is marked by 15 yellow can-buoys, extending nearly a mile from abreast of the Stack Rock, towards the eastern point of Angle Bay. It is a quarter of a mile across, and contains moorings for about 12 ships of the line, besides merchantmen. The depth of

Quarantine Ground.

water within the buoys varies from 13 to 2 fathoms, muddy bottom, the outer western buoy being in 6 fathoms, oyster-ground, the eastern one in 9, and those on its northern edge in 13 and 15 fathoms, oyster-ground. The Quarantine regulations forbid all vessels standing within the buoys, which is a very disadvantageous restriction with a turning wind, as between them and the Milford Shelf, the working channel after half ebb, is only a quarter of a mile wide.

Milford Shelf.

Milford Shelf begins at the Stack Rock, and sloping off the shore to the depth of 15 feet mud and oyster-ground, trends towards Newton Noyes, its breadth being nearly half a mile.

Milford Church.

42. Milford Church is a yellow building, with a square steeple, the parapet of which is 183 feet above high-water of ordinary spring-tides. The town of Milford lies to the north-west of the church, and ranges along the face of high steep ground, under which there are several landing slips; but the great spring-tides ebb outside of them all. To the N.W. of the town, close under the Custom House, there are two shipping-quays, with 12 feet alongside at high water.

Milford Town.

The general anchorage off the town is called Milford Road, and may be said to extend from abreast of Hakin Point to Castle-Pit Creek. It is confined on the north by Milford Shelf, and on the south by Pwlchrohon Flats, so that it is scarcely one-third of a mile in breadth; but the muddy bottom affords good holding-ground in 9 to 11 fathoms. Frigates should moor across the stream; and from their usual berth (which is called Man-of-War Road), the Dock Yard sheds are seen just clearly open of Weare Point; and likewise Dale Castle, midway between the Stack Rock and South Hook Point.

Milford Road.

It is recommended to moor across, to avoid the chance of tailing on either bank at low water, when swinging with a cross wind, as the cables are necessarily slack to allow for a 22 feet rise in the tide, and also in order to have two anchors on the ground when blowing hard either up or down, which, owing to the long reach of the Haven, causes such a trying sea, that small vessels are frequently obliged to slip and seek shelter off the Dock Yard. The strength of the tide is such, that all vessels thwart the wind however hard it blows.

Mooring in Man-of-War Road.

A quarter of a mile above Castle Pit is a low rocky point, with a yellow-faced house, called Newton Noyes, between which and

Newton Noyes.

A quarter of a mile above Castle Pit is a low rocky point, with a yellow-faced house, called Newton Noyes, between which and

Weare Point the north shore is bold to within half a cable at high water. On the south side Pwlchrohon Flats, dry nearly half a mile off; and on both sides there are 3 fathoms ledges, which so diminish the channel, that on approaching Weare Point it is less than 2 cables wide. Dale Castle and Valley, on with the north side of the Stack, is the leading mark through this part of the channel, and it must be carefully kept on; for although there are 8 and 9 fathoms in it, the flats are very steep.

Weare Point is sloping and low, having a tongue of shingle and sand, which dries out towards the Dock Yard a quarter of a mile, with a 15 feet spit of sand extending a cable's length beyond the tongue towards Pennar Entrance. On the extreme of the spit St. Twinel Church appears in the middle of Pennar Gut, and Hubberston Observatory a little open of the north shore. A vessel carrying a single light lies a cable's length within and above this spit, in $4\frac{1}{2}$ fathoms low water spring-tides. Vessels of easy draught may pass close to the southward of this Light Vessel, but others should keep Hubberston Observatory well open, and go to the southward of the Spit.

Pennar-mouth is an extensive arm of Milford Haven, being nearly 3 miles in length; but it all dries at low water, at which period the entrance to it through Pennar Gut is not more than 30 fathoms wide, and bounded by shelving rocks. At high water, however, of spring-tides, timber-ships of 12 feet draught pass through it to the town of Pembroke.

43. A mile above Pennar Gut stands Pater Fort; and stretching from thence to the eastward, Pembroke Dock Yard. A ledge of rocks, called the Carrs, project a cable's length and a half N. by W. These rocks dip in-shore towards the Fort, and thus form a swatch frequently used by small craft; while their outer ends, which at low water stand 7 feet high, shelve off into a shallow and foul flat, from whence the Carr Spit extends half way across the channel. The outer point of this spit has 12 feet water, and is marked by a white buoy, while its N.E. elbow, which rounds towards the Dock Yard, is marked by a white floating beacon, which also lies in 12 feet water. The white buoy bears from the Weare Light Vessel E. $\frac{1}{2}$ S., rather more than half a mile; and the floating beacon lies 90 fathoms E S.E. $\frac{1}{4}$ E. from the white buoy. Nearly midway between this buoy and beacon another Light Vessel is moored on the outer edge of the bank

Carr Light Vessel.

which surrounds the Carr Rocks. She lies in $3\frac{1}{2}$ fathoms at low water, and likewise shows a single light, which, as well as the white buoy and beacon, should be left a third of a cable's length to the southward.

East Pennar Flat.

From Pennar Gut to Pater Fort a mud-bank extends a quarter of a mile from the shore, drying in some places 8 feet above low water; and outside of it an irregular shelf of mud extends $1\frac{1}{2}$ cables further out, with 2 fathoms on its edge. As, however, this bank, which is called East Pennar Flat, has 14 feet on it at high water spring-tides, a vessel having parted her cable in the lower part of the haven would find this flat a convenient place to run for, both on account of its soft flat surface, and of its proximity to the Dock Yard.

Channel round Carr Spit.

44. Between Weare Spit and Carr Spit there is a 6 fathoms channel of a quarter of a mile in breadth, with the north shore pretty bold as far as the Carr Light Vessel; but then, Llanstadwell Shelf projects so as to narrow the channel almost to a cable's length; and there also it is split by the Dock Yard Bank into two channels, one continuing E.S.E. to Hobbs Point, and the other, which is very narrow, turning suddenly towards the Dock Yard.

Dock Yard Bank.

The 3 fathoms boundary of the Dock Yard Bank begins rather to the westward of a line drawn from Llanstadwell Church, to the western jetties of the Dock Yard, and from thence it extends south-easterly towards Hobbs Point, being a quarter of a mile in length, and consisting of gravel, mud, and shells. The shoalest part of it, where there are but 7 feet at low water, bears N.E. $\frac{1}{4}$ E. from the western Dock Jetty; the mark for it being the Gate Flagstaff in one with the western gable of the Clock Storehouse. The east and west ends of this bank are pointed out by two buoys; the latter, near the Carr Spit, being red, and the eastern one, black, with a red top. The red buoy lies in 3 fathoms $1\frac{1}{2}$ cables S.E. by E. from the floating beacon; and the black buoy in 5 fathoms, $2\frac{3}{4}$ cables S.E. by E. from the red buoy. Both these buoys, as well as the floating beacon, lie nearly in the same line, with Popton and Weare Points in one; the thwart mark for the red one being the Jetty Flagstaff, touching the eastern angle of the engine-house, and that for the black one being the southern angle of the fort just open of the western Dock Jetty.

45. The channel leading to the Dock Yard is between the western end of this bank and the Carr Spit, where it is only half a cable across, and only 4 fathoms deep; but between the bank and the low water-mark off the yard, it widens to a cable in breadth, with a depth of 6 fathoms on muddy bottom. There are four mooring-buoys laid down along the middle of this part of the channel. *Dock Yard Channel.*

The North Channel, between the Dock Yard bank and Llanstadwell Shelf, carries 7 fathoms water; but the shoal from Neyland Point reduces its breadth to a cable's length abreast of the Black Buoy, where, however, both channels unite, and carry broad and deep water up to the Packet Slip at Hobbs Point. *North Channel.*

Hobbs Point bears from Pater Fort E.S.E. $\frac{1}{2}$ E. rather more than half a mile, and between them lies Pembroke Dock Yard, the face of which trends about S.E. from the Fort. At about the middle of the yard stands a conspicuous Clock Cupola, which, with the high yellow gate, and the Jetty Flag-staffs, are very useful marks afloat. In front of the yard a shelf of stones and mud dries out about 30 fathoms from the Western Jetty at low springs, and 100 fathoms from the Eastern Jetty. *Hobbs Point. Dock Yard.*

Between the east end of the Dock Yard and Hobbs Point there is a bight called Lanion Pill, the muddy bottom of which altogether dries at low water, and offers a snug berth for any vessel that may be without a running anchor. *Lanion Pill.*

Neyland Point is distinguished by some white storehouses, from whence a large bed of stones and shingle extends to more than a cable's length, and dries at low water. The shoal water reaches nearly half way across the channel. *Neyland Point.*

SAILING DIRECTIONS.

46. When running in to Milford Haven, preference should be given to the St. Anns side of the entrance; and when Hubberton Observatory comes in one with the Stack (*view E.*) steering towards it in that direction will lead to the northward of the Harbour Rock: keep this mark on till Rosecrowther Church has opened from the land between Thorn Point and Angle Bay, and then haul to the southward on that mark till the upper Lighthouse of St. Anns comes in one with Thorn Island. On this last mark the vessel may proceed to the anchorage and choose a place according to her draught of water; but if bound to Milford Road, *Entering with leading Wind. Harbour Rock. Milford Road.*

Milford Road. she must continue on the same mark till Dale Castle is seen to the northward of the Stack Rock (*view F.*), and then run with this new mark till abreast of or above Hakin Point, when she may round to and anchor. If going to the Dock Yard, continue on this last mark (*view F.*) till Hubberston Observatory approaches the shore about Newtown Noyes, when she must run to the south-eastward, either with the latter mark astern, or steering so as to pass about a cable's length to the southward of the Weare Light Vessel. Then steer E.N.E. $\frac{1}{2}$ E. for Llanstadwell Church, and preserve that bearing till the outermost cottage on Weare Point is shutting in with the land about Fox Point, which mark will lead to the northward of the Carr Spit, leaving the white buoy Light Vessel and beacon a little to the southward.

Dock Yard Channel.

47. When the Dockyard clock appears its breadth open to the eastward of the jetty flagstaff, keeping it so will lead between the Carr Spit and Dockyard bank, in 4 fathoms, and will leave the red buoy on the larboard hand. Continue on this course till the mooring buoys come nearly in a line, when the vessel may run for them, and anchor as convenient. But if she is to be moored, place the Best Bower close to the Dockyard bank, and the Small Bower close to the shore athwart the tide, which, after the Carr rocks are covered, becomes so strong and wild that it would be dangerous lying at single anchor near the buoys. But if she is only to stop a tide, there are good roomy berths for her anywhere between the upper mooring buoy and the black buoy of the bank.

Mooring off the Dockyard.

Working into Milford Haven.

48. Vessels working in at low water should observe that the outer extreme of Skokham Island in one with St. Anns Point, N.W. $\frac{1}{2}$ W. (*view B.*) leads clear to the south-west of the Chapel Rock, and the Stack Rock on with the detached cliff of Thorn Point, clears it to the southward. Linney Head, in one with the outer extreme of Sheep Island (*view D.*), leads to the eastward of it, and Hubberston Observatory on the north side of Thorn Island (*view C.*) clears it on the north side.

Chapel Rock.

The outer extreme of Sheep Island, open to the westward of *Harbour Rock.* Rat Island, clears the Harbour Rock on its west side; and Hubberston Observatory in one with the Stack Rock (*view E.*) clears it on its north side. No ship should attempt to go between the Harbour Rock and Thorn Island.

Tides.

49. It is high water at St. Anns Head at 5h. 44m., and at

the Dockyard at 6h. 4m. Spring tides rise at the latter 22½ feet.

The foregoing directions are sufficient to enable any seaman to carry his vessel, at least with a leading wind, as far as Hobbs Point. Beyond that he must employ a pilot, and it will therefore be sufficient to add here, that the river is navigable at high water 11 miles further, to Haverfordwest, the county town, where vessels of 200 tons are sometimes found, and where spring-tides give 12 feet at high water at the bridge, which, at full and change, takes place at 6h. 30m. *Haverfordwest.*

50. From Sheep Island, where we stopped to describe Milford Haven (§. 35), a bold shore, with sloping cliffs, trends for about 2 miles to the S.E. into Freshwater Bay. From the termination of those cliffs it turns suddenly to the southward towards Black Pool, and falls at once into a flat beach, fronted by a low and dangerous shelf of sand. The line of this beach is interrupted by two rocky spits, inside of which it rises into a range of high burrows, and here and there shows some remarkable patches of white sand. *Coast South of Milford Haven.*
Freshwater Bay.

Black Pool, the occasional resort of a few lime and coal craft, *Black Pool.* is an insignificant bight, but easily distinguished by the white buildings of Linney Farm. From its northern side a ridge of shelving rocks, called the Pole, stretches nearly half a mile from the shore, and as an indraft sweeps round Freshwater Bay, this ridge is sometimes very dangerous to vessels becalmed there, as the remains of some wrecks, still visible, but too well prove. Outside, however, of 9 fathoms, Freshwater Bay is clean, and affords a fair anchorage in 11 and 12 fathoms, with offshore winds. Should a vessel be caught there with the wind in, she must endeavour to work out to the southward on the Linney side of the bay; for in the direction of Sheep Island it would be impracticable, as both tides would set her in. The ebb from Milford Haven turns sharply round Sheep Island, and forms an eddy of a mile in breadth from the shore, round which it runs till deflected towards the Turbot Bank by the true ebb, which it meets off Linney Head. On the other hand the flood stream, which strikes Sheep Island, takes its natural direction to the eastward round the bay, and thus a permanent current is always here in motion from that island towards Linney Head. *Pole Rocks.*
Tides in Freshwater Bay.

Turbot Bank.

51. The Turbot Bank lies about 3 miles from St. Anns Head, between the bearings of S. by W. and south, and immediately in front of Freshwater Bay; to the singular tides in which bay, as above mentioned, it probably owes its original formation. It is composed of fine sand, and is well defined by a 9 fathoms boundary, but it slopes up to a narrow ridge near its S.W. edge, where, on the shallowest part, there are 5 fathoms. From this spot, which lies towards the S.E. end of the bank, St. Anns Head bears N. $\frac{1}{2}$ E. about 4 miles, and Linney Head S.E. by E. $\frac{3}{4}$ E. nearly 3 miles. Or, the W. extreme of Skomer Island will be found just locking in with the E. extreme of Skokham Island, and Saddle Head just open of the Crow Rock. In bad weather this bank should be avoided by all small vessels, on account of its short breaking sea, and large ships should not venture across its narrow ridge; but in fine weather and light winds it offers a convenient tide anchorage. The western extreme of Skomer Island, touching the eastern extreme of Skokham Island, bearing N. by W. $\frac{1}{4}$ W., leads outside of it in 12 fathoms; Thorn Island, on with Rat Island, N.E. $\frac{1}{4}$ E., clears it to the westward in 12 fathoms; Rat Island, on with the outer extreme of Sheep Island, N.N.E., clears it to the eastward in 10 fathoms, and Saddle Head, in one with Flimstone Head, S.E. $\frac{1}{4}$ E., clears it to the N.E. in 14 fathoms. By night, St. Anns lights in one N. by W. $\frac{1}{4}$ W., lead $1\frac{1}{2}$ miles within it; and when the lights bear N.N.E. $\frac{1}{2}$ E., they lead two-thirds of a mile N.W. of it. The stream of tide sets obliquely across this bank in a N.N.W. and S.S.E. direction.

*Clearing marks.**Linney Head.*

52. Linney Head lies $5\frac{1}{2}$ miles S.S.E. from St. Anns Head. Its summit is a flat down, and its dark upright cliffs are about 150 feet high, with straggling rocks at their base, which project from it a cable's length, and two of which, but both close to the shore, are always above water. S.E. $\frac{1}{4}$ S., 2 miles from Linney Head, stands Flimston Head, the face of the coast continuing to bear a similar appearance and altitude; but at three-quarters of a mile from Linney Head, in the above direction, and standing 50 yards from the cliffs, there is a singular overhanging rock of

*Brimstone and Linney Rocks.**Eligug Stack.*

the same height, called the Eligug Stack, which the resort of sea-fowl has rendered quite white. This remarkable point serves both to indicate the position of the Crow Rock, and to identify this part of the coast.

53. The Crow Rock lies a mile S. by W. from the pitch of *Crow Rock*. Linney Head, and the same distance west from Eligug Stack: it is not more than 20 feet wide, and dries out of the water 17 feet in height, so as to show itself from $2\frac{1}{2}$ hours ebb till $3\frac{1}{2}$ hours flood. There are 6 fathoms water close to its inner side, and 9 fathoms close without. Near it are three small clusters of out-lying rocks, called its Toes. The N.W. Toe bears from the Crow *The Toes.* N.N.W. $\frac{3}{4}$ W., 2-cables distant, and its inner edge is just awash *North-west Toe.* at low water; but it extends to the southward almost a cable's length, where it has 6 fathoms close to, as well as on all its sides. The N.E. end of Freshwater Bay, kept open of Linney Head, leads to the westward of it. The East Toe is only a cable's length *East Toe.* E. by S. from the Crow, and comes awash at low water with $5\frac{1}{2}$ fathoms close round it. The South-east Toes bear S.E. $\frac{1}{2}$ S. from *South-east Toes.* the Crow, half a mile, and consist of two heads, N. and S. from each other, and nearly 2 cables asunder. The outer one comes awash at low water, ordinary springs, but the inner one has 3 feet over it. There are 10 fathoms close outside of them, 6 fathoms close inside, and 9 fathoms between them and the Crow. There is a third rock belonging to this part of the cluster: it lies N.E. from the south-east Toes about two cables' lengths, and carries $3\frac{1}{2}$ fathoms at low water. The marks for passing outside the Crow, and all its Toes, are St. Anns lighthouses, in one bearing N. by W. $\frac{1}{4}$ W., taking care at night never to bring the upper light to the northward of the lower one; and St. Govens Head, just open of Saddle Head, when it will bear S.E. by E. $\frac{1}{2}$ E. Eligug Stack bearing north, leads to the eastward of all; but in thick weather do not approach these rocks so as to shoal the soundings under 16 fathoms, coarse sand and gravel. It is proper to observe that, while the Crow Rock is covered, there are never less than 17 feet over its Toes; and also that the stream of tide sweeps out of, and into, Freshwater Bay, close round the Crow.

Between this group of rocks and the foul ground which lines *Crow Sound.* the shore from Linney Head to Eligug Stack, there is a 5 fathoms' passage, called Crow Sound; but it should never be attempted by a stranger without an overbearing necessity, and then only with a brisk leading wind, in which case Saddle Head, just opening with Flimston Head, will be found a safe mark.

The most striking objects in the neighbourhood of Linney and *Orielton.* Flimston are the Park trees of Orielton, about 4 miles east from

Linney Head, the church of St. Twinel, with its dark square tower, and the tall sharp spire of Warren church.

Flimston Head.

54. Flimston Head rounds gradually, and takes its name from a chapel nearly a mile N.E. of it, with an open belfry. This, and the tall chimney of Flimston brick-kiln, are the only remarkable objects near the coast. In summer, small vessels sometimes venture to take in pipe clay at this Head.

Saddle Head.

Two miles further lies Saddle Head, so named from its extremity resembling the pommel of a saddle. Two lime-kilns stand on the top of the adjoining cliffs, and at night, when burning, might possibly be mistaken by an inexperienced eye for St. Anns Lights. Between Flimston and Saddle Heads there is a slight curve of the coast, and about midway in the bight, some bleached rolling-stones, facing the west, are called Bullslaughter Bay, seldom, however, accessible.

Bullslaughter Bay.

From Saddle Head to St. Govens Head it is nearly a mile S.E. by E. $\frac{1}{4}$ E., the face of the coast all the way from Linney Head bearing the same character and height, and occasionally indented by deep chasms, which are most remarkable close to Saddle Head.

St. Govens Head.

55. St. Govens Head, the most southern point of Pembrokeshire, is a perpendicular limestone cliff of 142 feet in height, and, being without a single straggling rock, is quite bold and safe. The land within is nearly level, so that at even a 3 miles offing the inland objects can be seen over it. The most conspicuous of these is the dark square tower of St. Peter's church, which is $2\frac{1}{2}$ miles N. by E. $\frac{3}{4}$ E. from the pitch of the Head, and elevated 307 feet above the high water level of the sea. On the face of St. Govens Head there is an old chapel and a well (dedicated to St. Goven, and fostered with much local reverence), occupying a shelf half-way up the cliff.

St. Govens Head is such a prominent, yet so safe a headland, that it is frequently the first landfall after a distant voyage; and as it is almost always approached by vessels going up or down on this side of the channel, it may not be amiss to add a few words on its adjacent soundings, and to inform the mariner of an important circumstance respecting Caldy Light, which will enable him to take up his distance from this headland. Caldy Light is so masked as not to throw any very brilliant rays to the northward of a west line; and a 2 miles berth from the land is thus

Caldy Light masked in the direction of St. Govens Head.

secure as long as the light is not brought to the southward of east. But as the mode of concealing the light does not produce a complete eclipse, its real bearing by the compass should be frequently examined.

With the exception of the Crow Rocks, the coast is quite clear from Linney Head to St. Govens, having 6 fathoms water within a quarter of a mile of the shore, and the bottom varying from coarse brown sand to rock, off Flimston. The soundings at one mile off shore are gravelly, with 15 and 17 fathoms, on which vessels in fine weather may drop an anchor for a tide; but at $2\frac{1}{2}$ miles, the soundings vary from 17 fathoms outside the Head to 23 within it, coarse ground. Immediately off St. Govens Head there are from 4 to 7 fathoms, sandy bottom, at 2 cables' distance: at half a mile there are 11 fathoms, on oyster ground: and 20 fathoms at $1\frac{1}{2}$ miles. Further out, about 3 miles from the Head, the water shoals again to 16 and 14 fathoms on a shelf, which extends 6 miles along the shore, and which, at its western end, is rough and rocky, but shows fine sand in 17 fathoms at its eastern end. The shelf does not exceed a mile in breadth, deepening suddenly on the outside to 25 fathoms at a cast of the lead. When standing to the northward in thick weather, with a quick going lead, this shelf might give a useful warning of an approach to the land; but in stormy weather its overfalling and destructive sea should be avoided, by preserving a 25 fathoms offing.

56. A small sandy cove, called New Quay, breaks through the cliffs at two cables N.N.E. of St. Govens Head; and in the centre of the bight, between that Head and Stackpole Head, there is a larger and deeper sandy cove, called Broad Haven, into which the tide flows half a mile. There the valley is crossed by gates, which retain the lake-waters of the magnificent park of Stackpole Court. This little haven, or creek, is $1\frac{1}{2}$ cables wide at its entrance, having at its S.E. point, a rocky conical islet, called Stackpole Stack, which, with the valley and wooded heights of Stackpole Court, makes this spot easily recognised by any vessel that may be so distressed in a S.W. gale, as to render beaching necessary. For this purpose it is preferable to any other spot between Milford and Tenby; and the only directions that need be given, are to let the Stack Rock have a cable's berth on the starboard hand, and the higher the tide will float her up, the greater the probability of saving the cargo. Though

*Soundings off
St. Govens
Head.*

New Quay.

Broad Haven.

*Stackpole
Stack.*

*St. Govens
Tide Anchor-
age.*

neither of these sandy coves afford more than an occasional landing-place for a cargo of coal in fine weather, there is between the Stack Rock and St. Govens Head a tolerably convenient tide-stopping anchorage in 7 fathoms, on a sandy bottom, and sheltered from wind and sea between the points of W. by S., northwards to E. by N.; but all must be kept ready for reaching out, as the moment the wind veers to the southward, a heavy sea sets in. An ample supply of fresh water may be conveniently obtained in Broad Haven, with the wind offshore.

*Bosheston
Church.*

A stone-coloured church, with a square steeple, called Bosheston, stands at the head of the western valley of Broad Haven, but it is visible only when approaching St. Govens Head from the eastward.

*Stackpole
Head.*

57. From St. Govens Head the limestone cliffs sweep round Broad Haven bight to Stackpole Head. These Heads are very similar in appearance, and are equally bold and safe. Oyster beds, with 9 and 13 fathoms, will be found $1\frac{1}{2}$ miles S. by W. from the latter. When on them, Saddle Head appears a little open of St. Govens Head, and Stackpole Quay, a little open of Stackpole Head; and close outside the oyster beds there are 19 and 20 fathoms, coarse ground.

*Little Haven.
Stackpole
Quay and
Road*

From Stackpole Head the coast-line falls sharply back, in a N. by E. $\frac{1}{4}$ E. direction, three-quarters of a mile to Stackpole Quay, a small jetty in a little nook of limestone quarries. About half-way between it and Stackpole Head there is a small sandy cove, called Little-haven, off which, in Stackpole Road, a tide-stopping anchorage may be found in 6 fathoms, on a sandy bottom, and so far better than that of New Quay, as it affords shelter till the wind draws round to S.S.W., with a clean beach, in the event of being caught.

*Freshwater
Bay.*

From Stackpole Quay the cliffs alter their character to dark brown sandstone, and the coast-line trends about east for nearly 2 miles to Freshwater Bay, which is half a mile broad, and headed by high sloping sand-hills, through which a powerful stream constantly runs; and from which the tide ebbs about $1\frac{1}{2}$ cables, so as to form a broad beach, with a low water-line of hard sand.

*Swanslake and
Manorbeer.*

From the north side of this bay, the coast turns towards Old-castle Head in a S.E. direction $2\frac{1}{2}$ miles, first forming a small sandy bay, called Swanslake, which divides Westmoor and Eastmoor Cliffs; and then Manorbeer Bay, which is headed by low

sand-hills. The dark but conspicuous ruins of Manorbier Castle stand on the north side of the valley, and a church with a square steeple on the south side.

58 Oldcastle Head, projects from a rather higher background, and some old entrenchments, tend to give it a distinct bold summit, from whence it slopes to the sea, and is edged by shelving rocks: it is, however, bold to, having 5 and 9 fathoms within a quarter of a mile. *Oldcastle Head.*

Lidstip Point, a mile east from Oldcastle Head, is a narrow, flat-topped limestone cliff, about 130 feet high, with 6 fathoms water close to, and showing a flagstaff on its northern edge a quarter of a mile within the pitch of the head. Lidstip Bay is to the northward of the head: a very low shore, edged with shingle, commences under the staff, with a conspicuous yellow house, close to high-water mark, $1\frac{1}{2}$ cables north of the staff, from whence a range of sand-hills bounds the head of the bay. The tide ebbs out about $1\frac{1}{2}$ cables on hard sand, and there are 4 fathoms a quarter of a mile off. From Lidstip Bay a straight line of upright cliffs stretches S.E. by E. $1\frac{1}{2}$ miles to Giltar Head; the highest of them is called Proud Giltar, which overhangs its base, and is about 170 feet high. At the foot of these cliffs the low water rocks extend about half a cable off, with 5 and 7 fathoms water, within 2 cables' length. Their summits are quite flat for a quarter of a mile inland: the ground then falls into a gentle valley, and is succeeded by a rising back-ground, called the Ridgeway. *Lidstip Point and Bay.*

59. Giltar Head, the western extreme of Caermarthen Bay, is a narrow projection of limestone, similar to Lidstip, but not so high or perpendicular. It bears from Lidstip Point E. by S. $1\frac{1}{4}$ miles, and has a temporary flagstaff on it. From the limestone quarries at its foot a muscle-scare, or spit of large stones, projects a quarter of a mile E.N.E., and the shore, altering its character there to low sand-hills edged with a shingle beach, turns sharply N. and N.N.W., and then N.E. by E. in the direction of Tenby, but suddenly terminates in a large inlet at the marsh and causeway of Holloway. To the northward of Giltar Head, the small church of Penally shows over the sandy Burrows; a few whitish cottages stand near it, and high over the edge of the marsh, Holloway Old Mill. The causeway crosses the marsh to the end of Tenby cliffs, which are not more than 50 feet high, and at the *Giltar Head.* *Penally Church.* *Holloway Old Mill.*

- Tenby Sands.* foot of which a broad beach is left at low water, called the South Sands. On the western extreme of the cliff there is another windmill, which, in 1833, was the only one on this part of the coast that had vanes. Gumfreston farm-house bears N.W. a long mile from this mill, and both are marks for the Woolhouse Reef.
- Gumfreston.*
- Tenby Town,* 60. On the eastern end of the cliff Tenby Old Castle bounds this conspicuous little promontory, which, springing out from a high back-ground, the town of Tenby presents a mass of modern built houses, of a light colour, and a large church, with a spire 220 feet above the sea, which bears from Giltar Head N.E. $\frac{1}{2}$ E., $1\frac{1}{4}$ miles distant. A glen, with a sallyport, about a cable's length within the pitch of the point, helps to throw out the old castle and its bluff base into bold relief; but all that is now distinguishable of its ruins from the offing, is a small dark square tower, on which the coast-guard flagstaff is erected, and near which stands their black-walled and white-roofed watchhouses. Here the bluff falls suddenly to some low rocky cliffs and ruined walls, with 9 and 10 feet water close to; and on the north side of this bluff, and immediately under the church, lies Tenby Pier, the capacity of which is very limited, though few places present a better side for an artificial harbour. At present, about 20 colliers may find berths in it on spring tides, but having only 8 feet water on the neaps, the chances of being beneaped is a sad prospect for a coaster.
- and Pier.*
- St. Catharine Islet.* South from Tenby Old Castle, and half a cable from the cliffs, to which it is connected by a half-tide ridge of shingle, lies St. Catharine Isle. It is very narrow, with high cliffs, and about a cable in length. On its outer pitch is the ruin of an old castle, and half a cable off that point is the Skear Rock, which, at high water, shows only a few square feet uncovered, but at low water stretches N. easterly about 100 yards. The low water-mark of Tenby South Sands reaches out to the middle of St. Catharine, and almost forms a straight line from them to Giltar Head. The island is connected to the town cliffs by a ridge of shingle; and when that is just covering by the tide, it shows that there are 13 feet water on all the adjacent shoals, except the Woolhouse Rocks, which are then also awash.
- Skear Rock.*
- Tenby Old Mill.* 61. North of Tenby Church is Tenby Old Mill, a conspicuous ruin, on a hill 324 feet high, and serving as a most useful mark, as will hereafter appear.

From the inner wall of the pier, the high-water shore, after

forming a small bay of shingle, rocks, and sand, under high steep land, with a sugar-loaf islet, called Goskar, half way down the beach, continues to the N.E. by E. in a range of dark cliffs, about 170 feet high, and from these cliffs the low-water rocks and beach extend out about 150 yards, with 9 feet water, within 2 cables' lengths. The same character of coast prevails all the way to Monkstone Point, with one only interruption of a little wooded valley, called Waterwinch Cove. A yellow cottage stands there on the brink of high water, and near it there is a fine stream, which affords an excellent watering-place for shipping.

*Tenby North Sands.
Goskar Islet.*

Waterwinch Cove.

Monkstone Point is a sharp rocky projection, much lower than the neighbouring cliffs, and terminated by two rocky islets; the inner one, resembling a hay-rick, is called the Stack, and the outer one, which is longer, with flat sides, is called the Monkstone, and bears N.E. $\frac{1}{4}$ E. $1\frac{1}{2}$ miles from Tenby Old Castle. These islets extend nearly two cables from the point; they are united to each other, and to the main at the first quarter ebb; and when first covered by the flood, there will be found 10 feet water in Tenby Pier, and 7 feet over the Woolhouse Rocks. The Monkstone has but a head or two of sunken rocks at half a cable off, and at 2 cables' distance there are 9 feet water.

Monkstone.

62. We will now return to Giltar Head, in order to describe Margaret and Caldy Islands, which are separated from the main by Caldy Sound, an open and safe strait of half a mile in breadth.

Margaret Isle is a quarter of a mile in length, and 200 yards wide; it is surrounded by brown cliffs 140 feet high, with open limestone quarries, and an irregular barren surface: and it has also a singular cavern through its southern corner. On its northern cliffs there is a stone-coloured house the roof of which is seen from the offing. It is joined to Caldy Island by a rocky neck, called Small Sound, the northern part of which is so high as not to cover at the neaps, and it has only 3 feet over it at the springs; but the middle and southern parts of the rocks cover at $2\frac{1}{2}$ hours flood, and then indicate 10 feet water over the shoals, and just water enough in Tenby pier for a boat. When the whole of these rocks are covered, the tide must have risen 24 feet, which is equal to 15 feet at the pier, and to 12 feet over the Woolhouses. The N.W. half of the isle stands boldly into the sea, with 6 fathoms water at a few yards' distance.

Margaret Isle.

Small Sound.

63. Caldy Island slopes up to the south-west from its eastern

Caldy Island.

Caldy Island. shore, and projects with a low rocky point towards Margaret Isle, between which and Red Ord Point there is a little sandy bay with very steep cliffs.

Red Ord Point. Red Ord Point is also low, but immediately over it a hill, the highest on the island, with a small cairn of stones on its summit, rises 170 feet above the sea. From this point to Lighthouse Head the island presents a steep green brow, with shelving cliffs of red rab stone. About a third of the way from Lighthouse Head, in a small sandy bay, the cliffs change from the red rab to limestone; for which material many craft resort to this island, and generally take shelter on its northern side. In Small Sound (or the neck of rocks connecting the two islands) there is a singular little basin, called Brussels Hole, in which there are always 6 feet water, and in which therefore yawls and small craft can lie afloat when all around them is dry.

Small Ord Point. Small Ord Point is low, rocky, and rounded, and is not so bold as the preceding shore. The cliffs double back from thence to High Cliff, forming a small bay, at the head of which there is a

White obelisk. small obelisk or beacon, erected there at the same time as the lighthouse, in 1828, as a day-mark for the Woolhouses. *High Cliff.* High Cliff is a perpendicular mass of limestone with open quarries, standing about 130 feet above a beach of limestone fragments and sand, the low-water edge of which points towards Margaret

Priory Bay. Isle, and thereby leaves at low water a broad sand, which fills up the intermediate bight, called Priory Bay. There is a staff on the western summit of High Cliff, which there falls back to a landing-place on a high beach of shingle; and at the western end of this little bay there is a round white building, formerly a mill, but now a powder-magazine for the quarries. Within this beach stands the proprietor's residence, a large white house attached to the remains of a priory, the dark spire of which appears close behind it. A never-failing well of water is found near the house, but very inconvenient for shipping, as it does not communicate with the beach. The shore stretches from the magazine in a gentle sweep, with low cliffs, to Eel Point, a high limestone crag resembling a pile of ruins, and bearing from High Cliff N.W. by W. two-thirds of a mile. Here the low-water shore again approaches close to the cliffs, but soon diverges towards the north part of Margaret Island.

Caldy Light. 64. Caldý Lighthouse stands about 100 fathoms within the

high-water mark on the southernmost bluff of the island: it is a round whitewashed building; and the gables of the keeper's house which is attached to it, when seen from the offing, appear like two small wings. It bears from Tenby church S. by W. $\frac{1}{2}$ W. $2\frac{1}{4}$ miles; and the ground being 170 feet above the high-water level of ordinary springs, and the building 40 feet, the whole elevation of the light is 210 feet; so that by an eye 10 feet above the water, it may be seen nearly 20 miles. It is a single and fixed light, but in the direction of Worms Head there are additional lamps and reflectors, so as to give it greater strength towards that quarter; and for the purpose of enabling vessels passing up and down the Bristol Channel to distinguish it from any other neighbouring light, it shows a red light from two of the reflectors, when between the bearings of N. E. by N. and N. by W.; but the transition to that colour takes place rather sluggishly. The eastern limits of the red light passes 4 miles to the westward of the Helwick Shoals in 21 fathoms. The light is screened so as not to show between the bearings of E. and S. by E.; so that, by keeping it clearly in sight, or to the northward of east, it will lead a vessel safely to the southward of St. Govens Head. It may be useful to remind the mariner that this, like many other lights with but one tier of reflectors, is apt to appear faint and glimmering when seen in the angles between the reflectors; and therefore, should a vessel first make Caldý Light in one of these directions, and be running towards it, it might deceive the eye as to distance. Should he suspect this to be the case, he might try if, by altering his course a little, a better light should appear, and thereby clear up all doubt as to distance, for the light is very good when opposite a reflector.

Shows red between S. by E. and S.W. by S.

65. The Drift Rock is a foul patch of nearly a quarter of a mile in length, and lying S. by E. $\frac{1}{4}$ E. a long mile from the Lighthouse Head. It is steep to, with 12 fathoms on a gravel bottom all round, and 5 fathoms on its shoalest part, the marks for which are Tenby Old Castle, or the Coast-guard-house, touching Small Ord Point, and the north-eastern sand-hills in Lidstip Bay on with Red Ord Point. As this rock lies at the confluence of the Caermarthen Bay and the Channel streams of tide, it is subject to a heavy breaking sea, and should be carefully avoided: to do which observe the following marks. To sail between it and Caldý Island (the most desirable course), keep the southern end of Freshwater

Drift Rock. Bay just open of Old Castle Point (N. W. by W.), and it will lead a third of a mile to the N. of it, in 10 fathoms. Eastmoor Head open of Old Castle Point (N. W.) leads a quarter of a mile to the S. of it in 16 fathoms; the W. end of Margaret Isle in one with Red Ord Point, leads half a mile to the W. of it in 16 fathoms; and Tenby Church in one with the Old Mill-house*, and both a little open of Small Ord Point, bearing N., clears it a quarter of a mile to the E. of it in 17 fathoms: this mark also answers for running between the Spaniel and Caldy. At night this rock may be avoided by keeping Caldy Light half a point either to the N. or W. of N. by W. $\frac{1}{2}$ W.; but to pass between it and the island, the distance must be judged so as to keep about half a mile from the Lighthouse Head, and to go outside of it 2 miles.

Spaniel Ledge. 66. The Spaniel is a sharp-headed ledge of rocks, having on its inner and shoalest part 12 feet at low water, but 24 as soon as the Woolhouses are covered. This north-west end bears S. E. from Small Ord Point, distant 3 cables; and the Ledge stretches S. E. about 2 cables in length by 1 in breadth, with 4 and 5 fathoms rocky ground close round it. The marks for the shoalest part of it are, Penally church its own breadth open of the High Cliff of Caldy; and the Old Mill-house a quarter point open E. of Tenby Church. The sea in S. W. gales breaks heavily on these rocks, but there are good day-marks for clearing them, as follow: Red Ord Point in one with Lighthouse Head, N. W. $\frac{3}{4}$ W., leads half a mile to the S. W. between them and the Drift Rock; or St. Govens Head may be brought on with Lighthouse Head, W. N. W. $\frac{1}{2}$ W.; and the Old Mill-house nearly in one with, or just open to the E. of the church, leads between them and Caldy in a safe passage of 5 fathoms: but to go to the E. of them, the Old Mill-house must be brought in one with the W. end of St. Catharines Isle; and the N. side of Margaret Isle just touching the High Cliff of Caldy will lead a quarter of a mile N. of them.

Men-of-war Road.

67. The Spaniel and Drift are much in the way of large ships running from seaward for Men-of-war Road, which is the only anchorage at the W. end of Caermarthen Bay adapted to vessels

* Since the preceding sheet was printed, in which (page 46) Tenby Old Mill was described, we have learned that it has been pulled down, and therefore no longer serves as a piloting mark. Just across the road, however, there is a house which, though less conspicuous, nearly answers the same purpose, and which we shall henceforth call the Old Mill-house.

drawing more than 13 feet. This anchorage lies half a mile off the High Cliff of Caldý, between the Spaniel and High Cliff Spit: the ground is tough mud and sand, with 5 to 7 fathoms; and with the wind between S. W. and N. W. it affords very good shelter with but little strength of stream. The best marks for anchoring are the lighthouse and obelisk of Caldý in one; Tenby Church N. $\frac{1}{4}$ W.; or the Old Mill-house half a point open to the E. of the church; and should the wind shift to the E., and blow hard, ships will find a good passage to the W. through Caldý Sound, with not less than 24 feet over the High Cliff Spit at half-tide; or by casting to the southward they may run out between Caldý and the Spaniel. To sail in by night round the Spaniel, bring Caldý Light to bear W. N. W., but not more westerly, and hauling to the northward as soon as you have 10 fathoms coarse sand, anchor about half a mile from Small Ord Point, with Caldý Light bearing S. W. by W.

Men-of-War Road.

To anchor by night.

68. The broad sandy beach, which has been described (§ 63) as crossing Priory Bay, projects from High Cliff three-quarters of a mile under water towards Tenby, and is called High Cliff Spit. At a third of a mile from Caldý Island it dwindles in breadth to little more than a cable, and its extreme point carries 14 feet; but half-way towards the shore there is a spot with only 9 feet, having, however, $3\frac{1}{2}$ fathoms as soon as Small Sound is awash, and nearly 4 fathoms when the Woolhouses are covered. The marks for its end are, the pitch of Lidstip Point in one with Giltar Head, and the Old Mill-house half way between the Church and Tenby Old Castle; Old Castle Head in one with Giltar Head clears it to the N.; Caldý Light just on with the east end of High Cliff (S. W. $\frac{1}{4}$ S.) leads clear to the E. of it, and Caldý spire just opening from the West end of High Cliff clears the point of the Spit to the W.

High Cliff Spit.

Two patches of rocky ground, called the Ridges, lie off Eel Point, and extend towards Tenby Church a third of a mile, but they are not more than a cable in breadth. The North Patch has 12 feet water, and the South Ridge 9 feet, with 5 fathoms between and all round. There are $3\frac{1}{4}$ fathoms over them when the tide first makes through Small Sound, and 4 fathoms when the Woolhouses are covered. The marks for the North Ridge are, the Lighthouse its own breadth open E. of Caldý spire; Penally Church, its breadth open of Giltar Cliffs; and St. Govens Head, a little open

Ridges.

*Ridges off
Caldy Island.*

of Margaret Isle. St. Govens Head midway between Margaret Isle and Giltar Head, or the sand-hills at the eastern end of Lidstip Bay in one with Proud Giltar lead to the northward of them, and the white magazine on Caldy open a little to the eastward of the Lighthouse clears them to eastward. A dangerous cross sea breaks upon these Ridges with a weather-going tide, which the pilots call the Fiddlers.

Caldy Road.

69. Caldy Road is the space between the Ridges and High Cliff Spit, and is the safest anchorage for vessels not drawing more than 12 feet: the marks given for clearing those shoals will serve to conduct vessels into the road. It is exposed to rather a strong tide, but it is sheltered from all winds, except between N. E. and S. E., and then vessels can easily run out through Caldy Sound. The depth of water ranges between $2\frac{1}{2}$ and $3\frac{1}{2}$ fathoms, with good holding-ground; but as there are a few patches of oyster-ground, hemp cables are liable to be chafed. The best bearing of Caldy Light to anchor upon at night is S. by W. $\frac{1}{4}$ W., and half a mile from High Cliff, in 3 fathoms coarse sand and shells. Vessels approaching this anchorage at night from the south-eastward may pass between the shoalest part of High Cliff Spit and the cliffs very safely, by running along with the light just topping over High Cliff: they should drop the anchor the moment the light opens clear to the westward of the cliff. The day-marks for taking up a good anchorage are, the Lighthouse wholly open of the west end of High Cliff, and the Spur of Small Ord Point just open of the east end of High Cliff: St. Govens Head will then be touching Margaret Isle.

Giltar Spit.

70. Giltar Spit is a bank of sand and patches of stones, or mussel-scare, projecting from Giltar Head due east three-quarters of a mile: it dries a quarter of a mile off, and there are 5 or 6 feet water on the rest of it, with $2\frac{1}{4}$ fathoms close to, on its Caldy side. It is about 2 cables wide, and Caldy Lighthouse touching the west end of High Cliff marks its extreme.

White Bank.

The White Bank is a continuation of the Giltar Spit, and projects in the same direction of east to the distance of $1\frac{1}{2}$ miles from Giltar Head. Its northern edge is nearly parallel to that of Tenby south sands, but the Bank widens towards its termination, the marks for which are Tenby Old Mill-house on with St. Catharine Castle, and Caldy Lighthouse just over the east end of High Cliff, which marks, ever so little open, will clear it. The Bank consists of fine sand, with 9 feet everywhere, except on two small knolls

which lie nearly in a line with Water-winch Cove and the Skear *White Bank*. Rock. There are $2\frac{1}{4}$ fathoms close to all round it; but there are some foul patches of oyster-ground on either side. A cross sea breaks over it on the flood with a S. E. breeze, and on the ebb with a north-wester; but there are $3\frac{1}{2}$ fathoms over it when the Woolhouses, or St. Catherines Causeway, are covered.

71. The Woolhouses are a small cluster of rocks, which uncover *Woolhouses Rocks*. a little before half tide, and when awash denote 12 feet rise of water over all the neighbouring shoals, as well as 3 feet water in Tenby Pier. They extend a cable in length, and are half a cable wide, and, from their position, are exceedingly dangerous even by day, unless the marks can be seen. Caldý Lighthouse and Obelisk in one, with Giltar and Lidstip Points in one, and Precelly Mountain (when visible) over the Monk Stone meet in their centre; from whence also High Cliff bears S. W. by W. $\frac{1}{4}$ W. $1\frac{1}{4}$ miles, and St. Catharine Castle N. N. W. $\frac{3}{4}$ W. $1\frac{1}{4}$ miles. As there are 4 fathoms (fine white sand) close round them, the adjacent soundings give no warning to an approaching vessel. They must therefore be cautiously avoided, by the sailing marks, while covered, but as long as they remain so, none of the other banks or rocks require any attention.

A red buoy has been placed in $3\frac{1}{2}$ fathoms about half a cable *Buoy on the Woolhouses*. S. E. from the centre of the group; but it is the intention of the Trinity House to erect a beacon on one of the rocks, if practicable.

To sail to the southward of the Woolhouses, open Caldý Light- *Clearing marks for the Woolhouses by day,* house a little to the southward of the white obelisk or beacon on the island; and a little open to the northward of it will equally clear them to the northward. To sail to the westward, bring Gumfreston farm-house on with, or rather open of, the cliff under Tenby new Windmill; and Tenby Church and St. Catherine Castle in one will clear them to the eastward. If standing through Caldý Sound after half-tide, and bound to Tenby Pier or Road, with a N. E. wind, you may borrow close to their S. side by keeping St. Govens Head barely open of Margaret Isle. To avoid the Woolhouses by night, if passing to the S., Caldý Light *and by night.* must not be brought more S. than S. W. by W., nor to the W. of S. W. if passing to the N. If standing in from the S. E. for Tenby Road before the gas-lights of the town are extinguished, they must not be shut in with the old Castle of Tenby; but, as they are seldom shown after midnight, and not at all in summer,

the only guide for passing eastward or westward of these rocks is to keep full 2 miles distant from Caldy Island, or else within a mile or less of it.

Yowan.

72. The Yowan is a patch of foul ground lying E. $\frac{1}{2}$ S. a mile from the Woolhouses; the sea breaks very heavily on it, although not shoaler than the surrounding ground, there being $4\frac{1}{2}$ fathoms on it and all round. The marks for it are, the pier-head just on with Tenby Point, and the obelisk on Caldy midway between the lighthouse and spire; Lidstip Point will then be just covered by Giltar Head. It is about 2 cables across, and the breaking sea on it is all that need be avoided.

Tenby Road.

73. Tenby Road is a good anchorage for vessels drawing not more than 12 feet, but only with the wind from S. W. westerly to N. E.; the ground is clean sand over tough mud, and the depth from $2\frac{1}{2}$ to 3 fathoms. The marks for a good berth are, Tenby Church in one with the yellow baths on the inner end of the pier, and Caldy Magazine just open of St. Catherine Isle, or Giltar Head between St. Catherine and Tenby Point. The water to the eastward of these limits is shallower, particularly off Waterwinch and the Monkstone, where it reaches a mile off shore, and extends a considerable way towards the Woolhouses. To take up a berth at night in Tenby Road, bring the town lights to bear west, and anchor just before Caldy Light disappears behind St. Catherine. With south-easterly gales a great sea sets in to this road, breaking a mile out; but should a vessel prefer the pier to running for Caldy Road on a change of wind, there will be water in, on the springs, before the sea rises much.

Tenby Pier.

74. Tenby Pier consists of a single arm of natural rock and rude masonry extending a cable's length from the Old Castle-hill in a N. W. by N. direction, having on its inner end a neat yellow pile of buildings called the Baths, and, within 50 yards of its outer end, a white chapel, which is but a small building, and only to be distinguished by a flagstaff on its western gable. The wharf on the town side of the harbour is faced with stone, some storehouses are built there, and there is a reservoir of back water, with sluice-gates to scour away the mud. There is also a narrow breakwater stretching from the outer end of the sluice-wall half way towards the pier-head, intended to check the run or undertow occasioned by S. W. gales. The ground is hard but smooth, and very steep towards the Old Castle-hill, so that vessels moor head and stern,

with their heads towards the Castle. Just within the pier-head *Tenby Pier*. there are 16 feet at high water on ordinary springs, and 8 feet on neaps; and alongside the discharging-slip there are on those tides 14 feet and 6 feet. To sail in to the pier, give the Castle Point a berth of 2 cables' lengths, and haul as close as possible round the pier-head, not fearing to carry canvas close to, on account of the eddy winds.

75. Caldý Sound, which is half a mile wide between Margaret *Caldý Sound*. Isle and Giltar Head, with 7 fathoms close to either shore, may be said to extend easterly as far as a line drawn from High Cliff to the Monkstone. Immediately within Giltar the Sound shoals from 7 to 4 fathoms; between Giltar Spit and the Ridge it is rather less than a quarter of a mile wide at low water; and between the Whitebank and High Cliff Spit it is more than half a mile; but at half-flood there are 24 feet over all, except on Giltar Spit, and that will be avoided by keeping Lidstip Point in sight until Caldý Lighthouse comes in one with High Cliff, when, if bound to Tenby, you may haul up for St. Catherine, giving the toes of the Skear Rock a berth of a cable's length. There might be cases in which it would be useful for a vessel to know that at low water there are 2 fathoms between the Skear and St. Catherine, and that the S. E. point of that island is quite bold; for there is a strong eddy *Eddy Tide inside the Skear*. which sets through that very narrow channel to the S. W. from the first quarter flood to the last quarter ebb.

Vessels working to the eastward towards Caldý Sound about *Sound Rock*. low water should beware of the Sound Rock, on which the sea breaks in a S. W. gale. It is a single sharp head, carrying only 15 feet, with 6 fathoms all round. It lies nearly half way between Lidstip Point and Margaret Isle, which bears from it S. E. Its marks are, Carew Beacon on with the east end of Lidstip Bay, High Cliff of Caldý just closed with the north side of Margaret, and Stackpole Head touching the shelving rocks of Old Castle Head. There are, however, $4\frac{1}{2}$ fathoms over it at half-tide.

A cable's length W.N.W. from the Sound Rock there is a patch *Lidstip Ledge*. of foul ground called Lidstip Ledge, having 18 feet water, with 5 fathoms all round. Stackpole Head well open of Old Castle Point will clear both this and the Sound Rock, on the south side, in 7 fathoms; Old Castle Head just open clear of Lidstip Point will lead a cable's length to the northward, or within them, in 6 fathoms; Lidstip House barely open of Lidstip Point will clear

them on the west side, at 2 cables, in 7 fathoms; and Red Ord Point on with the west end of Margaret Isle will clear them on the east side, at 3 cables' distance, in 7 fathoms.

*Passage
through Caldy
Sound.*

To sail through Caldy Sound from the westward, at low water, the best passage is between the Sound Rock and Margaret Isle. Keep Giltar Head about half a point open of Margaret Isle, which may be passed safely at 2 cables' distance, and when Old Castle Head comes nearly on with Lidstip Point steer due E., passing Giltar at 2 cables' distance. Or, if the weather be clear, keep St. Govens Head midway between Old Castle Head and Margaret Isle, and it will lead, in a 4 fathoms channel, up to the marks for clearing the Woolhouses, or for hauling round either the Whitebank or High Cliff Spit. It is to be observed that Caldy Light is of no use in this channel until vessels are as far eastward as Giltar, it being masked from them to the westward. It first becomes available (after passing that head) for the purpose of hauling up for Caldy Road clear of the Ridge, which may be done as soon as it bears south.

Tides.

76. It is high water on full and change days of the moon, about Tenby and Caldy, at 6 o'clock. Equinoctial tides rise 30 feet, ordinary springs 27, and neaps 13 feet. South-westerly winds tend to raise and advance the tides, and north-easterly winds to retard and diminish them.

The stream of flood begins to set to the eastward through Caldy Sound at 4 hours ebb, the springs running 4 knots and the neaps 2½. The stream of ebb in like manner begins to run to the westward at 4 hours flood; but close in with the main, between Giltar and Monkstone, the stream of flood makes to the N. E. an hour before low water, and so continues for 2 hours, when it turns and sets S. W. along the shore from Monkstone to Giltar, where it meets and joins the Sound tide; so that out of every 12 hours there are 10 of western tide and eddy between these points.

We resume the description of the coast to the E. of Caldy Island.

*Monkstone
Point.*

77. The land about Monkstone Point is high, the coast-line forming a gentle curve of sloping rocky cliffs, and the low-water edge of rocks and sand extending beyond the little rocky points about a cable's length.

*Saundersfoot
Bay.*

Saundersfoot Bay commences here, and gradually sweeps round

to the eastward with a low, flat beach of shingle, stones, and sand, which uncover a quarter of a mile out. There are a few white houses close to the beach, and, half a mile in shore, the little, dark-towered church of St. Issel, with a white, conical top, shows *St. Issel.* itself out of a thickly-wooded background. Farther east, among some trees, stands a yellow, modern-built house called Hen Castle, *Hen Castle.* where the coast under it consists of moderately high rocky cliffs, to which succeeds a low shore of shingle, with a modern, freestone-coloured mansion called Amroth Castle at its eastern end; and half *Amroth Castle.* a mile inland the church of Amroth, showing its square steeple.

At the foot of Amroth Castle the stream which divides the counties of Pembroke and Caermarthen reaches the sea, and on the eastern side of the stream the dark cliffs of Turnpen Point *Turnpen Point.* rise into high and uneven ground. Some flat rocks extend from this point; and the low water-line between it and Saundersfoot Bay is fine dark sand interspersed with rocky patches and beds of rotten soil, which contain bog-wood. The beach is a quarter of a mile in breadth.

From Turnpen Point the coast, which runs easterly 2 miles to Ragwen Point, is low, and bounded by unusually large rolling stones for the space of a mile, but slopes up to the high, undulating land of Marcroes, where there was a trigonometrical sta- *Marcroes Hill.* tion, a quarter of a mile from the sea and 430 feet above it. Marcroes Church, with its dark square steeple, lies half a mile farther in, but it can only be seen through an occasional valley.

78. Ragwen Point, which is shelving and rocky, and slopes *Ragwen Point.* gradually from a high background, immediately follows the shingly coast of Marcroes, and bears from the Monkstone E. $\frac{1}{2}$ N. $4\frac{1}{2}$ miles. The low water beach up to this point is of the same description and extent as about Turnpen, the water gradually shoaling up to it from 2 fathoms at half a mile off; though to the eastward of Ragwen the 2 fathoms line stretches out towards the Burry Holms. The high water rocky line of the coast falls back from Ragwen Point to Gilman and Talwen Points, which lie *Gilman and Talwen Points.* at the feet of the Pendine heights; but there it loses its rocky character, and suddenly turns to the eastward along a range of sand-hills for 5 miles to Ginst Point. These sand-hills are divided by a stream into two parts, the western one being called Great Hill Burrows, and the eastern part Laugharne Burrows; *Laugharne Burrows.* and within these sand-hills there is an extensive marsh, from

which rises the limestone crag called Coygen, and the partially-wooded high land, which is terminated to the eastward by a conspicuous dark house, on Sir Johns Hill, from whence it falls abruptly to the northward to the town of Laugharne.

*Laugharne or
Caermarthen
Inlet.*

*Laugharne
Sands, and
Ginst Channel.*

Llan Ishmael.

Towy River.

Warlo Bluff.

The Plas.

The Paddock.

*St. Thomas
Church.
Ferryside.*

*Llansaint
Church.*

*Kidwelly
Church.
Gwendraeth
Stream.*

79. Ginst Point is the eastern extremity of the sand-hills, and, although low, makes out very well, owing to its light appearance on a dark background. The dry sands which extend off between this point and Ragwen are called Laugharne Sands, along the low water-edge of which, a mile off, runs the Old or Ginst Channel of the Towy River. Ginst Point, with Warlo Bluff, which bears from it E. by N. $1\frac{1}{4}$ miles, form the entrance to Laugharne Inlet or the river Taf, which, though wide, is so choked by high beds of mud and sand that small craft only can navigate it. S. E. $\frac{1}{4}$ S. $1\frac{1}{2}$ miles from Warlo Bluff is Llan Ishmael Church, a small white building without a steeple, having a white glebe-house near it, and standing close to the rocky cliffs, with high ground rising immediately behind it. These two form the mouth of the Towy or Caermarthen River, a space so crowded with shallows of sand as scarcely to give the river vent at low water. The first contraction of the shores within the above line is between the ruins of Llanstephan Castle and the Paddock: the former are upon the western shore, about half a mile from Warlo Bluff, and stand on the summit of an underwooded brow skirted by shallow, rocky cliffs, from which, at low water, extend beds of rock, sand, and mussel-scare. Directly round the Castle is a village of the same name, and near a very well-wooded park is a large yellow mansion called the Plas. Immediately opposite this is the Paddock, a high spit of shingle, which affords a good landing-place for the ferry-boats. A little above the Paddock is the small modern-built church of St. Thomas, with a neat, light-coloured tower; and the village of Ishmaelston, or Ferryside, which stretches along the cliff to the S. W. From Llan Ishmael a range of heights rise, and extend in a S. E. by E. direction $2\frac{1}{2}$ miles, upon which, about midway, is Llansaint Church, a dark, square-towered building, with a few white houses. The high water shore skirting these heights rounds gradually to the S. E., with low sand-hills in front as far as the town of Kidwelly, where there is a church with a conspicuous spire, though standing very low. A small stream, called the Gwendraeth Fach, passes the bridge, and a mile and a quarter below the town unites with the

Gwendraeth Fawr, and then, crossing the Cefn-Sidan Bank, falls into the bay, near the mouth of the Towy, at the Kidwelly Guy. But their winding tracks are seen only at low water, as the flood covers all these extensive sands, and neither of them are more than half a cable wide or 3 feet deep; so that nothing larger than a coal-barge can attempt to trade with Kidwelly, though 20 years ago ships of 800 tons were in the habit of discharging at Kidwelly Quays.

*Laugharne or
Caermarthen
Inlet.*

Kidwelly.

80. The low-water course of the Towy passes a third of a mile west of Llan Ishmael Church, then sweeps along the hard steep edge of the Cefn-Sidan sands, which dry abruptly 18 feet above the bed of the river, and falls into the bay $3\frac{1}{2}$ miles from the church. All without the church is called the Towy Channel, which increases in breadth from a cable and a half to a quarter of a mile as it approaches the bar. It is bounded on the north by the Middle Spit and Middle Patch, and on the opposite side by the Cefn-Sidan sands. From the mouth of the Towy the low-water line of these sands stretches away S. S. E. for 6 miles to the north Bar of the Burry navigation, passing the Kidwelly Guy, a narrow tide-channel through the sands, and the Old Guy, a blind channel, with only 3 feet at its entrance.

*Channel of the
River Towy.*

*Cefn-Sidan
Sands.*

Pen Towyn is a conspicuous point, forming the N. extreme of the sand-hills of Pembrey Burrows: it bears from Llan Ishmael Church S. $\frac{1}{4}$ W. 2 miles, and forms the southern arm of the Kidwelly estuary. These sand-hills or burrows continue to the point called the Nose, which is marked by a large barrel-post, and which forms the north point of the Burry Inlet.

*Pen Towyn
Point.*

81. Caermarthen Bar consists of a flat shelf of sand, having but 3 feet water, with several patches which dry a foot high: it is a mile broad, and sweeping from the Middle Patch to the Cefn-Sidan sands, is about 3 miles in length. The approach to it shoals gradually from 5 fathoms at a mile off. The Middle Patch extends E. by S. 3 miles, and dries 3 feet out of the water, its north side forming, with Laugharne sands, the Ginst Channel.

*Caermarthen
Bar.*

In fine weather the bar may be crossed at half-flood by coasters; there will then be 12 feet over it, and 10 feet on the Middle Patch: but a terrific sea breaks over both, even in light westerly winds.

The usual channel for entering the Towy is buoyed. The outer Back Buoy, No. 1, is placed just outside the bar in 2 fathoms at

*To enter the
Towy Channel.*

*Lougharne
Inlet; Towry
Channel.*

low water: it bears from Caldy Lighthouse east 9 miles, from Worms Head N. $\frac{1}{2}$ W. $9\frac{1}{2}$ miles, and S. W. by W. $\frac{3}{4}$ W. 5 miles from Llanstephan Castle, which will appear just open of Warlo Bluff. On this line, therefore, a vessel coming from the southward should run in order to pick up the Buoy, and St. Govens Head touching Margaret Isle will lead to it from the westward. These marks, it is true, depend on distant objects; but as the bar should not be attempted except in clear weather, they will answer the purpose; and some marks are very necessary, for, large as the buoy is, it is so far off shore as not to be easily discovered.

Five Buoys

82. There are 5 can-buoys in this channel: they are all black, with their numbers in large white figures. On the outer one, abovementioned, there is painted "No. 1 Buoy, Caermarthen Bar;" and as No. 3 is placed where the bar suddenly contracts into a narrow channel, it is distinguished by an iron perch. Nos. 1, 2, and 3, are in a line E. N. E., each a mile apart; Nos. 3, 4, and 5, are also nearly in a line E., three-quarters of a mile apart. No. 1 lies in 2 fathoms at low water; No. 2 grounds; No. 3 lies in $1\frac{1}{2}$ fathoms; No. 4 in $1\frac{1}{2}$ fathoms; and No. 5 in 1 fathom. The course in is from the Bar Buoy No. 1 to No. 2, although the latter lies on the shoalest part of the channel; but the skilful pilot can find 3 feet more water by crossing the Bar from the southward, keeping the outer extreme of the Burry-Holm in one with the High Barrow of Rhosily, S. by E. $\frac{1}{4}$ E. This leads in between the buoys Nos. 2 and 3; and when Nos. 1 and 2 come into a line astern, the course is at once to be altered for No. 3. This operation saves the time required by the tide to rise 3 feet; but it can only be done with the wind well to the southward. No. 3 is to be passed close on its north side, and then kept in one with No. 2, till No. 4 is in one with Kidwelly Church: steer then for No. 4, which may be passed close on either side, and having brought No. 5 on with Llansaint Church, pass it close to the northward, and keep the vessel hauling gradually to the northward till Llan Ishmael Church is right ahead. Steer for that church till the church of St. Thomas is just disappearing behind Llan Ishmael cliff; and then haul up for Llanstephan Castle till Penthrathroe House (a yellow building on the heights of the north shore) appears directly in one with the walled Ferry Point on the same shore. Keep on this line, which will

lead over the deepest part of the Itchey sand, as well as clear of the rocky beds lying on both shores abreast of Llanstephan Castle. *Laugharne Inlet; Towy Channel.* As soon as the large yellow mansion called the Plas (§ 79) opens to the north of the castle, steer direct for the shore; and immediately that Ginst Point disappears, bring up with a bower-anchor, *Anchorage.* and steady the vessel with a kedge: here she will soon ground on a clean, even, mud bottom, called Llanstephan Flats. *Llanstephan Flats.* This is the only berth that can be taken without the aid of a pilot, and so far a man may safely venture with a flowing tide, provided the buoys are in their places, and that he has some previous knowledge of the objects; but unless it be to avoid greater danger, no stranger should attempt it: for unusual nerve and a quick command of helm is requisite to take a vessel 4 miles through an invisible channel, not more than 3 cables wide, with a tide running 4 and 5 knots, and a breaking sea on each side threatening destruction. Should, however, a vessel be drifted into this part of the bay on a winter's evening, with such a westerly gale that greater risk would be incurred by endeavouring to claw off after dark, then must the enterprising seaman make the effort: but if possible, let him wait till it be at high water; when, disregarding the buoys, and bringing Caldy Lighthouse on the bearing of W. $\frac{1}{2}$ S., he will find Llan Ishmael Church and its white parsonage-house bearing E. $\frac{3}{4}$ N. Sure of these objects, and knowing that his compasses are correct, he may boldly bear up, and steering for the church, he will not fail in carrying his vessel, if not more than 15 feet draft, safely over the northern sands into the fair course of the Towy, until the marks come on for running towards Llanstephan Flats, as before directed. *Running over all at high water.*

There is no floating anchorage within the bar, nor any place to ground on so clean as Llanstephan Flats, except the little pools *Anchoring Pools.* farther up towards Caermarthen town: they, however, are not only very confined, but exceedingly difficult to pitch upon and moor in with a strong tide, although the river-pilots can manage to do so when tiding vessels up to the quays, a distance of 8 miles beyond the above flats.

83. It is high water on full and change days on the Bar, at Tides. 6h. 10m.; equinoctial tides rise 29 feet; ordinary springs 26 feet; and neaps 13 feet: there is, therefore, at high-water ordinary springs, 25 feet over the shoalest spots of the bar, and 20 feet at the neaps.

Tides.

It is high water at the Paddock 5 minutes later than at the Bar; the equinoctial springs rise 24 feet; ordinary springs 21 feet; and neaps 10 feet. It should be noticed that, although the flood sets fairly up the Towy Channel, the ebb sets directly across the Cefn-Sidan until it is quite uncovered. Should a vessel in light winds meet the stream of ebb when going in, she may drop anchor in a good stopping-place of 12 feet, just below No. 4 buoy; and if coming down she should have an anchor always ready in case of the wind failing, so as to prevent touching on the destructive Cefn-Sidan, where even in a calm a great sea breaks.

THE BURRY INLET.

*Cefn-Sidan,
Cefn-Hooper,
and Cornel
Mawr Sand.*

84. The Cefn-Sidan sands, and then the flat sandy shelf called the Cefn-Hooper, along with the Cornel Mawr, intervene between the mouth of the river Towy and the Burry Inlet; the low water edge of all these sands is very flat, there being only 2 fathoms a mile outside, and the breadth of the dry sand is in the narrowest part one mile out from the Pembrey Burrows.

Pembrey Nose.

It has been already stated that the Nose, or southern point of those Burrows is distinguished by a large barrel-post. From thence the north shore of the Burry, consisting of sand-hills, trends E. S. E. $2\frac{1}{2}$ miles to a low point called Towyn Back, where they terminate; and E. $\frac{1}{2}$ N. $1\frac{1}{4}$ miles from the Nose stands Pembrey Church, with a dark square tower, the parapet wall of which, being white, distinguishes it from all other churches on these shores. A few white houses may be seen near it on the same low ground, from which some well-wooded hills immediately rise, with the Court-house on their slope a quarter of a mile north of the church; and a third of a mile E. $\frac{1}{2}$ S. from it stands Pembrey House, a freestone-coloured building with wings. To the S. E. of this house will be seen the two furnaces of an extensive iron foundry, about 60 feet apart, facing the west, and about 75 feet above high-water level. They bear from Caldy Light-house, E. by S. 16 miles; from Burry Holms, N. E. $\frac{1}{2}$ E. 5 miles; and from Pembrey Pier Light, N. E. $\frac{1}{2}$ N. nearly a mile; and when they happen to be at work are very useful beacons. If kept open of the bluff behind Pembrey Church, or not brought more to the southward than S. E. by E. $\frac{1}{2}$ E., they will keep a vessel to the southward of the flats of Caermarthen Bar; and when they are just open to the westward of the Burry Holms, or bearing N. E.

Pembrey.

*Furnace
Lights.*

by E., the vessel will be clear to the westward of the Helwick Shoal.

85. The new Pier at Pembrey projects out from the high-water *Pembrey Pier.* line on hard sand in a south direction for about 800 feet, having on its head a small round white lighthouse, in which a light is exhibited while there are 10 feet water alongside the quay; and by day, a red flag with a white ball is hoisted for the same purpose. The lantern of this tide-lighthouse is 35 feet above high water, and exhibits a Blue light to the westward, and a Red light towards Llanelly; and, excepting the furnaces, there is no light near it for which it can be mistaken. From the pier-head, a breakwater with several posts on it runs off in the same direction as the pier 700 feet, where it forms an elbow, and from thence slopes off westerly to nothing. The elbow has a barrel-post on it to indicate its position when covered. There are well-sheltered loading-stages along the eastern face of the pier, which, by means of an excavation, extends a cable's length within the high-water mark of sand-hills, where it is crossed by a bridge and reservoir wall with sluice-gates; and on the eastern side, a ballast-bank and jetty of slags sweeps round so as to afford room and shelter within the pier-head for 30 colliers. The ground is hard, but pretty smooth and even, and it generally dries from 4 hours ebb to 2 hours flood.

The average rise of water within the lighthouse is 21 feet on *Pembrey* springs, and 13 on neaps; it is high water on full and change *Tides.* days about 6h. 5m., and the tide reaches the 10 feet level in the pier, which is 18 feet rise above low-water level, about 4 hours flood. This pier is well provided with warping-buoys; and a convenient pool of 3 fathoms affords a good temporary anchorage *Anchorage.* half a mile to the S. E. of the pier-head. To the westward there is a much more extensive pool, with 3 and 4 fathoms at low water, and sheltered by both the Hooper Sands and the Cornel Mawr.

Large quantities of coal are shipped here; but the iron-trade has for some time declined.

From the sand-hills of Towyn-back the high-water shore falls back into a bay which is entirely filled at low water by the Cefn-Patrick sand. At the bottom of this bay stands Pwll Quay, a *Pwll Quay.* stone jetty with a pile of engine-houses on its inner end; and N. W. a mile from thence, and a cable's length from the shore, a neat yellow house called New Lodge will be seen: it has a

Pwll Quay. grove of trees close to its N. W. side, and will be hereafter mentioned as a leading mark. The high-water shore from Pwll Quay towards Llanelly is edged with shingle, and is low and flat for the breadth of half a mile, when it rises into some wooded heights, in front of which there is a light-coloured mansion called Strady.

Llanelly, 86. Llanelly Church is a square-towered stone building in the centre of the town, and surrounded by stacks of engine-house-chimneys and smoke. It stands low, and is backed at the distance of half a mile by high land. It is half a mile from the lower Docks, and three-quarters of a mile from the upper Docks and the Custom House for the county and creeks of Caermarthen.

Piers, The western Pier of the port of Llanelly is nearly half a mile
and long, and projects in a S. W. direction; 800 feet of its inner end being of masonry, and containing the Railway Dock and a series of loading-stages, alongside of which there are 14 feet water at ordinary springs, and 8 feet at the neaps: the ground is hard, but smooth. The outer part of the pier is composed of copper slag, with mooring-rings inserted along the eastern face; and from its outer termination a ballast-bank, trending a little more southerly, has been judiciously deposited, so as to form a breakwater for 2 cables' lengths farther out, and having on its extreme point a conspicuous barrel-post, which bears from the Pembrey post S. E. $\frac{3}{4}$ E. 3 miles, and from Whiteford barrel-post E. S. E. $\frac{3}{4}$ E. $3\frac{1}{4}$ miles. This breakwater affords excellent shelter to a fine flat of mud mixed with sand, on which vessels may take the ground without any risk from the swell, and over which there are 21 feet water in ordinary springs, and 12 at the neaps; but it is uncovered between 4 hours ebb and 2 hours flood. A reservoir of back-water helps to scour the channel. To the eastward of the above dock there is another jetty of slag, extending about 900 feet to the westward, also provided with loading-stages, and possessing an equal capacity of water. These are called Pemberton Docks; and about a quarter of a mile farther, immediately under the Copper House chimney, which is 180 feet high, are the Copper House Docks, with their loading and discharging stages, and a breakwater of slag projecting to the westward. These works contain a basin with gates, capable of floating a dozen vessels in 12 feet water; and when it is improper to open the gates, a white flag is hoisted by day, and a lantern shown by night: in which case vessels must bring up on the Flat. They are almost exclu-

sively frequented by vessels employed in the copper ore trade, *Llanelly*. while the two other docks are chiefly connected with the neighbouring collieries, and by their united means about 200 sail of vessels may be berthed in the port of Llanelly in safety.

It is high water there on full and change days at 6h 15m.

From the low bight of Llanelly the shore suddenly rises into a round clifly hill, on which stands Machynys white house, with a conspicuous double roof; and the bed of the river passes close to the foot of the cliffs. The face of this, Machynys Hill, is not a mile in length to the low shingle point called Penrhyn-gwn; and from thence the shore turns sharp round to the eastward.

87. The entrance to the Burry Inlet is formed on the south side by a small green island, called Burry Holms, with a few ruins on its inner end. It boldly faces the westward with steep rocky cliffs, but slopes down on the eastern side to a sandy and rocky spit of 50 fathoms long, which at half-tide connects it to Limekiln Point on the main. It is not more than a cable and a half in length, or a cable in breadth, but its height is about 90 feet. The main beach of sand dries out to its western point, but the shelving rocks of that point the sea never leaves.

From Limekiln Point a series of irregular cliffs extend three quarters of a mile to the eastward, and are then succeeded by a low and gentle sweep of sand-hills, forming Broughton Bay, which is half a mile round, with a fine freshwater stream, down its centre, and bounded by some limestone cliffs, called Spritsail Tor, with a flagstaff on their summit. Here the low water hard sand dries a quarter of a mile off; and the Whiteford Burrows, a long range of sand-hills, project to the N.E., and terminating at Whiteford Point, form, with Penbrey Pier (which bears from it N.N.E., 2 miles), the first contraction of this great inlet. Two extensive beds of loose stones and muscle scare lie upon the Whiteford Sands (which dry out three quarters of a mile from Whiteford Burrows); and a stout Barrel post has been placed on their northern extreme, at the distance of a long mile S.W. by S. from Pembrey Lighthouse.

On the eastern side of Whiteford Burrows there is a small insulated patch, called Berge Isle, with an extensive bed of stones, on the eastern edge of which there is another Barrel-post two-thirds of a mile from Whiteford Point; and all that side of the Burrows is skirted with a mixture of mud and sand, which affords

some snug flats for the stone-lighters. At the inner part of the Burrows, and a third of a mile from Spritsail Tor, the green peak, Cwm Ivy Tor, rises abruptly 100 feet, and behind it, Llanmadoc Hill. This hill is distinguished by its smooth uniform profile, having two cairns two-thirds of a mile apart, and each 595 feet above the sea, with a gentle saddle between them. Llanmadoc Church is white, and it is only distinguished by its belfry from the adjacent white cottages. A mile S. E. by E. of Cwm Ivy Tor is North-hill Tor, a brown limestone craig, about 100 feet high, which rises from a bight of mud and rotten sward. Through this mud a small pill, or stream, called the Burry, finds its way to the Whiteford Creek, and insignificant as it is, gives its name to the waters of this extensive inlet from the sea to Llanelly.

Llanmadoc.

Burry Stream.

Llanrhidian Sands.

From North-hill Tor to the eastward, as far as Salthouse Point, the shore breaks down into a low swampy flat, called Llanrhidian Marsh, in front of which the Middle Ridge and Llanrhidian Sands, extend upwards of two miles to the main channel of the river. These sands are all dry at low water, and are intersected by various pills, or streams, which ooze from the land, and give names to the several banks.

Salthouse Point.

88. Salthouse Point is low, with a tongue of loose stones, or scare, which has a Barrel post on its extreme. The point bears S. $\frac{1}{2}$ W. one mile from Penrhyn-gwn Point, and forming with it the second contraction of the high water shores, may be called the mouth of Loughor, or Llŵchwr River. There is a Ford from this point to Penrhyn-gwin, but only during the springs; it remains open an hour on each side of low water.

Capel Chapel.

Within Salthouse Point, two-thirds of a mile, and half way up the western brow of the hill, there is a conspicuous white chapel, called Capel, hereafter referred to as a leading mark; and a mile further up stands the little village, Penclawd, not far to the eastward of which there are the remains of some smelting works, and a ruined jetty, from whence the ordinary high water mark sweeps round the steep edge of the sward to Sluice Pill Jetty, and then towards Loughor Point. But in high tides much of the ground in this interval is covered, and therefore several perches have been placed along the south edge of the channel, as well as Barrel-posts on both points of Cobs Pill. In this interval will be found the entrance of a former canal, and at Sluice Pill a railway communicating with Adair Colliery, from a convenient jetty, to which

Penclawd.

Cobs Pill.

vessels of 17 feet draft can come at the springs. About half a mile below this Pill there is a small pool, which retains 12 feet at low water, abreast of Morfa-torcedi.

Loughor Point, or the N.E. point of Cobs Pill, is directly opposite Spitty Point, and here the high water shores contract to the sixth part of a mile, with a ford between them, which is passable for two hours before and after low water. The Barrel-post, above mentioned, points out a spit of coarse shingle, which projects from Loughor Point; and over the point there is a Bluff, on which stands the ruined tower, with a flagstaff, and a small white church, with only a belfry, of Castell Llŵchwr, or Castle Loughor, as it is now more commonly written and pronounced. *Loughor Point.* *Castell Llŵchwr or Castle Loughor.*

89. On the northern side of the river, from Machynys Bluff to Spitty Point, the land is low and marshy, with broad banks of sand and mud, which extend nearly over to the south shore, and render the low water channel very narrow.

The Spitty Quays are of masonry, and close to the high chimney of the Spitty copper works. They have stages, at which 3 or 4 vessels can load, but at spring tides there are but 13 feet water alongside, and 6 at the neaps, and the above-mentioned contraction of the river produces a great rush of the ebb. *Spitty Quays.*

Broad Oak Shipping Place, on the south side, is an excavated dyke, with an embankment, parallel to the shore, and, by scouring, it admits a sufficient depth of water for vessels to ship coal from the Loughor Collieries, which lie a little above the village. The depth of water is the same as at Spitty. *Broad Oak.*

At Pencoedisaf, a mile above Spitty, on the north shore, there is a bold jetty, fitted with a stage for loading coals, with a dam and sluice-gates, to deepen the approach. It has 13 feet water at the springs, and 6 feet at the neaps: and the tide flows 25 minutes later than on the bar, or 6h. 25m. *Pencoedisaf.*

Llangenych Shipping Places are half a mile further up, on the same shore, with similar means of loading colliers, but with a foot less water. The Llangenych coal, the useful properties of which are well known, is brought to these jetties by means of railroads, and, notwithstanding their remote situation from the bar, no detention or difficulty is experienced, as the company has provided a steam vessel to tow the colliers up and down, a fa- *Llangenych.*

cility which is extended to every vessel resorting to the Burry Inlet ports if required.

Sands and Banks.

90. Having thus briefly travelled round the shores of the Burry, we shall give some description of the sands and banks which interfere with its navigation before we proceed to the Sailing Directions.

Burry Bar.

A shelf of sand, from a mile outside the Burry Holms, stretches to the northward, and joins Caermarthen Bar. On the south end of this shelf, towards the Holms, there are 9 feet at

South Bar.

low water, ordinary springs, and this part is called the South Bar, and forms the principal opening into the Burry Inlet. This

Newcomes.

bar is a mile broad before the water deepens to 3 fathoms in Lynch Pool, which is the beginning and deepest part of the channel inside. The passage across the bar has been much incommoded by the growth of two patches of sand, called the Newcomes. They very nearly join the Holms spit, and, like it, have only 4 feet water on them. The north extreme of the Newcomes is a mile N.W. by W. from Burry Holms, and the marks for it are the highest copper works chimney at Llanelly, just shut in to the S. of Whiteford Point, and Rhossily Parsonage house, a little open to the S.W. of the southern and highest cairn on Rhossily Hill. The sea breaks heavily on these banks in bad weather. There are 21 feet water over the South Bar as soon as Worms Sound is covered, and 27 feet while the Pier flag at Pembrey is up. Over the Newcomes there are 17 and 22 feet at the same times. The soundings from the bay to the bar diminish gradually from 12 fathoms 3 miles off, and 9 fathoms 1 mile off, with dark sand.

Oyster Patch.

A spot of very foul oyster ground lies 2 miles W.N.W. of the Holms, with 4 or 5 fathoms on it; the marks for it being the western cairn on Llanmadoc Hill, directly over Burry Holms, and Llanelly high chimney on the extreme of Whiteford Point.

North Bar.

91. The North Bar, or that part of the shelf by which vessels approach the North Channel, in some places carries less than 6 feet water. From its outer 3 fathoms' edge to the first cast of 3 fathoms in Pembrey Pool, a vessel has to run $2\frac{1}{4}$ miles; and if she dare not borrow on the adjacent sands, she will have to thread the narrows of the North Channel, which, for the length of a mile, is not two cables wide. These sands are, the Cefn Hooper, and Cornel Mawr, on the north side; and on the south side the

North Channel.

Middle and South Hooper. The two latter banks, with two *Hooper Sands*. narrow ridges, which are almost continuous from their eastern ends, are the first within the bar that dry, and at low water are upwards of 4 feet high, though there are 10 feet over them when Burry Sound covers, and 15 feet as long as Pembrey flag is up. The mark for the outer or western edge of the Hooper Sands is Rhossily Church, in one with the outer extreme of Burry Holms. From the position of the Newcome and Hooper Sands, a stranger would be induced to conclude, from a western view, that no entrance existed, so blended are their breakers, but on advancing a little to the northward the channel is developed.

Immediately within the Hooper, and divided from it by a cross *Lynch Spit and Lynch Sand*. Swatch of 2 to 4 cables wide, with 6 feet water, are the dangerous banks, called the Lynch Sand, and the Lynch Spit. The outer point of the latter is a quick sand, and dries only a foot out of the water; but it continues scarcely covered to within three quarters of a mile of Burry Holms, and close to the edge of the pool. From that point they stretch to the N.E. for $2\frac{1}{2}$ miles towards Pembrey, but increasing in height and breadth, the inner end being nearly a mile across. The northern edge of Lynch Sand is very steep, and dries 8 feet out of the water; but there are 11 feet over it as soon as the flag is hoisted on Pembrey Pier, which is about three quarters of a mile E.N.E. of the N.E. extreme of Lynch Sand. A Swatch separates it from the Spit; and Worms Head in one with Limekiln Point, bounds their north-western sides, while the inner end of Burry Holms, just clear of the main, bounds their south-eastern sides.

92. The next sands which interfere with the channel to *Middle and Patrick Spits*. Llanelly are the Middle and Patrick Spits; the former stretching to the northward, dries 6 feet out of the water, but has 13 feet over it as soon as Pembrey Pier flag is hoisted. The Patrick Spit returns outward from Cefn Patrick, and, like it, is a quick-sand: it dries 7 feet out of the water, and has 12 feet over it, when the Pembrey Pier flag is hoisted.

93. Lynch Pool is a good anchorage, with light winds, in 3 *Lynch Pool*. fathoms, on close holding sand. It lies between the Lynch Spit and Whiteford Sands, and extends from Burry Holms to within half a mile of No. 2 buoy. A vessel may bring up any where in the stream of the buoys Nos. 1 and 2.

Pembrey Pool is also a good stopping-place, with a depth of $3\frac{1}{2}$ *Pembrey Pool*.

Pembrey Pool. fathoms. It extends from the second buoy of the North Channel to abreast of Pembrey Church, and lies between the Lynch Sand and Pembrey Scot. Vessels may bring up anywhere within those limits, on the leading marks through the North Channel. It is interrupted off Pembrey Pier by an inner bar, but the East Pool, where the North and South Channels unite, continues nearly a mile further to the eastward, with No. 4 buoy on its southern edge.

Inner Bar. The Inner Bar is a shelf of sand, which stretches across from Whiteford Barrel Post to Pembrey Pier, between the inner edge of the Lynch Sand and the Middle Spit. It has only 3 feet on some parts at low water, but at half-flood there are 16 feet water over it.

Buoys. 94. The North and South Channels, up to Pembrey, and the single channel from thence to Llanelly, and even as far as Salt-house Point, are buoyed with good-sized black can buoys, with their numbers on their heads, in large white figures; but the outer one of each channel are black nun buoys.

No. 1 nun buoy, of the South Channel, lies in 18 feet at low water, ordinary springs, a mile within the inner edge of the bar, and three-quarters of a mile E.N.E. of the Burry Holms.

No. 2 can buoy, lies in 16 feet, $1\frac{1}{2}$ miles E.N.E. of No. 1, between Whiteford and the Lynch Sands, a little above the Lynch Swatch, and a long mile W.S.W. of Whiteford Barrel Post.

No. 3 lies on the Inner Bar, in 3 feet, between the upper end of the Lynch Sand and the Middle Spit, and bears N. by E. $\frac{1}{2}$ E. half a mile from Whiteford Barrel Post.

No. 4 lies in 3 feet on the south edge of Pembrey Pool, and between the Middle Spit and Pembrey low water mark. It bears south half a mile from Pembrey Lighthouse.

No. 5 lies in 7 feet, between the upper part of Middle Spit and lower part of Patrick Spit, bearing east one mile from Whiteford Barrel Post.

No. 6 lies in 18 feet, at the south elbow of Patrick Spit, between it and Llanrhidian Sands, bearing from Llanelly Barrel Post W. $\frac{1}{2}$ N. $1\frac{3}{4}$ miles, and S.S.E., 2 miles from Pembrey Lighthouse.

No. 7 lies in 3 feet, between the upper part of Patrick Spit and the Middle Ridge, bearing west $1\frac{1}{4}$ miles from Llanelly Barrel Post.

No. 8 lies in 3 feet, between Cefn Patrick Sand and the Middle

Ridge. It bears from Llanelly Barrel Post W.N.W. $\frac{1}{2}$ W. three *Buoys*. quarters of a mile.

No. 9 lies in 3 feet, between Dafen and Penclawd Sands, and bears from Salthouse Point N.E. half a mile. This buoy, with the perch on Caregfach, shows the trend of the channel from Llanelly to Penclawd.

No. 1, in the North Channel, is a black nun buoy, lying in 13 feet on the inner edge of the bar, between the elbow of the Cornel Mawr and the Middle Hooper. It bears from Caldý Lighthouse E.S.E. 14 miles, and S.W. $1\frac{1}{2}$ mile from the Nose Barrel Post.

No. 2, a can buoy, lies in 15 feet, at the west end of Pembrey Pool, very near the edge of the Cornel Mawr. It bears from No. 1 E.N.E. half a mile, and from the Nose S.S.E. $\frac{3}{4}$ E. one mile. The next buoy in succession is the No. 4, already noticed, near the junction of the channels, and which bears from this one E.S.E. $\frac{3}{4}$ E. $2\frac{1}{2}$ miles.

It should be remembered that the positions of these buoys are not permanent; the westerly gales and winter freshes frequently alter the shape of the sands, and the places of the buoys are therefore occasionally changed.

95. It will likewise be expedient to describe Rhossily Bay, *Rhossily Bay*. which lies under the high land of Rhossily Downs, and between Burry Holms and Worms Head. On the N.E., or bay side of this latter rocky island, the cliffs are perpendicular, with 5 fathoms close to, and a ridge of rock, and rolling stones connect them to Rhossily Point at half tide, but at high water spring tides the sea covers this interval, which is called Worms Sound, to the depth of 13 feet, and small vessels frequently run through it by passing on the east side of the perches.

From the low rocky point of Rhossily the church bears east nearly a mile. It is a little white square towered building, standing on a flat, close under the heights, which rise in perpendicular limestone cliffs 100 feet above their base. Rhossily Hill lies a quarter of a mile in, and rises 610 feet high at its southern cairn, or hummock, with a very uneven face. The cliffs break down near the church, and the coast, turning to the northward, changes to a low range of sand-hills, which terminate at Limekiln Point, opposite Burry Holms. A flat, low water hard sand curves round the bay from Rhossily Point to the outer extreme of that sland, at a quarter of a mile distance from high-water mark. A

Rhossily Bay. small church and steeple of stone colour, with a few white houses about it, called Llangenydd, stands a mile within the sand-hills, and between Rhossily and Llanmadoc Hills. There is also a remarkable overhanging crag on the north part of Rhossily Hill, but rather lower than the southern cairn, called High Barrow, and as it shows distinctly, it is used as a long leading mark.

Anchorage. The best anchorage in Rhossily Bay is with Worms Head bearing west, and Rhossily Church S.E. by E. $\frac{1}{2}$ E., in 4 fathoms, stiff mud and sand. This berth is half a mile from the Worms Cliffs, and out of the stream of tide, with much shelter from wind and sea as long as there is no northing in them. But with winds to the northward of west, a very heavy sea tumbles in, and even with southerly winds a ground swell sweeps round the bay, though while the Sound is covered there is no strain on the ground tackle. This bay is very advantageous to vessels bound to the Burry, either for picking up pilots, who, in single lug-sail gigs, are always on the look-out in tolerable weather, or to wait for the tide, by standing off-and-on out of the stream. In the latter case they ought not to stand out farther than to just open Pembrey Church with Burry Holms, nor to stand in shore without the lead going, as the ground is flat a long way off. Nor should a vessel drop so far to the N.E., while in the bay, as to open Llangenydd Church, north of Rhossily Downs, on account of the Newcomes; and when bearing up for the Burry Bar, Worms Head must not bear to the westward of S. $\frac{3}{4}$ W. for the same reasons.

SAILING DIRECTIONS FOR THE NAVIGATION OF THE BURRY INLET.

Approach. 96. Vessels approaching the Burry Inlet, or, as it is frequently called, the Burry Navigation, in moderate weather, cannot take up the entrance on a better line than with the Western Cairn, or Hummock of Llanmadoc Hill, open a quarter of a point to the northward of Burry Holms, unless they want a pilot, in which case they had better stand in towards Rhossily Bay.

Burry Tides. 97. It is high water at the bar on full and change days at six

o'clock. Equinoctial tides rise 31 feet; ordinary springs 28 feet, *Burry Tides*. and neaps 14 feet. The rate of flood on the springs is 3 knots, but the ebb, on account of freshes, is sometimes 4 knots; while neaps average 2 and 3 knots. The flood sets fairly over the bars; but until the banks are covered its direction is guided by the channels between them; and after they are covered, which is at a third flood, it is necessary to be guarded against a southern set into Whiteford Pill. The contrary takes place during the ebb. At Pembrey the tide flows 5 minutes, and at Llanelly 15 minutes later than on the bar.

98. The South Bar is generally preferred, except with N.E. *South Bar*. winds, because it is deeper and broader, and may be taken at two hours' flood; but the nearer half flood the better, which may be known by the Worms and Burry Sounds covering. A vessel having run up with Caldy Lighthouse bearing N.W. by W. $\frac{3}{4}$ W. should bring Capel Chapel near Penclawd on with Spritsail Tor E.S.E. $\frac{3}{4}$ E., and Cwm Ivy Tor will be just seen over the latter. This line will lead over the bar in 22 feet at half tide, clearing the Newcomes on the starboard hand, and the Hooper on the other, up to No. 1, or the Nun Buoy. Or, if bound to Pembrey with a commanding breeze, she may haul to the north-eastward two cables' lengths short of the buoy, and run through the Cross Swatch between the Hooper Sands and the Lynch, by keeping *Cross Swatch-way*. Worms Head in the middle of Burry Sound, about S.W.; and when Llanelly Church comes on with No. 4 Buoy, or bears E.S.E., she may anchor in Pembrey Pool till the pier flag is hoisted.

99. But if the wind is north-westerly, it would be imprudent, *South Channel, to Pembrey East Pool*. by using this channel, to risk being swept on the Lynch by the flood, which is then a lee tide. A vessel should, in that case, proceed up the south channel from No. 1 buoy, by keeping this buoy on the outer extreme of Burry Holms, or the inner end of the Holms just locking with the main. Run up on either of these lines between the Lynch and Whiteford Sands, close past No. 2 buoy, to about 2 cables' length from the Whiteford Barrel Post, or till High Barrow comes over Spritsail Tor. With these in one, but recollecting that the flood is setting south into Whiteford Pill, steer for No. 3 buoy till Pembrey House comes in a line with the Pembrey Old Lighthouse; and this new mark will lead over the inner bar, between the Lynch Sand and Middle Spit, and directly

to Llanelly, into Pembrey Pier, or into the East Pool, as may be desired. If bound to Llanelly, as soon as the buoy, No. 4, comes in one with Llanelly Church, about E.S.E., steer for it, and passing it closely, and then bringing it in one with Pembrey Church, steer for No. 6, by which course No. 5 will be left about 2 cables' lengths on the starboard hand. Pass No. 6 close on either side, and the vessel will be safely round the quick-sand which forms the elbow of Cefn-Patrick Spit. Steer then from buoy to buoy, and so on to Llanelly Barrel Post (observing that all the perches, which are in the steep edge of the Cefn-Patrick, are to be passed at half a cable's distance on the larboard hand), and rounding the Barrel Post, take up a berth on the flats, or within the pier, as may be convenient.

and to Sluice Pill.

If bound still higher, and the tide is advanced to three-quarters flood, edge away gradually from Llanelly Barrel Post towards Machynys Bluff, observing that the high chimney of Llanelly is not to be shut in afterwards with that bluff; and that the perch on Careg-fach must be left 2 cables on the larboard hand, until No. 9 (the last) Buoy comes on with Penclawd old jetties (bearing about S.E. by E.). Steer then for those jetties, and after passing close to the buoy (No. 9) approach them within half a cable, and continue to run at that distance from the perches on the starboard hand up to Sluice Pill.

North Bar, and North Channel.

100. The North Bar is desirable in N. and N.N.E. winds, as on one tack a vessel can fetch in through the channel which is, however, narrower and shoaler than the south channel; but there will be found 16 feet over the bar at half tide, and the outer buoy may be picked up by running in with Caldy Lighthouse W.N.W. till Capel Chapel is clearly made out, and kept a very little to the southward of the pitch of Whiteford Point. When New Lodge comes twice its breadth to the southward of Pembrey Old Lighthouse, steer for the former, and passing quite close to the southward of buoy No. 2, keep Pembrey Barrel Post about half a point on the larboard bow till buoy No. 4 comes on with Llanelly Church. Then take up the directions given for the South Channel (99).

If, on approaching this bar, the wind should prove scant, and if the vessel should be sufficiently to windward, she might cut off nearly a mile of the Cornel Mawr by taking the Cornel Swatch, which has 14 feet water through it when Pembrey Pier flag is up; Llanelly Church a quarter of a point open to the southward of

Pembrey Barrel Post, bearing E.S.E. $\frac{1}{2}$ E. leads through into Pembrey Pool.

Vessels coming out of either channel may haul clear of the three Hoopers when High Barrow comes on with the outer extreme of Burry Holms; and this mark will also lead over the deepest part of Caermarthen Bar, and will clear all the Cefn-Sidan flats between the Burry and that bar. *Mark for the Hooper Sands.*

101. Though it is by no means intended that the foregoing directions should tempt any one to venture into the Burry Inlet, for the first time, without a pilot, yet it is possible that, after thick weather, a vessel might find herself close off the bar in the evening, and with a westerly gale, which had prevented the pilots from coming out. In such a case, when the necessity of shelter would justify a considerable risk, he should first study the time of tide, in order to keep her off till three quarters flood, and then disregarding all buoys and leading marks (which are only useful to persons whose knowledge of the objects enables them to save time by taking the earliest tide), he should bring Pembrey Pier lighthouse E. $\frac{1}{2}$ N. by compass, and at once bearing up steadily keep it so, till close to Pembrey Barrel Post, round which, at half a cable's length distance, he may luff right into the pier, where, as well as on the above course, he will find 15 feet water, at that period of the tide. *General rule in extreme cases.*

The anxious and distressed mariner will derive confidence in the hour of danger from the above rule, which, it is hoped, may help to simplify the apparently perplexing navigation exhibited in the chart. It may also be of use to the regular traders; for, if bound even as high as Llanelly, they may readily stand their own pilots, after 4 hours' flood, by only altering their course to S.E. by E. $\frac{1}{4}$ E., on passing Pembrey, as soon as Machynys White House comes on that bearing, or is a little open to the southward of Llanelly Barrel Post. That post they must leave half a cable's length on the larboard hand, and hauling up for the high chimney, bring to on the flats 2 or 3 cables' length E.N.E. of the Barrel Post, from whence the vessel may be warped alongside any of the quays.

Worms Head is the western extremity of a singular shaped islet, or tide peninsula: it rises from the sea perpendicularly to the height of 164 feet above high water, and when first made from the offing resembles a great hay-cock. It is in latitude *Worms Head.*

Worms Head. $51^{\circ} 33' 56''$ N.; longitude $4^{\circ} 19' 56''$ W., and bears from Caldy Lighthouse S. E. $\frac{1}{4}$ E. nearly 14 miles. The inner part of this islet is much lower than its western head, and the isthmus or causeway of rock and stones which joins it to the land, though only a quarter of a mile in length in that direction, yet shelves out almost a mile under water to the southward, so as to render the approach on that side very dangerous. Hence this reef is called *Dangers Reef*; but Porth-Einon Staff in one with Slades Bluff marks its outer extreme, and consequently, kept open, clears it.

Porth-Einon Head. The coast from Worms Head trends S.E. $\frac{1}{4}$ S. 5 miles to Porth-Einon Head, and consists of perpendicular cliffs from 100 to 150 feet high, with many sudden breaks and deep ravines. The low water rocks do not extend off more than a cable's length, and are pretty bold, having 3 fathoms with clean ground within a quarter of a mile. Porth-Einon Head is narrow, rocky, and flat-topped, about 100 feet high; and though it falls abruptly to the sea, shelving low-water rocks extend to the south and east 2 or 3 cables' lengths; but the west side is bolder, having 4 fathoms at 2 cables off. A signal-staff and yard belonging to the coast-guard stands a little within the pitch of the cliff; and this point is further distinguishable by a black ledge of rocks which seldom covers, and which stretches S.E. from the point a quarter of a mile; it is called the Skysea, and forms a natural breakwater to Porth-Einon Bay, which lies to the eastward of the head.

Porth-Einon Bay. Porth-Einon Bay, though small, is clean, and headed by a sweep of sand-hills, with two villages which are but a little way from the beach. The western one, Porth-Einon, has a small church with two belfries, but no tower, and there is a conspicuous white house nearly under the coast-guard staff, called the Salthouse. A broad low-water strand lines the western side of this bay; but about a mile from Skysea the shore changes to clay cliffs, with shelving low-water rocks, which dry two cables off, and continue round *Oxwich Point*. This point is a table-topped bluff, sloping gradually to the sea on both sides, with a large dark-coloured farmhouse on its summit, called Limerick, at the height of 246 feet above the sea. The point is safe, as there are 5 fathoms within a quarter of a mile, and the coast suddenly recedes from it into *Oxwich Bay*. At the western angle of this bay, on the brink of a low cliff, and at the foot of a well-wooded slope, Oxwich Church may be observed, with the parsonage, a yellow building with

wings, and behind it the ruins of Oxwich Castle. Further north *Oxwich Bay.* will be seen, over the trees, the steeple of Penrice Church, and the mansion and park of Penrice Castle. From the foot of the parsonage a belt of sand hills with a broad hard strand stretches round the bay to the Great Tor, a cliff which rises from the beach 140 feet; and in the interval lies the swampy opening of Nicholaston Pill, which is overflowed by high tides. *Nicholaston Pill.*

Behind the Great Tor will be seen a straight ridge of high land, *Cefn Bryn.* called the Cefn Bryn, which nearly stretches across the peninsula to Llanmadoc Hill. It is 595 feet high, and when brought end on from the eastward has a conical appearance.

Close to the eastward of the Tor the wide creek of Pennard Pill *Pennard Pill.* bounded by high shingle and sand-hills, opens through the beach which a little further to the eastward ceases; the coast there resuming its rocky cliffs, with occasional interruptions and valleys, and skirted by low-water shelving rocks. This character of the coast continues from thence to Mumble Head; but Oxwich Bay extends only to Pwl-Du Head, a bold and remarkable overhanging bluff, the summit of which, about half a mile inland, and 262 feet above high water, is called High Pennard: 4 and 5 fathoms may be carried round this bluff within a quarter of a mile of it, and immediately to the eastward the coast falls back in Pwl-Du Bay, which is very small, lined with shingle, and connected with *Pwl-Du Head.* some limestone quarries. Then follow Caswell and Longland *Pwl-Du Bay.* Bays, both very small, and separated by high land that slopes *Caswell and Longland Bays.* down to a rocky steep shore. The latter has some ugly outlying rocks, but the two former might serve to beach a boat in distress.

Mumble Head forms the western limit of Swansea Bay. At *Mumble Head.* high water it is insulated as well as Middle Head, another high hummock between it and Knave Point, but at low water they are all connected by a rocky causeway, over which the tide makes through, at two hours' flood, on springs. The Outer Sound, as the *Passage through Outer Sound.* space between the hummocks is called, is wide enough for a vessel to go through if absolutely necessary, as there are 9 feet water in it at half tide, 23 at high-water springs, and 16 at high-water neaps; and this resource may be of special service to a vessel weighing from Mumble Road on an ebb tide, which sets so strongly through that narrow channel as to prevent vessels, in light winds, from getting round the Head, and often compels them

to anchor again to avoid being swept on shore. In such case, by taking Kilvey Mill in one with the western pier-head of Swansea, as a leading mark, they may dash through the sound and save their tide.

The low-water rocks extend from Mumble Head nearly 2 cables *Cherry Stone.* to the S.W., and terminate in a fang called the Cherry-stone.

Mumble Light. On the summit of the outer island or hummock stands the lighthouse in lat. $51^{\circ} 34' 3''$ N., long. $3^{\circ} 58' 10''$ W., and bearing from Pwl-Du Point E.S.E. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles. The hummock being 58 feet above high water, and the building 56, the lantern is elevated 114 feet, and the fixed light which it displays may be generally seen 15 miles. The building is white and octagonal, and belongs to the corporation of Swansea.

Helwick Shoals. We will now return to the westward in order to describe those dangerous shoals called the Helwicks. They project from Porth-Einon Head about N.W. by W. $\frac{3}{4}$ W., and have advanced considerably of late years. The outer extreme of the West Helwick is marked by a black buoy with a beacon on it in $5\frac{1}{2}$ fathoms, and is 6 miles from that Head, from Worms Head S.W. by W. 3 miles, and from Caldy Lighthouse S.E. by S. 13 miles. They consist of two long ridges with a swatch between them, and their breadth varies from one to three-quarters of a mile. No vessel should approach them from the southward nearer than 13 fathoms, not only from their extreme steepness on that side, but because within that line, and with a fresh westerly breeze, such a heavy cross sea breaks during the ebb tide, that vessels have been known to founder in it. They everywhere consist of fine sand, and the least water on either of the ridges is 9 feet.

West Helwick Buoy.

The marks for the 9 feet spot on the western ridge are, Oxwich and Porth-Einon Heads in one, and High Barrow on with Rhossily Point; Burry Holm will then be just locked in with the Worms Head; and when Worms Sound is covered there are 22 feet on this shoal spot.

The soundings, to the westward of the Helwicks, shoal suddenly from 10 to 5 fathoms; and along the south side they jump from 18, 16, and 14 fathoms, with coarse ground, to 6 and 3 fathoms, on fine sand; but on the north side they shoal from 10, 9, and 8 to 6 and 5 fathoms in the same short distance, but do not alter the quality of the bottom.

Clearing marks.

Clearing marks.—The Mumbles Lighthouse kept a quarter of

a point open of Oxwich Head,* bearing E. by S., or, if hazy, the latter point bearing E. $\frac{3}{4}$ S., will lead, in 15 fathoms, a quarter of a mile outside of the eastern Helwick, and a full mile to the southward of the western sand. Rhossily Parsonage between the table-land of Worms Island and its eastern point† will cross the western tail of the Helwicks in 5 fathoms; and, in bad weather, the High Barrow on with Worms Head, bearing E. $\frac{3}{4}$ N., will clear it to the westward half a mile, in 9 fathoms.

The swatch, or opening between the two sands, is rather more than a mile wide at low water; and, as the least depth in any part of it at that time is $3\frac{1}{2}$ fathoms, it may be considered a perfectly safe channel except when the above-mentioned cross sea spreads through it. The present mark for it is also very clear and distinct: viz. Burry Holms appearing through the opening of Worms Sound,‡ and as soon as Oxwich Point and Porth-Einon Head are in one the vessel will be in the centre of this channel. The facility of taking it has been still further increased by a black and white striped buoy placed on the above mark, and in $4\frac{1}{2}$ fathoms.

There is a safe passage also between these sands and the main, called the Helwick Pass, which is very convenient for coasters running up, as it offers them, during a westerly gale, smooth water, instead of being exposed to a mountainous sea outside the shoals; or, if coasting down with a northerly wind, it affords a vessel the advantage of overlaying the flood so as to fetch Tenby, or at least to pass much nearer to Caldy Island than if, by keeping outside, she had taken the flood on the weather-bow.

When coming from the westward, the marks for this channel are, bring Porth-Einon Head S.E. by E., and steer for it on that bearing, in 13, 10, and 8 fathoms water, until the eastern extreme of the Worms Island is so nearly closed with Rhossily Point (bearing N.W. $\frac{1}{2}$ N.) that it only just appears as an island. These marks will lead safely through this 5 fathoms channel, which, however, it should be recollected, is only a third of a mile wide. Small vessels beat through with the following marks.—While to the westward of the last-given mark, which may be said to begin at Slade Bluff, do not bring Oxwich Point (which, with its house, can be seen over all) open of Porth-Einon Point, nor shoal the water to less than

* View A.

† View B.

‡ View C.

Helwick Pass. 7 fathoms when standing towards the Helwicks; and when standing towards the land never shut in Porth-Einon staff with Slade Bluff, nor shoal the water below 8 fathoms. A black buoy, which lies in $2\frac{1}{2}$ fathoms at low water, on the eastern extreme of the East Helwick, will much assist in beating through; but when standing towards the shoals it should not be brought to the eastward of S.E. $\frac{1}{4}$ E. Anywhere between the above marks, but not further westward than to have Worms Head N.N.W., vessels may take up a temporary anchorage in light winds.

East Helwick Buoy.

No vessel should attempt the Helwick Pass at night, as the above points are not then sufficiently distinct; but the outer navigation is well defined by means of Caldy and Mumble Lights. It so happens that the Mumble Light is eclipsed by bluff land three-quarters of a mile to the westward of it, and exactly upon the line which leads close to the outer edge of the Eastern Helwick; consequently, while this light can be broadly seen, bearing E. by S., there is no danger to be apprehended from that shoal; and when Caldy Light bears N.N.W. $\frac{3}{4}$ W. vessels may haul to the northward clear of all danger.

Rules for keeping outside the Helwicks.

The distance at which Mumbles Light can be seen is about 15 miles, Caldy Light somewhat more; and therefore, in clear weather, vessels in the neighbourhood of the Helwicks will not lose sight of the one before they can take up the other. Again, vessels coming from Caldy Road may be sure of giving the Helwicks a wide berth by keeping the red part of Caldy Light in sight, the eastern limit of which bearing N. by W. $\frac{1}{4}$ W. clears them 4 miles. In thick weather, to a vessel working outside the Helwicks, her lead will instantly show when to stand off, as 18 or 19 fathoms at low water, with a bottom of coarse gravel or shingle, range along their south side at the distance of a mile, with 17 and 16 fathoms on fine sand between that limit and the shoals.

Helwick Tides.

The mariner should carefully bear in mind that though, from a mile or two to the westward of Worms Head, the flood stream is naturally influenced in its course by the trend of the Helwick sands while they are *uncovered*, yet that from half-flood to half-ebb both flood and ebb streams set directly over those sands.

Porth Einon or Skysea Anchorage.

Vessels beating down channel from Swansea, and having exhausted the ebb before passing the Helwicks, may find snug anchorage under the lee of Skysea Islet, in Porth-Einon Bay,

on good holding ground in 4 fathoms, with the church bearing *Skysea Anchor-*
N.N.W. and the outer end of Skysea W. They will be shel-
tered there from winds between the points of W. and N.E., and
will feel but little strength in the tide; the only caution requisite
will be to give Skysea a quarter of a mile berth. It is here that
the numerous oyster-dredgers take shelter and deposit their car-
goes taken from the oyster-ground, which lies $2\frac{1}{2}$ miles south of
Porth-Einon Point, in 17 fathoms.

Oxwich Bay is also resorted to by vessels late upon tide with a *Oxwich Bay*
westerly wind, as it affords good shelter from W.S.W. to N.E.; *Anchorage.*
they have only to give Oxwich Point a quarter of a mile berth
when rounding it, and bring up with the extreme point bearing
W.S.W. and the Parsonage N.W., where they will have 4 fa-
thoms water on stiff holding ground. Vessels sometimes stand
into this bay to expend the last of an ebb tide when working up
to Swansea Bay with an easterly wind; but in this case they
should beware of a sand bank which has lately been increasing, *Sir Christo-*
and which would pick up even coasters near the period of low *pher's Knoll.*
water. It is called Sir Christopher's Knoll, and lies in the
eastern part of the bay, a mile S. by E. $\frac{1}{2}$ E. from the Great Tor,
and 2 miles S.E. by E. $\frac{3}{4}$ E. from Oxwich Church. Its length
is a third of a mile, with 9 feet on the middle, and 3 fathoms,
sandy bottom, all round it. After half-flood this bank is harm-
less, but till then the following marks will clear it.—Mumbles
Lighthouse half a point open of Pwll-du Point passes it to the
southward; the summit of Cefn Bryn on with the eastern ex-
treme of the sand-hills clears it to the westward; Penmaen Church
on with Three Cliff Point (the projecting point on the east side of
Pennard Pill) clears it to the eastward; and the Parsonage and
Oxwich Castle in one clears it to the northward.

In sailing eastward from the Helwicks, at $1\frac{1}{2}$ miles in the offing, *Soundings off*
there will be found 17 fathoms, with gravel, off Porth Einon Head; *the Headlands.*
16 and 17, with gravel, off Oxwich Point; 12 and 14, with very
coarse gravel, off Pwll-du Head; and 11 fathoms, with similar
bottom, off the Mumbles; but at half that distance fine sand and
shells stretch all along that shore.

The Mixon Shoal is another danger, which lies outside of the *Mixon.*
head-lands; and the approach to it may be known to the mariner
in the same manner as when he feels his way by the lead along
the outer side of the Helwicks; for the deep water tract of coarse

Mixon Shoal. ground extends up to its edge, though the Mixon itself is a bank of fine sand. It is about three-quarters of a mile long, and one-quarter of a mile wide, with a short ridge in the middle, on which there are but 4 feet at low water. There are but $3\frac{1}{2}$ fathoms between it and Mumble Head, from which it shoals gradually, as well as from the deep water on its northern and western sides; but to the southward and eastward it shoals, at one cast of the lead, from 13 fathoms to $1\frac{1}{2}$, changing the colour of the sand from dark to light. The marks for its west end are, Kilvey old Windmill in one with Mumble Lighthouse, and Porth-Einon Head in one with Oxwich Point. But these heads, when open a quarter of a point, will lead a third of a mile to the southward of it, in 13 fathoms. To haul round the eastern end into Swansea Bay or into Mumble Road, bring Woodland Castle a quarter of a point open to the eastward of the lighthouse, bearing N. $\frac{3}{4}$ W., which will clear the shoal 2 cables' lengths, in 8 or 10 fathoms; Cefn Bryn summit over the centre of Pwll-du Bay, bearing N.W. $\frac{1}{2}$ W., leads close across the western end; and to sail between the eastern end of the shoal and the Cherrystone, which extends off from the lighthouse, bring Whiteshell Head on with Thistle Bluff, W.N.W., and it will lead clear through a narrow but safe channel, with not less than $3\frac{1}{2}$ fathoms at dead low water, and that only for one cast. The vigilant elder brethren of the Trinity House have placed a white buoy off the southern elbow of this shoal: it lies in 10 fathoms with Oxwich and Porth-Einon Heads in one, Kilvey Mill in one with Swansea E. pier head, and Mumble Lighthouse N.E. $\frac{3}{4}$ N.

At Night. The only directions that can be given to avoid the Mixon by night are attention to the lead and the bearing of the light. The light bearing east will lead inside clear of the west end; and, when running outside, the east end will be cleared when the light bears north. A great sea breaks on this shoal till half-flood, after which there are 18 feet over its shoalest part.

White Oyster Ledge. The White Oyster Ledge is a patch of foul ground, on which there are never less than 27 feet; it is, however, extremely dangerous to deep-laden coasters on account of its heavy-breaking sea when the ebb stream is opposed by a strong westerly wind. It lies 3 miles S.W. $\frac{1}{2}$ S. from the Mumble Lighthouse, and is about a third of a mile in extent, deepening gradually to 8 and 9 fathoms, except at its south-western end, where it is more

abrupt. A large yellow house, to the N.N.W. of Swansea, called Heathfield, is in one with Mumble Lighthouse, bearing N.E. $\frac{1}{2}$ N. when on it; the best way, therefore, to avoid it by day is to keep Heathfield open on either side; and, by night, to keep the light half a point on either side of a N.E. $\frac{1}{2}$ N. bearing.

The average time of high water on full and change days of the *Mumble Tides*. moon, at Mumble Head, is nearly 6 o'clock. Equinoctial spring tides rise 33 feet, ordinary springs 29 feet, and neaps 15 feet.

The general set of the flood stream between Worms and Mumble Heads continues to the eastward till an hour before high water by the shore, and at the rate of 3 knots at the spring and 2 at the neaps. The stream then turns, without any perceptible slack, to the westward, so that the ebb stream runs 7 hours. This is the case 2 or 3 miles in the offing, but inshore it is influenced by the headlands, each of which produces a temporary offset and ripple; and in Oxwich and Porth-Einon Bays there is an eddy on both flood and ebb, which has been probably the cause of Sir Christopher's Knoll, by depositing the sand washed out by the adjacent rivulets.

From Mumble Road the ebb sets directly out to the southward, sweeping close by Mumble Head, and reaching to the distance of half a mile from it.

SWANSEA BAY.

Swansea Bay extends from Mumble Head to Scar Point, which is 9 miles distant from the former, bearing S.E. $\frac{1}{2}$ S.; and three rivers, the Tawe, Neath, and Afon, fall into it, and supply its wharfs with large quantities of coal. At the mouth of the Tawe *Swansra*. stands the town of Swansea, with its wide harbour, admitting vessels of 10 feet draught at four hours flood, even at neap tides. Its position in the bay is somewhat sheltered by Mumble Head, under the lee of which hundreds of vessels at a time anchor during long-continued westerly winds.

The approach to Swansea Bay, though apparently open, is much hampered from the southward and eastward by the Scarweather and Nash Sands, the Tusker Rock, and the Kenfig Patches; and from the westward by the Mixon and White Oyster Ledge, which have been already described.

All of these obstacles, however, depend much on the state of the tide, there being periods when any sized vessel may sail over

Swansea Tides. them; and in order that these periods may be readily known, the following table has been prepared, exhibiting the hourly rise and fall of tide, founded on the establishment of high water in Swansea Bay, which at the full and change of the moon is at 5 h. 56 m.; its rise and fall on ordinary springs being 30 feet; at the neaps 15; and in equinoctial springs 33 feet.

TABLE showing the additional depth of Soundings due to each hour before or after high water, in Swansea Bay.

Period of High Water being at	Interval of time, either before or after Water.						
	0 or High Water.	1 Hour.	2 Hours.	3 Half- Tide.	4 Hours.	5 Hours.	6 Low Water.
7 o'clock	Feet. 29½	Feet. 27½	Feet. 22½	Feet. 15	Feet. 7½	Feet. 2¾	Feet. 0
8 ,, or 6	29½	27	22	15	8	3	1
9 ,, or 5	28	26½	21½	15	8½	3¾	2
10 ,, or 4	26¾	25½	21	15	9	5½	4
11 ,, or 3	25	23½	20	15	10½	7	5½
12 ,, or 2	23½	22	19½	15	11	8½	6½
1 ,, ..	22¾	21½	18¾	15	11½	8¾	7½

The above Table has been computed on the supposition that the highest tide at Swansea takes place two transits of the moon after her full and change; and it is to be used in the following manner:—

Calculate the period of high water for the given day, and then find the interval of time between the given hour and that period of high water, whether before or after it. With the above period (or rather with the hour nearest to it) enter the left hand column of the table, and opposite thereto, and under the above interval of time (or rather the hour nearest to it), will be seen the number of feet that the tide will be, at the given hour, above the level of the low water of ordinary spring tides; or, in other words, the additional depth by which all the soundings in the chart are to be at that hour increased.

It is obvious that if greater accuracy be required, a proportionate allowance should be made for the broken hours.

Example 1.—September 11th, 1839, at 4 P.M., a vessel, drawing 13 feet, is standing into Swansea Bay, but being early on tide for the harbour, it is desired to know whether she can lie-to, regardless of the Green Grounds, the shoalest water on which, by the chart, is 1½ fathoms?

Swansea Tides.

It will be, on that day, high water by the shore at
 7h. 43m. P.M., and the interval of time to it will
 therefore be 3h. 43m., or nearly 4 hours. Now
 opposite 8h. (the nearest to 7h. 43m.) and
 under the 4th hour will be found . . . 8 feet.
 Least water on Green Grounds $1\frac{1}{2}$ fathoms . . . $7\frac{1}{2}$
 The depth, therefore, at 4 P.M. will be . . . $15\frac{1}{2}$ feet.
 or $2\frac{1}{2}$ feet to spare.

Example 2.—September 3rd, 1839, a vessel, drawing 11 feet, having stood in from the offing with a westerly wind and flood stream, finds herself, at noon, close to the Scarweathers, but with smooth water, and can only fetch into Swansea by going over those shoals. Can she cross them with safety?

It is high water by the shore on that day at 2 P.M.,
 and the interval thereto is consequently 2 hours;
 now in the table, opposite 11h. and under the 2d
 hour, will be found $19\frac{1}{2}$ feet.

The shoalest part of the Scarweathers is stated in
 the chart to dry 6 feet high at low water . . . 6

Depth on the shoalest part $13\frac{1}{2}$ feet.
 at noon; so that she will have $2\frac{1}{2}$ feet to spare
 and growing water.

When standing in from the south-westward towards Swansea, *Kilvey Old Mill.*
 the first object that attracts the attention of the mariner, as it
 opens from Mumble Head, is Kilvey Old Mill, which stands on
 a hill 620 feet high, and about one mile within the pier-heads.
 This Old Mill, the pier entrance, and Mumble Lighthouse, are in
 the same line, bearing N.E. $\frac{3}{4}$ E.; and within that line no vessel
 should pass after three-quarters ebb or before one-quarter flood, as
 irregular beds of shingle and stones stretch far outside the low
 water-mark.

A vessel intending to anchor in Mumble Road, and having *Mumble Road.*
 passed the White Oyster Ledge, should run with Kilvey over the
 white elbow of the eastern pier about N.E. $\frac{1}{4}$ E.* till Woodland
 Castle (on the W. side of the bay) opens to the E. of Mumble
 Head about N. by W., in order to clear the Mixon; but in hauling

* View 4 on the Plan of Swansea Bay.

Mumble Road. round the lighthouse head, a distance of 2 cables should be preserved to avoid its outlying fangs of rock. The flats off Swansea bar cannot be taken before half flood; therefore to anchor in Mumble Road, with not less than 18 feet water, on good ground, bring Kilvey Old Mill over the pier entrance, and the first western point, called Tut Head, in one with the Middle Mumble Head, bearing W. The wind from S. to E. is the only exposed quarter, though much rolling is caused by a ground-swell when blowing fresh from the westward. If, however, the vessel be adapted to

Mumble Flats. take the ground, a fine flat of soft mud lies three-quarters of a mile within the lighthouse at 2 cables outside of high water-mark, just after passing the limestone quarry; and there it will be found convenient to moor head and stern in a N. N. W. direction. Care must be taken, when coming out of this place on the ebb, with light winds, that the vessel is not drawn into the Sounds between the two Mumble Heads, or too near the outer Head, as the western stream begins to run through an hour before high water.

Green Grounds. The Green Grounds. It is recommended that no vessel drawing more than 8 feet should attempt to enter Swansea Bay before the first quarter flood, unless for the purpose of anchoring under Mumble Head to wait till tide time. The bay is too confined to permit manœuvring under sail; for besides a 9 feet shelf of sand, mud, and stones, which extends half a mile from the low water-mark (making it dangerous to be within $1\frac{1}{2}$ miles of the high water line of coast), there are detached beds of rocks scattered about the bay which rise within 7 feet of the surface, and which are called the Green Grounds. The two principal patches to which that name has been given together occupy a space of a square mile. The Inner Green Grounds, where there are but 7 feet at low water, is in the line of Tut Head and Middle Head in one, and Kilvey just clear to the eastward of the eastern pier wall. Near the western extreme there is a ten feet spot only a mile E. $\frac{1}{4}$ S. from the lighthouse, but there is a safe channel through that interval by keeping on the same marks which were given for running into the Mumble Road; viz. Kilvey over the white elbow of the eastern pier N.E. $\frac{1}{4}$ E.* On the Outer Green Grounds the least water is near their N.E. extreme, where there are but

* View 4 on the Plan.

16 feet, and to sail between the two patches (starting from the *Green Grounds*. above mark, in 5 fathoms, keep Thistle Bluff (seen over the high land of Tut Head) in one with the north side of the Lighthouse Island, bearing W. by N.*; but this mark leads very close to the tail of the Inner Grounds. To sail within the Inner Grounds from the first-mentioned line of entrance, in 3 fathoms, bring the hummock on Tut Head right over the Inner Sound, bearing W. $\frac{3}{4}$ S.; † and to pass close to the eastward of the Inner Grounds, in 3 fathoms, bring Kilvey midway between the white Look-out at Port Tennant and the large dark-looking Inn, bearing N.E. by N.†

Swansea Bar dries out from the mouth of the pier in a southerly *Swansea Bar*. direction, nearly a mile in breadth, consisting of sand interspersed with beds of large stones, and through which the River Tawe, on coming out between the pier-heads, keeps open a narrow channel, *Channel to the harbour*. and there is consequently about two feet deeper water on that part of the bar when it is covered by the tide. The last-mentioned mark, Kilvey between the Look-out and the Inn, leads up to the entrance of this hollow or channel; and to preserve it in approaching the piers, bring a dark-coloured public-house, called the Red House, standing close to the Kilvey shore, on with the west pier-head, bearing N. This mark will lead up between the two warping buoys just without the entrance of the point, observing to keep plenty of way on the vessel in order to counteract a constant set upon the eastern pier.

Should a stranger have ventured so far without a pilot, the *Swansea Harbour*. anchor must be let go the instant the vessel has shot within the pier-heads, as the flood-tide sets strong towards the Town Banks, and can only be managed by those acquainted with the localities; for though the port offers a space, at high water, of a mile in circumference, yet but few spots of its bed are adapted for berthing on, and those are of a changeable nature. Neither can a vessel be safely berthed alongside the piers, owing to a great run there in bad weather. The business of the port is carried on at the well-sheltered quays some distance up the river on the Swansea side, or at the eastern bight of the pier, called Port Tennant, according as a vessel's object of trade may require. It thus appears, and it is an important fact, that Swansea Harbour is accessible to

* View 1.

† View 2.

‡ View 3.

- Pilots.* any stranger that may arrive in the bay, when blowing too strong for pilots to get off, which, however, very seldom happens, as they are an active, venturesome set, and are generally hovering about the Worms or Mumble Heads, in schooner-rigged yawls. On coming within the piers he will get one promptly to berth him; and he can make sure of 10 feet water on the bar at 4 hours' flood, springs or neaps; besides which a light at night and a black ball by day is exhibited on the western pier-head so long as 8 feet water is found within the pier. This tide-light bears from the Mumble Light N.E. $\frac{3}{4}$ E. $3\frac{3}{4}$ miles. The tide rises between these pier-heads $22\frac{1}{2}$ feet on ordinary springs, and $16\frac{1}{2}$ on neaps.
- Tide Light or Ball.*
- Tides.*
- Neath.* Three miles and a half E.S.E. from the entrance of Swansea pier lies the mouth of the Neath River, between the Crymlyn Burrows on the N.W. and Witford Point on the S.E. This entrance is nearly half a mile wide from shore to shore, but the channel is narrow and intricate, having high sand-banks on the Witford side, and on the other the Black Rocks in front of the Burrows; besides which the low-water flat of sand, called Neath Bar, dries out in a S.W. direction $2\frac{3}{4}$ miles, though variously guttered by the freshes which fret their way down to low water-mark. The deepest of these approaches to the river carries 17 feet water on springs and 11 feet on the neaps, and is marked by 3 black can-buoys, which are succeeded by perches on the Black Rocks. These perches should be left close on the larboard hand, when going in, and are succeeded by smaller buoys which are adjusted to the best channel according to the varying state of the sands. The outer can-buoy lies almost a mile within the low water-mark, and bears from the Mumble Lighthouse E. by N. 4 miles. Nothing should tempt a vessel bound to Neath to pass that buoy without a pilot, even supposing the weather such that none can board her; she had better wait under the Mumbles till it moderates: for, were she to cross the bar safely, the intricacy of the channel and the furious tide near Briton Ferry would so perplex any stranger that he would lose all command of his vessel; yet with the aid of pilots the trade of this port is carried on with very few accidents.
- Neath Bar.*
- Aberafon.* Three miles and a quarter S. by E. of Neath entrance, and 7 miles E.S.E. of Mumble Head, is the entrance to Aberafon; but it is inaccessible till 4 hours flood on the springs, or till high water neaps, though there are some slight and changing channels which

the river Afon makes through the bar. The best of these is, from *Aberafon*. time to time, marked by perches, one being placed about 2 cables within low-water mark; and should a vessel be embayed off Aberafon, so as not to be able, by weathering the Neath Sands, to fetch into Swansea on the one tack, nor to weather Scar Point on the other, she may, about the time of high water, succeed in getting into Aberafon by passing close on the southern side of the perches. When the conspicuous range of white cottages (situated *Constantinople Cottages*. half a mile within the entrance, on the high land) called Constantinople comes in one with the cluster of copper-smelting chimneys (always smoking), bearing E.N.E., she should then run on that line till up to the shipping wharfs and close to the smelting-houses, keeping on the south side of the slag breakwater. She will there find perfect shelter; but nothing short of forlorn hope ought to induce a stranger to attempt such a risk.

From Aberafon the coast consists of a range of sand-hills, with *Scar Point*. a clean sandy beach, which is a third of a mile broad from low-water mark, and, after passing the Kenfig Burrows, terminates at Scar Point. This point, which is rendered conspicuous by the sudden change it makes in the appearance of the coast, it being low, dark, and rocky, bears from the Mumble Lighthouse S.E. $\frac{1}{2}$ S. 9 miles. But as those very formidable dangers, the Scarweather Sands, the Hugo Bank, and the Kenfig Patches, lie off this part of the coast, between Scar and Porthcawl Points, it is necessary to enumerate several objects on the land which the mariner will readily recognise, and which are used as danger-marks. 1. Scar *Scar House*. House, a large dark-looking farm-house with a white-washed roof, standing on a flat nearly half a mile within the point. 2. Kenfig *Kenfig Church*. Church, a white square-towered building, in a cluster of trees, on a gentle rise, a mile N.E. of the Scar House. 3. Margam trees, *Margam Trees*. a clump of firs, similar to those on Portsdown Hill, elevated 270 feet, and bearing from Scar House E. by S. 3 miles. 4. Newton *Newton Down Mill*. Down Windmill, of a dark colour, on a rising back-ground elevated 307 feet, and bearing S.E. by E. 2 miles from Scar House. 5. Porthcawl Inn, 2 cables within the point, showing its white *Porthcawl Inn*. gable well out, and bearing from Scar Point S. by E. $\frac{1}{2}$ E. $2\frac{1}{2}$ miles. 6. A small ruin nearly half-way between Scar and Porthcawl Points, called Castell Morlais. *Castell Morlais*. 7. Rhwchiwyns, a white *Rhwchiwyns House*. and yellow farm-house two-thirds of a mile from Porthcawl.

The Scarweather Sands lie between Scar Point and Porthcawl, *Scarweather Sands*.

*Scarweather
Sands.*

*Buoy on East
Scarweather.*

*Buoy on West
Scarweather.*

but are quite detached from the land by a 5-fathoms channel. They are about 5 miles in length from the 3 to the 3 fathoms at either end; and a ridge of 2 miles in the middle dries at low-water spring-tides, one part of it to the height of 6 feet. There is also a small patch within half a mile of the eastern extreme of the shoal, which just shows at low water, and lies on the line of Margam Trees in one with Castell Morllais E. $\frac{1}{2}$ N., and 2 miles from the beach. Half a mile E.S.E. from this dry patch a striped red and white buoy has been placed by the Trinity House in 6 fathoms, from whence a row of white cottages near Aberafon, called Constantinople, will be seen about its own length open to the westward of a conspicuous shaft on the summit of the highest hill in that direction, and bearing N.N.E. $\frac{3}{4}$ E.; Nash Low Lighthouse S.E. $\frac{3}{4}$ S.; and Porthcawl Point E.S.E. $2\frac{1}{4}$ miles. From the western extreme of the Western Shoal, Mumble Lighthouse bears north nearly $6\frac{1}{2}$ miles, but there are 12 fathoms midway between them on that bearing. A close mark for this extreme, just cutting it in 2 fathoms, is Woodland Castle shutting with Knaves Head and bearing N. $\frac{1}{2}$ W., when Newton Down Windmill is a quarter of a point open to the northward of Castell Morllais. A shelf of sand encloses the western and northern sides of the shoal, but to the southward it is very steep, having 6 and 7 fathoms within a ship's length of its edge. A red buoy with a small beacon has been placed close to the western end of this shelf in $4\frac{1}{4}$ fathoms, with the Constantinople cottages in one with the mouth of Aberafon E.N.E., and Mumble Lighthouse N.E. $6\frac{1}{4}$ miles. The nature of the bottom, however, will, if carefully watched by the lead, give timely warning in thick weather, as a belt of coarse sand and gravel, in 13 and 14 fathoms, lies upwards of a mile to the southward and westward, and outside of which there is a sandy bottom in 15 fathoms. In clear weather, by night, the Nash Lights kept in one, bearing S.E. by E. $\frac{1}{4}$ E., lead $2\frac{1}{4}$ miles outside of the Scarweathers, in 13 fathoms; and the Mumble Light brought to bear N. $\frac{1}{2}$ E. clears the western end a full mile, in 7 fathoms. The mariner may also always calculate on having 12 feet water over this shoal from 4 hours flood till 2 hours ebb. The great leading mark for passing three-quarters of a mile outside the Scarweathers in 14 fathoms is Worms Head just open to the southward of Porth-Einon Head, bearing N.W. $\frac{1}{4}$ N. (See View D.) Or if wishing to haul sharply into the

bay for Neath or Aberafon, bring the range of white cottages called *Scarweather Sands.* Constantinople, in one with the chimneys of the copper works, when both will appear over the Aberafon entrance, bearing E.N.E., and will lead across the western tail of the shoal in 5 fathoms. Its eastern end may be cleared half a mile in 7 fathoms, by keeping Kenfig Church in a line with Scar House, and bearing N.E. $\frac{1}{4}$ E. Vessels frequently pass in 6 fathoms between the northern edge *Shord Passage.* of this bank and the Hugo, by bringing Rhwchiwyns farm on with a singular gap formed by Newton sand-hills, when closing with Ogmoor Down, and bearing S.E. by E. $\frac{1}{2}$ E. This is called the Shord Passage.

The Hugo Bank lies a mile to the northward of the eastern *Hugo Bank.* end of the Scarweathers, having but 3 feet water on its centre at low-water springs. It is three-quarters of a mile long, and surrounded by an irregular 4 fathoms' bed, which shoals gradually from 5 and 6 fathoms, with a variable bottom, from half a mile distance. From the shallow part of this bank Scar Point bears E. $\frac{1}{2}$ S. $2\frac{1}{2}$ miles, with Margam Trees appearing twice their apparent breadth open southward of the Scar House.

There being deep water between the eastern end of the Hugo *Kenfig Patches.* and Scar Point, it was generally believed, that after passing the E. Scarweather the rest of the bay was clear towards Swansea, and that the various rippings were only the effects of tides; but the survey has discovered several patches of sand off the Kenfig Burrows. The one nearest the Hugo has only 2 fathoms' water; its inner end lies one-third of a mile from the Hugo in the direction of Kenfig Church, and from thence stretches a mile towards Mumble Head, but not exceeding $1\frac{1}{2}$ cables in breadth; thus narrowing the actual channel to little more than a mile at low water. Two small 3 fathoms' patches also are found half a mile farther to the eastward; and a 13 feet spot of foul ground $1\frac{1}{2}$ miles off shore, lies equidistant from Aberafon and Scar Point. A 4 fathoms' patch lies half a mile to the northward of the above, and three others between them and the shore, with $3\frac{1}{4}$, 3, and $2\frac{3}{4}$ fathoms. All of them are known by the general name of the Kenfig Patches; and to take the deepest water between the 2 fathoms' patch next *Kenfig Channel.* the Hugo Bank, and the 3 fathoms' patch to the eastward thereof, Dunraven promontory must be brought a little open to the southward of Porthcawl Houses, bearing S.E. $\frac{1}{4}$ S. When going to the south-eastward, this mark must be left as soon as Kenfig

Kenfig Channel.

Church and Scar House come in one, for the ground is uncertain, and there are some rocky fangs stretching from the shore under Castell Morllais and Rhwchiwyns, to the distance of a third of a mile. The coaster may also be reminded of a rock which projects from the low-water sand at half a mile north of Scar Point, called the

Mussel Bed.

Mussel Bed. Rhwchiwyns Point should be given a mile berth, for there is a growing sand-patch, with not more than 13 feet water W.N.W. of that point. None of these passages within the shoals are by any means warrantable at night; but should a vessel be accidentally entangled among them, let her endeavour to keep the Nash Lights S.S.E. $\frac{1}{4}$ E., and the Mumble Light N.N.W. $\frac{1}{4}$ W., which is the bearing of these lights from each other, and which is the only line that can be drawn clear of the dangers to the right and left.

Unsafe at Night.

Tides in the Shord.

It may also be observed here, that directly off Rhwchiwyns point the ebb stream branches through the Shord Channel, and continues a W.N.W. and W. by N. course from half ebb till low water, the flood stream returning over the same ground between low water and half flood.

Tides in Swansea Bay.

With reference to the set of the tides when within the range of Swansea Bay and its offing, it should be understood, that at about 5 miles west of the Scarweathers the first quarter flood sets directly towards them; after which, and until half flood, it sweeps one mile outside, nearing the west end of the Nash sands; and ultimately setting, till high-water, S.S.E., which points well outside of all. It averages a rate of 4 and 5 knots on springs, and 3 upon neaps, and changes exactly at the same time that it ceases to rise on the shore; but slack water always lasts half an hour. Midway between the western Scarweather and Mumble Head, the flood and ebb set W.N.W. and E.S.E. tide and tide, though farther in, the ebb sets directly from Swansea and Neath. One mile outside the Mumbles, and close inshore, a sharp eddy sweeps between Swansea and the Mumble Head, from half flood to low water.

Porthcawl.

The shore up to Porthcawl Point is low and rocky, and terminates in a small breakwater and an artificial harbour, which presents its entrance to the E.S.E. It is formed by two substantial arms of masonry, placed rather below the half-tide mark of the beach, and enclosing a bed of soft mud, with 20 feet water on the springs, and 12 on the neaps, with 8 feet between the pier-heads.

at 4 hours flood. When running for Porthcawl from the west- *Porthcawl.*
ward, care should be taken not to round the point nearer than $2\frac{1}{2}$
cables, as low-water rocks branch out nearly that distance to the
southward; but on opening the pier clear of the breakwater, a
vessel may haul up gradually for the entrance, letting go a stern-
anchor when shooting in. This little port is busily engaged in
the coal and iron trade, though it cannot admit more than eighteen
or twenty vessels from 50 to 150 tons; yet its accessibility, and
its position in the Bristol Channel would well deserve increased
means and space.

The following sailing directions have been drawn up by Mr. *Harbour Mas-*
Lewis Fitzmaurice, the zealous and intelligent harbour-master of *ter's Direc-*
Porthcawl, and are circulated there for the benefit of vessels fre- *tions.*
quentering the port:—

“ This harbour, which has now become much frequented by
“ coasters and vessels in the coal trade, is well sheltered from
“ the prevailing westerly gales, not only by the pier and Porth-
“ cawl Point, but it is further secured by a breakwater in a
“ south-easterly direction.

“ Vessels approaching the harbour from the westward with a
“ leading wind, after bringing the Mumbles Light to bear N. by
“ E., should not bring the Nash Lighthouses to the southward of
“ S.E. by E. until Newton Down Mill (which may be distinguished
“ by a clump of fir trees to the N.W. of it) comes midway between
“ Porthcawl Inn and the Rhwychiwns farm-house; the mill will
“ then bear N.E. by E. (easterly); this mark will lead midway
“ between the eastern end of the Scarweathers and the western end
“ of the Nash Sand, the water shoaling gradually from 10 or 11
“ fathoms at low water all the way to the shore. If, however, the
“ wind should be scant to the northward, with a flood tide, which
“ here runs strongly, it would be advisable to haul to the northward
“ as soon as the mill comes on with the farm-house. Porthcawl
“ Inn will be readily known by its presenting a broad white gable
“ to the westward, with the southern front yellow, and the farm-
“ house (which is about a mile to the N.W.) is a low thatched
“ building, yellow washed, with small outhouses or sheds round it.
“ Working the mill on with the farm-house when standing to the
“ northward, and on with the Inn when standing to the southward,
“ is a good turning mark; the channel is about two miles and a
“ half wide. Vessels bound to this port in strong westerly gales

Harbour Master's Directions.

“ should carry sufficient sail to keep to windward until about four hours’ flood, when they may bear up and run for the harbour by the above marks; observing, that when within about half a mile of the shore, the point of the breakwater will be seen on the starboard bow: this must be passed to the eastward, giving it a berth of about a quarter of a cable’s length, luffing up immediately to the northward; and if you cannot fetch in through the entrance, which is just to the northward of the S.E. angle of the basin, let go the anchor as near thereto as possible, where the water will be perfectly smooth, and boats will come out to take ropes on shore to haul the vessel into the harbour. A reef of rocks runs off to the southward and westward of Porthcawl Point, which should not be approached nearer than three or four cables’ length.

“ In coming from the eastward there is a passage between the eastern end of the Nash Sand and the Nash Point, with from 4 to 6 fathoms: this channel, however, is narrow, and the marks by no means sufficiently distinct to authorise a stranger in taking it, unless with a leading wind and fine weather; particularly as at nearly the eastern extremity of the sand there is a patch extending upwards of a mile and a quarter to the N.W. which dries at about half-ebb. The mark for going through this passage is the ruins of an old tower over Dunraven Point (which is a shelving and projecting rocky point, about three miles to the N.N.W. of the Nash lighthouses), on with a yellow house on the top of Southern Down (called Groes Farm) bearing north: this mark must be kept on until the low lighthouse bears S.S.E. $\frac{3}{4}$ E., when a course should be shaped on the opposite bearing: this course will lead clear to the southward of the Tusker, about two cables’ length, and when the Breakwater Point bears about N.N.E. you may then run for it. It should, however, be observed, that as the stream of tide sets across the sand, particular attention should be paid (in light winds) to keeping the low light-house on the above bearings.

“ In working through between the Nash and the Main it will be necessary to go about on the first shoaling by the lead, on both tacks, and this must be observed all the way down to Porthcawl.

“ About two-thirds of a mile to the southward of the breakwater there are two rocky patches, over which the sea breaks

“ violently in westerly gales, but as there is not less than 7 feet *Harbour Master's Directions.*
 “ on them at low-water springs, they need not be feared at any
 “ time of tide, when there is water in the harbour.

“ When waiting for water into this harbour, with the wind from
 “ the westward, in unsettled weather, it is far better to keep to
 “ windward, under sail, than to anchor off the breakwater, as the
 “ bottom there is loose sand and does not hold. The tide flows on
 “ the full and change till 6 o'clock. There is between the pier-
 “ heads 21 feet water on high springs, and 9 feet on low neaps at
 “ high water; but ordinary springs and neaps produce respec-
 “ tively about 18 and 11 feet. At very low spring ebbs the beach
 “ dries for 10 or 15 fathoms outside the breakwater.

“ In making for this harbour with a fresh breeze, it is always
 “ requisite to have an anchor ready for letting go, to bring the
 “ vessel up if necessary, the harbour being only 200 feet across;
 “ but in easterly winds the anchor must be let go from the stern,
 “ at a greater or less distance outside the entrance, according to
 “ the strength of the wind, veering the hawser with a turn as you
 “ run in: hence it is manifest that, under such circumstances, the
 “ harbour should be taken under as little sail as is possible to keep
 “ the vessel under command.

“ Licensed pilots are always in readiness to attend on vessels
 “ arriving here: it is therefore simply necessary that masters of
 “ vessels should have an anchor clear for letting go, either for-
 “ ward or aft, according to the wind being from the west or east-
 “ ward, with a sufficient number of hawsers on deck clear for
 “ running.

“ This harbour possesses the additional advantage (to vessels
 “ from Cornwall) of being from eight to ten leagues to windward
 “ of Cardiff and Newport, with the prevailing westerly winds,
 “ which alone may frequently be the means of saving an entire
 “ voyage. A railroad runs from the port eighteen miles up among
 “ the mountains, which abound in iron and coals, both of which
 “ are shipped at the port in considerable quantities.”

From Porthcawl the coast sweeps to the eastward, with a broad *Newton Bur-*
 flat beach, under the high sand-hills of *rows.* Newton Burrows, which
 terminate at Ogmere River. In the interval on the low rocky point
 of Newton there is an old pile of buildings called the Red House,
 or Bathing House, which is seen above the sand-hills, and leads
 the eye inland to the white steeple of Newton Nottage Church, and

to Newtown Down Mill, referred to hereafter, as leading marks for the Nash and Tusker.

Ogmore River. Ogmore River, where there is a salmon-fishery, brings down considerable freshes, but it is only accessible to small craft at the top of spring-tides.

Tusker Rock. About W.S.W. from the mouth of the river, and $1\frac{3}{4}$ miles S.S.E. of Porthcawl breakwater, lies the highest part of the Tusker Rock, which dries up 15 feet above low-water level, and thus indicates half tide nearly when awash. This highest part forms the south-eastern shoulder or extreme, from whence it slopes in a N. by W. direction, three-quarters of a mile to low-water mark, with an average breadth of half a mile, altogether presenting a very irregular, long-fanged appearance, and only bold at its S.E. end. Off its south-western extremity a green buoy has been

Tusker Buoy. lately placed by the Trinity House, in $4\frac{1}{2}$ fathoms, but a conspicuous beacon is hereafter to be erected on the rock itself. The nearest part of the Tusker is a mile from Porthcawl, with 4 fathoms between them, and it is connected with Newton Point by a ridge, over which there are $1\frac{1}{2}$ or 2 fathoms. To the E. of that ridge, and

Tusker Pool. between the Tusker and Ogmore River there is a pool of 15 to 18 feet water at low-water, and well calculated to anchor in for a tide. To the W. and N.W. of the Tusker there are two small

Passages round the Tusker. rocky patches, with only 7 feet water over them; and to sail outside of them and the body of the Tusker in 6 and 7 fathoms, keep Rhwchiwyns and Scar Points in one, bearing N. $\frac{3}{4}$ W. To pass between those patches and the Tusker, and very close to its N.W. end, bring Newton Down Windmill, Newton Nottage Church, and the Bathing House, in one, bearing N.N.E. $\frac{1}{2}$ E. And to run between the Tusker and the main, at the same time crossing the Tusker Pool, keep Rhwchiwyns and Porthcawl Points in one, bearing N. W. $\frac{1}{2}$ N. In moderate weather the Tusker may be sailed over in 17 feet water, at high-water springs, or 10 feet at high-water neaps; and it may be remarked, that as long as the rock is actually covered, the eastern end only of the Nash is dangerous, and that there are then 9 feet over the Scarweathers. The only directions to keep without the Tusker by night are, not to bring the Nash lights to the southward of S.S.E. $\frac{3}{4}$ E. Finally, the Nash sands lie $1\frac{1}{2}$ miles to the south-west of the Tusker, with upwards of 6 fathoms between them, but with foul ground.

Ogmore Cliffs. At a short distance to the south-eastward of Ogmore River the

coast rises into limestone cliffs of about 100 feet high ; but not- *Ogmore Cliffs.*
 withstanding its bold appearance, it must not be approached
 within a third of a mile, owing to some shelving rocks which ex-
 tend 2 cables out. From thence to Nash Point, a distance of
 5 miles, the coast is only interrupted by Dunraven Head, which *Dunraven*
 slopes to a low rocky point that is pretty bold to, and distinguished *Head.*
 by a little white gazebo. A flagstaff surmounts the conical part
 of this projecting head, and a little further in stands the modern
 mansion of a freestone-colour called Dunraven Castle, nearly over
 a small bay on the northern side, where a boat is kept, and which
 is the only landing-place on this part of coast. On the S.E.
 side of the promontory, which is almost perpendicular, and partly
 wooded, the ruins of a tower will be seen, which, with Groes, a
 remarkable yellow house $1\frac{1}{2}$ miles nearly north of it, forms a leading
 mark for the channel inside the Nash Sand.

127. The Nash Point is an abrupt and prominent feature of the *Nash Point.*
 north shore of the Bristol Channel, which suddenly narrows
 there to one half the breadth it has abreast the Mumbles. From
 thence also spring the Nash Sands, which were long notorious for
 their constant wrecks, occasioned not only by there being no light
 in sight, but by the ebb tide, which sets obliquely from Bridge-
 water Bay towards them. The former source of danger has been
 happily obviated by the erection in 1833 of two lighthouses on
 Nash Point.

128. These lights are placed along the cliff, and bear from Lundy *Nash Lights,*
 Light E. $\frac{3}{4}$ S. distant 44 miles ; from Mumble Light S.S.E. $\frac{3}{4}$ E.
 $18\frac{1}{2}$ miles ; from Ilfracombe Light E. $\frac{1}{4}$ N. $23\frac{1}{2}$ miles ; from
 the Foreland E.N.E. $\frac{1}{4}$ E. $12\frac{3}{4}$ miles ; and from the high land of
 Minehead, the nearest part of the south coast, N.N.E. $\frac{1}{4}$ E.
 11 miles. The easternmost of the two lighthouses is the highest,
 and is distant from the lower exactly 1000 feet, on the magnetic
 bearing of S.E. by E. $\frac{1}{4}$ E. (S. 84° E. true.) Both are white,
 with slate-coloured roofs, and stand close to the cliff on a table-
 land elevated 77 feet above high-water level. The lantern of the
 former is 90 feet above its base, and that of the lower one 45 feet ;
 and therefore, on ordinary springs, their reflectors being respec-
 tively elevated 167 and 122 feet above high-water level, they are
 visible on a clear night to an eye 10 feet above the sea, at the
 distances of 18 and 16 miles. These lights are excellent, and not
 only serve to avoid the Nash and Scarweather sands, but when *clear the Nash*

*and Scarwea-
ther Sands and
Culver,*

running to the eastward a vessel will avoid the west end of the Culver Sand, by keeping the lower light *brightly* in sight; for it is so masked as to begin to grow dim when bearing N. by W. $\frac{1}{2}$ W., and this bearing leads $2\frac{3}{4}$ miles to the westward of that sand. The upper light is likewise so managed, that as long as its entire brilliancy is preserved, it ensures not only a sufficient offing from the reef which extends from Breaksea Point, but it leads to the

*and One Fa-
thom Bank, and
Breaksea
Rocks.*

southward of the One Fathom Bank, the mask being so disposed as to produce a dim light when bearing to the westward of N.W. $\frac{1}{2}$ N. This line of bearing clears Breaksea low-water rocks nearly a mile, and passes $1\frac{1}{2}$ miles to the westward of the One Fathom Bank, thus leading into the fair way between that bank and the Culver. The Nash Lights cannot, after a moment's consideration, be mistaken for St. Ann's Lights; for in making the latter from the S.W. the upper light is seen to the left or northward of the lower; but the Nash upper light must always appear on the right hand of the lower light when running in shore from that quarter. The cliff whereon the light towers are erected is rather lower, and less prominent when viewed from the N.W. or S.E., than the conspicuous bluff on which St. Donat's Castle stands.

Nash Sands.

129. The eastern extremity of the Nash sands begins to rise above low water about a third of a mile N.W. $\frac{1}{2}$ W. from the corresponding low-water mark of Nash Point. This narrow pass, however, often affords a convenient and safe day channel in 5 fathoms' water; and a tolerable tidal anchorage on the ebb may be taken close inside the eastern extremity of the sands. Both are greatly facilitated by a new black and white chequered buoy lying off the point of the East Sand in $4\frac{1}{2}$ fathoms, with the N. side of the high lighthouse touching the S. side of the low lighthouse, and Groes House twice its breadth open to the W. of Dunraven Tower. From this end the sands extend fully 7 miles N.W. $\frac{1}{4}$ W., and are divided into three patches, but all consisting of fine brown sand.

*East Nash
Buoy.*

East Nash.

The first, or east patch, which may be called the Nash Sand, takes a more northerly direction than the above general line of bearing, and upwards of a mile in length of it dries 17 feet high on the springs, showing the half-tide level when just awash. From thence a one fathom tail continues to the N.W., where it is separated by a very narrow and shallow swatch from the Middle Nash, which is a ridge of $1\frac{1}{4}$ miles long, and carrying scarcely a fathom in depth at low water. A better swatch succeeds, as it is half a mile

Middle Nash.

wide, with 15 feet water ; and then comes the West Nash, of 2 *West Nash*. miles in length, carrying $1\frac{3}{4}$ fathoms in depth, and nowhere exceeding 2 cables in breadth. The whole of these banks are united by a 3 fathoms bed of similar sand, about a quarter of a mile across from edge to edge. The soundings shoal towards them rather suddenly, from 7 fathoms sandy bottom, at 2 cables' outside of their outer margin ; but at 1 and 2 miles to the southward there are 9 and 10 fathoms with coarse gravel, which is a sure indication of approaching them. Inside of the bank the soundings come abruptly up to it from 8 fathoms, with 6 and 7 fathoms foul ground towards the shore. From the western extreme of the West Nash, Porthcawl bears N.E. by E. 3 miles, or Newtown Down Mill in one with Porthcawl Breakwater just cuts the 3 fathoms' limit of the shoal ; and the Mill in one with Porthcawl Inn, N.E. by E. $\frac{1}{2}$ E. will lead a third of a mile to the westward of all, in 8 fathoms sand and shells. St. Donats Bluff closing with the Nash Point, is the cross mark for that W. extreme. Off the western extremity of this shoal a buoy has been recently fixed by the directions of the Trinity House. It is chequered black and white with a small beacon, and lies in 6 fathoms, Newtown Down Windmill being in one with the middle of Porthcawl Breakwater, N.E. by E. $\frac{1}{4}$ E., the lighthouses S.E. $\frac{1}{4}$ E., and the East Scarweather buoy N. about $2\frac{1}{2}$ miles. There are 10 fathoms, foul ground, between this end of the sands and the main, and as the same depth extends to the east end of the Scarweathers, this space may often be used with a beating wind, by attending to the above marks, as well as to those for clearing that end of the Scarweathers, namely, Kenfig Church and Scar House in one. When working down to the south-westward, as soon as the Nash lighthouses appear in one, bearing S.E. by E. $\frac{1}{4}$ E., or when any part of the land to the eastward of Nash Point appears in sight, the vessel will be well outside the west end of the West Nash, as the lighthouses in one lead $1\frac{1}{2}$ miles to the southward of it in 10 *Nash Sands*. fathoms, gravel, and three quarters of a mile outside of the Middle Nash, in 9 fathoms, gravel ; and just a cable's length to the southward of the eastern extreme of Nash Sand in 3 fathoms. In thick weather, when standing to the northward towards any part of this dangerous shoal, never go nearer than 10 fathoms on gravel bottom.

130. To sail in between the Nash Sand and Nash Point, in 5 *Nash Passage*.

Nash Passage. fathoms at low water, supposing the buoy should not watch, bring the conspicuous house on Southern Down, called Groes, directly in one with the dark tower on Dunraven promontory, bearing north*, taking care to haul westward as soon as the lower lighthouse comes over the little white beach, just to the westward of the point, bearing S.S.E. $\frac{3}{4}$ E. This latter mark should be preserved when

Straight Course between the Sands from Mumble Light to Nash Lights. passing either way, for it also leads a quarter of a mile outside the Tusker, and directly towards the Mumble Light, being, in fact, the line before-mentioned connecting the lower Nash Light with the Mumble Light, and marking a straight low-water channel the whole way; leaving the Nash Sands on the one hand, just clearing, on the other hand, the Tusker, the Rocky Patches, and Scar Point, and passing between the Hugo and Kenfigs. If, therefore, a vessel should be caught inside the sands at night, she should endeavour to preserve, by careful steerage, the back and forward bearings of the Nash lower light S.S.E. $\frac{3}{4}$ E., and the Mumble light N.N.W. $\frac{3}{4}$ W.

Nash Swatch. 131. The Nash Swatch, as already stated, has 15 feet at low-water springs, and may be taken with Newton Down Mill, Newton Nottage Church, and the Red House or Bathing House, all in one, bearing N.N.E. $\frac{1}{2}$ E. Besides which leading mark, a black buoy has been laid down on the W. side of the Swatch in $2\frac{1}{2}$ fathoms at low water, with the high lighthouse open its apparent length to the S. of the low lighthouse, Newtown Down Windmill open its apparent length to the W. of Newtown Nottage Church, and the Tusker buoy bearing N.E.

Nash Tides. 132. It should be carefully borne in mind, when a vessel for the above purposes is closing with the Nash Sands, that the ebb stream sets obliquely across them N.N.W., as likewise does the flood S.S.E. from within. At two miles off, however, or when the upper lighthouse is open to the southward of the lower one, a fair stream of ebb sets in a N.W. by W. direction, and of flood S.E. by E., both turning at the times of high and low water on the shore, but allowing half an hour for slacking, and running from 3 to 5 knots on the springs, and from 2 to 3 on the neaps. It is high water at Nash Point on the full and change days of the moon at 6h 15m, being 24 minutes later than at Mumble Head. Ordinary springs rise 33 feet, neaps 17, and equinoctial tides 38 feet.

In conclusion, as respects the Nash Sands, it is proper to know

* See view d in Plan.

that, after the first quarter flood, no part of the point has less than 14 feet over it, except the eastern end, which does not cover till half flood; but even that patch carries 16 feet water at high-water springs, and 9 at high-water neaps. It is only with smooth water that a vessel should borrow upon any part of these sands.

133. In describing the features of the coast to the eastward of the *Nash Point*. Nash Point, it should be remarked that the immediate elbow that forms that point is rather lower and less prominent, when viewed from the S.E. or N.W., than the connecting Table Land which unites it to St. Donats Bluff, where the cliffs fall back into a *St. Donats Bluff*. bight, over which stand the ruins of St. Donats castle, and its detached watch-tower, and off which a vessel may avoid the flood-tide by anchoring in fine weather. This old tower, which bears from the upper lighthouse S.E. by E. $\frac{1}{4}$ E. nearly a mile, is elevated 207 feet above high-water level, and assists in identifying this part of the coast, on a sudden clear up of thick weather. The low-water line extends off $1\frac{1}{2}$ cables' lengths, and the water gradually deepens to 7 or 8 fathoms, with a sandy bottom, at a mile distance, and to 12 fathoms, with gravel, at $1\frac{1}{2}$ miles.

134. From St. Donats the coast is nearly straight up to Breaksea Point, and though the back ground preserves its height, yet the cliffs suddenly slope down to a margin of flat low-water rocks and stones. The first projecting foul ground likely to pick up a vessel running too close along shore is that off Colhugh Point, which *Colhugh Reef*. bears from the Nash Upper Lighthouse S.E. 2 miles, as it extends from the high-water mark a third of a mile in a W. by S. direction, and suddenly shallows from 6 fathoms, foul ground, a quarter of a mile off shore; but it may always be avoided by keeping the upper light or Lighthouse in sight when passing.

Four miles further eastward is Breaksea Point, from which a *Breaksea Shelf*. shelf of rocks extends half a mile off, in a W.S.W. direction; its extreme point bears S.E. $\frac{1}{2}$ S. from the Nash Upper Lighthouse, and, as it springs out from some low sand-hills, vessels often run upon it, when closing in towards the north shore at night, the eye being deceived by the high back ground as to its actual distance. The frequency of these disasters is lamentably proved by the wrecks which annually strew its beach, and which have induced the Trinity House to place a buoy (striped black and white) just *Breaksea Buoy*. off its outer pitch in 5 fathoms, the low lighthouse bearing N.W. $\frac{1}{2}$ W., and apparently midway between the High Lighthouse

Breaksea Shelf.

and a white beacon on St. Donats Cliff. If this buoy should not watch, the outer rocks may be cleared 3 quarters of a mile by not bringing the Upper Nash Light to the westward of N.W. $\frac{1}{4}$ N., or by simply keeping it open and well in sight, for that light is so masked as to darken immediately within the line of danger. The Flatholm Light also affords a check, by taking care, when standing in, or running along shore, not to bring it more southerly than E.S.E. Three fathoms range at a cable's length outside the low water rocks of this point, 7 fathoms at half a mile, with sand, and 8 fathoms with foul ground are found at a little more than a mile distance, rising suddenly from 14 fathoms on a rocky bottom. A convenient anchorage may, however, be taken up on an ebb-tide in 3 fathoms, at the western side of the point, and limestone craft find a small layer of mud, which serves for that purpose, off a white hut called Limpert.

Aberthaw Creek.

On the eastern side of Breaksea is the inlet of Aberthaw, presenting a maze of shingle banks, which prevent its being approached by anything but small craft.

Roos Point.

135. Roos Point, to the eastward of Breaksea, is a limestone cliff of about 50 feet high; it bears from Breaksea S.E. by E. $\frac{1}{2}$ E. $2\frac{1}{4}$ miles, with 5 fathoms at 2 cables off, and 18 fathoms foul ground at $1\frac{1}{4}$ miles distance, but it is only remarkable as being the southernmost point of the Welsh shore of the Bristol Channel. Coldknap Point and Barry Island then appear, with Porthkerry Bight in the interval, in which the low-water rocks extend a considerable distance off, especially the Chapel Rock, which comes awash on low springs. This rock lies in a line from Roos Point to the outer extreme of Barry Isle, bearing from the former E.S.E. $\frac{1}{4}$ E. nearly a mile, and directly off Porthkerry Church, which stands up among trees with a square grey steeple. Breaksea Point kept just in sight, or Sully Island open of Barry Isle will clear this rock at a cable and a half in 4 fathoms.

*Chapel Rock.**Barry Isle.*

136. Barry Isle, which lies close to the eastward of Coldknap Point, is only an island at half-tide, and even then, as it lies in a recess almost within the line of coast, there are but few positions in which it appears insulated. As the tide rises there is a circuitous channel within it with complete shelter for small craft on a layer of mud; but only those well acquainted should attempt it, each entrance being overlapped by rocks. The western one is the best of the two, and carries 7 feet in at half-tide. The island is not

quite a mile long, but its eastern part is as high as the adjacent *Barry Isle*. land, and the outer points are pretty bold, there being 5 fathoms at 2 cables off, and 19 fathoms on foul ground at 2 miles. A very strong tide, sometimes producing a race, passes close to Barry Island; but a vessel may avoid it on the flood, by anchoring in 5 fathoms just to the eastward, as soon as Roos Point shuts in, and right off a large black rock called the Bendrick, which lies $1\frac{1}{2}$ cables from the main, and a mile due east of the island.

137. Sully Island bears E.S.E. $\frac{1}{2}$ E. at the distance of $2\frac{1}{2}$ miles *Sully Island*. from Barry Isle, and, though much smaller, presents a more conspicuous and prominent appearance, as it stands a quarter of a mile from the shore, though connected to it at half-ebb by a causeway of rocks, which, when just covered, indicates a 19 feet rise of tide. This islet, though but a quarter of a mile in length, rears up boldly at its eastern end, and, being higher than the neighbouring shore, is very distinct at night. There are 5 and 6 fathoms, on foul ground, at 2 cables from its south side, but it must not be closely approached at either end. At half a mile, however, to the westward of it, with its eastern end just shut in by the western extreme, vessels may anchor out of the ebb-stream, and in very little flood.

138. Lavernock Point lies E. $\frac{1}{4}$ N. more than a mile from Sully *Lavernock Point and Shelf*. Island; it forms such an abrupt elbow in the line of the coast as immediately to catch the eye of the mariner. It has a little white church and a farm-house just within the brink of the cliff, which is of limestone, and bold looking; but there is, nevertheless, a spit of rocks which dries at low water, and which stretches out *Lavernock Spit*. half a mile in the direction of Flatholm, with deep water close to its extreme end. These rocks must not be approached, on the south side, nearer than to keep the outer extreme of Barry Isle just opening clear of Sully Island, bearing W.N.W. $\frac{1}{2}$ W. (See View N.)

A white buoy has been latterly placed off the pitch of this spit *Lavernock Buoy*. in 4 fathoms, with Red Brick Point just open of Ball Head, W.N.W. $\frac{1}{4}$ W., and Lavernock Church belfry in one with Lavernock Point, N.N.W. $\frac{1}{4}$ W.

139. The One Fathom Bank, so called from its shoalest spot *One Fathom Bank*. having exactly a fathom on it at an ordinary spring ebb, lies 3 miles S.W. $\frac{1}{2}$ S. from Sully Island, and the same distance from Barry Isle; it bears due west from Flatholm Light, $3\frac{1}{2}$ miles distance, and N.W. by W. from Steepholm, just to the S. of which the peak of

One Fathom Bank.

Brean Down may be seen at the distance of 7 miles. This bank is directly in the fair way of vessels using the north side of the channel; but as its very shoal parts occupy only a small space, and as the rising tide renders the rest of it comparatively safe, few instances of ships striking on it have occurred. Two other patches of coarse sand lie east and south of the One Fathom patch, with as little as 10 feet on them, and the whole bank, which is a bed of fine gravel, extends about a mile east and west, by a third of a mile broad, from 3 fathoms to 3 fathoms; but its length is at least a mile and a half from 5 to 5 fathoms, to which depth the soundings shoal suddenly from 8 and 9 fathoms, on all sides except the west, where it deepens gradually to 7 fathoms at 2 miles from the middle patch, with coarse gravelly bottom. As much as 18 fathoms, coarse ground, are found a mile off between it and Barry Isle, and 16 fathoms towards Sully Island; but there are nowhere between it and the Culver Sand more than 8 fathoms, on a sandy bottom. The heavy breaking sea which sometimes takes place on this bank should be carefully avoided by deeply-laden craft; but, in fine weather, there are always 25 feet water over it at half-tide, and not less than 15 at three-quarters ebb, or one-quarter flood.

One Fathom Bank Buoy.

A black buoy has been wisely placed on its western extreme in 5 fathoms at low-water spring tides, and the following leading marks will clear it on all sides:—

Clearing Marks.

Barry Church, which is white, with a double belfry, on the ridge of Coldknap Point, if brought in one with the S.W. point of Barry Isle, bearing N. $\frac{3}{4}$ W., will clear the One Fathom Bank to the W. in $5\frac{1}{2}$ fathoms; and the same church touching the S.E. point of the same island will clear it to the E. in 8 fathoms. See Views I. and K. To sail between it and the main, in 9 fathoms and a mile from it, keep the pitch of St. Thomas Head, touching the south extreme of Flatholm Island, bearing E.S.E. Penarth Head and Lavernock Point in one N.N.E. $\frac{3}{4}$ E. gives it a wide berth to the eastward in 10 fathoms; and Anchor Head, a little open to the southward of Steepholm, bearing E. by S., leads midway between it and the Culver Sand, in 6 fathoms. See View P.

Culver Sand.

140. The Culver Sand is the first formidable danger eastward of the Nash, being a narrow ridge of hard sand lying in the middle of the Channel, and in the direction of the stream which is E. $\frac{1}{2}$ S and W. $\frac{1}{2}$ N. It is $5\frac{1}{2}$ miles in length from 4 fathoms to 4 fathoms at either end, and upwards of 3 miles of it dries at low

water, when the eastern part is 9 feet high ; but no part of the *Culver Sand*. bank exceeds $2\frac{1}{2}$ cables in breadth. From the eastern extreme in 4 fathoms Flatholm Lighthouse bears N.E. 3 miles, the Rudderhead of Steepholm N.E. by E. $\frac{1}{2}$ E. 3 miles, and Burnham Lights S.E. $\frac{1}{2}$ S. 7 miles. Penarth Head will be just on with Lavernock Point, bearing N.N.E., and the southern houses of Weston-Super-Mare will appear just open of Brean Down. From the western extreme of the Sand, in 4 fathoms, Flatholm Lighthouse bears E.N.E. $\frac{3}{4}$ E. 9 miles ; and Burnham Lights S.E. by E. 11 miles ; Penarth Church, a white single building without a tower, on the pitch of the head, will be seen over the W. end of Sully Island, bearing N.E. $\frac{1}{2}$ E. ; and Weston appearing as before. This point is the tail of a spit which shoals gradually for the length of a mile to 2 fathoms, where it abruptly rises ; the spit is chiefly sand with scattered patches of gravel ; but the south side of the bank is very steep, as it alters from 6 fathoms to 1 at a cast ; along this south side of the Culver there is a deep channel with 7 and 8 fathoms, and from a mile to half a mile in breadth ; and for 3 miles to the tail of Bridgewater Bar there is nowhere a less depth than $3\frac{1}{2}$ fathoms with alternate sand and mud. There is also a broad deep water channel between the Culver and the One Fathom Bank, which lies 3 miles to the northward. There are generally 6, 7, and 8 fathoms in this channel, but with foul uneven ground, which in one place a mile N. of the E. end of the Culver rises within $4\frac{3}{4}$ fathoms of the water.

To clear the W. end of the Culver, in 3 fathoms, bring Willet Tower, a remarkable building 6 miles inland on the Devonshire side, just to the westward of West Quantock Wood, bearing S.S.W. $\frac{1}{2}$ W. See View **X**. To cross the east end, in 4 fathoms, bring Penarth Church on with Lavernock Point, bearing N.N.E. View **L**. And to run between it and the Gore Sand or Bridgewater Bar, at $1\frac{1}{2}$ miles from the Culver or about mid-channel, keep Weston Church (yellow with a square steeple at the east end of the town) just clear of Brean Down, bearing E. $\frac{1}{4}$ N. View **Q**. This will lead over a very irregular bottom, in some places 6 and 7 fathoms, and in one spot $3\frac{3}{4}$ at dead low water.

The Trinity House have lately placed two very useful buoys to *Culver Buoys*. mark the extreme ends of this dangerous sand. The Western Buoy, which is striped red and white and carries a small beacon,

Culver Buoys. lies in 4 fathoms at low water, with Swallow Cliff just open of S. end of Steepholm, E. $\frac{1}{4}$ N. Willet Tower well open W. of West Quantock Wood S.S.W. $\frac{1}{2}$ W., and the East Culver Buoy E. $\frac{1}{2}$ S. The Eastern Buoy is red, and lies in $6\frac{1}{2}$ fathoms, with Penarth Head in one with Lavernock Point N.N.E. $\frac{3}{4}$ E., Black Nose just open S. of Steepholm E.N.E. $\frac{3}{4}$ E., Flatholm Lighthouse N.E. $\frac{1}{2}$ E., and Burnham Church S.E. by S.

*Facility given
by the Nash
and Flatholm
Lights in navi-
gating the Bris-
tol Channel.*

141. With the chart of the Bristol Channel and the foregoing directions it is believed that any intelligent seaman may feel himself independent of a pilot, even with a working wind, till to the eastward of the Culver and One Fathom Bank. Indeed, by night, with a leading wind and clear weather, he will find that the lights are so placed as to reduce the method of keeping in the fair channel to two distinct bearings. He has been already told that, so soon as the *Lower or Western Nash Light* disappears, he is approaching the west end of the Culver, for the line of obscuration of that light when bearing N. by W. $\frac{1}{2}$ W. passes just $2\frac{1}{2}$ miles to the westward of that sand. His next care must be to bring Flatholm Light on the bearing of E. by N., and to keep it so till within about a mile distance, which bearing well preserved will carry him midway between the Culver and the One Fathom Bank, and will counteract the indraft of flood towards Bridge-water Bar. When approaching Flatholm he will haul to the northward or southward according as he may be bound to Cardiff or Bristol.

On the other hand, if proceeding down channel after parting with the pilot abreast of the Holms, while pursuing the fair-way course by keeping Flatholm Light E. by N., he may haul to the northward, if bound that way, when outside of the One Fathom Bank, as soon as the *Upper or Eastern Nash Light* appears in sight, as its line of obscuration when bearing N.W. $\frac{1}{4}$ N. passes $1\frac{1}{2}$ miles to the westward of that bank; or if continuing his westerly course, when the *lower light* appears, bearing N. by W. $\frac{1}{2}$ W., he may be assured of being clear to the westward of the Culver.

*Flatholm
Light.*

142. It is in this vicinity that the Flatholm Light comes into especial use in guiding a ship bound to the eastward; for without seeing it, no man would be justifiable in proceeding, even with a pilot, the soundings being too uncertain, and the tides so furious as to preclude any safe navigation in thick weather. It stands upon the southern and highest part of Flatholm Island; Break-

sea Point bears from it N.W. by W. $\frac{1}{2}$ W. 11 miles, and Lavernock Point, the nearest part of the land, N.N.W. $2\frac{3}{4}$ miles. The light is elevated 156 feet above the high-water level of ordinary springs, showing a fixed light all round. The tower, which is white-washed, is 77 feet high. From thence the island slopes down to the northward; it is nearly circular, and a third of a mile in diameter; and it is tolerably bold, except off the farmhouse at the N.W. point, where shelving rocks extend from it 2 cables' lengths. The adjacent soundings vary very much, there being 14 fathoms close to its S.E. point, and only $3\frac{1}{2}$ between it and the Wolves, while there are 8 and 6 and $4\frac{1}{2}$ at half a mile to the S.W. and W.

143. Near Flatholm there is a small detached shoal which might pick up a vessel; it is called the New Patch, and lies east from the lighthouse, and a quarter of a mile from the nearest part of the island. It seems to be only a knoll of sand with 9 feet water at the western end of a 4 fathoms tail which stretches $1\frac{1}{2}$ miles to the E.N.E., and between it and the island there are 7 fathoms. On the shoalest part of this Patch a white buoy now rides, but if it be not clearly seen no vessel near low water should round the Flatholm to the eastward nearer than on the line of Hayes Windmill appearing half way between Sully Island and the main, bearing N.W. $\frac{1}{2}$ N. Hayes Mill is white, and stands near the shore to the westward of Sully. On the tail of the New Patch the flood stream often produces broken water, though with little set of the tide; and vessels sometimes anchor thereabouts for a tide with the lighthouse bearing W. by S.; but the best anchorage for a coaster, where she can ride out a smart westerly breeze, is on a bed of mud with 3 fathoms, close to the N.E. part of the island, and abreast of a steep beach of shingle which is the chief landing-place; observing that it may be approached until Steepholm just disappears.

144. Connected with Flatholm, and indeed rising from the same rocky base, there is a small but mischievous cluster of rocks called the Wolves. They lie in a direct line between Sully Island and Flatholm, bearing from the Lighthouse N.W. $\frac{1}{4}$ N. rather more than a mile, and from Lavernock Point S. by E. $1\frac{1}{4}$ miles; and when on them Cardiff Church will appear touching the extreme of Penarth Head, N. by E. $\frac{1}{4}$ E., and Hayes Mill just eclipsed by the pitch of Sully Island, bearing N.W. The Wolves consist of

Wolves.

three rocky heads, the highest of which shows about 5 feet at low-water springs, and, though the whole cluster does not exceed a cable's length in diameter, yet they form a very dangerous impediment to navigation, because both flood and ebb set directly over them, and the tides are extremely rapid, running sometimes almost 6 knots. There are 4 fathoms at low water on the rocky shelf which connects them with Flatholm, but there are 7 fathoms between them and Lavernock, and not less than 3 fathoms close

Wolves Buoy.

to them all round. At half-tide they carry 14 feet. A red and white chequered buoy has been placed half a cable's length west of them in 5 fathoms, and they may be safely avoided with a turning wind by attention to the following marks:—Hayes Mill nearly touching the western extreme of Sully Island, bearing N.W. $\frac{1}{4}$ N., leads a cable's length to the S.W. of them, in 6 fathoms; Hayes Mill kept in the middle of Sully Sound, bearing N.W. $\frac{1}{2}$ W., leads a quarter of a mile north-eastward of them in 6 fathoms. To pass them a quarter of a mile to the westward in 5 fathoms, keep Cardiff Glasshouses touching Penarth Head bearing N. by E. $\frac{1}{4}$ E., which also clears Lavernock Spit, though not Ranie Spit; and to pass to the eastward between them and Flatholm in 4 fathoms, about 2 cables off, bring Cardiff Church a quarter of a point open of Penarth Head bearing N. by E. (See View M.) This mark also leads into Penarth Road midway between Cardiff Grounds and Lavernock Point. A vessel with a leading wind should keep the outer extremes of Barry and Sully Islands in one, bearing W.N.W. $\frac{1}{2}$ W. (See View N.) This mark clears Lavernock Rocky Spit by 2 cables, passes midway between the Cardiff Grounds and the Wolves, and leads a cable's length to the N. of another patch of rock called the Centre Ledge, which lies $1\frac{1}{2}$ miles N.N.E. of Flatholm Lighthouse. It also leads half a mile to the southward of the Monkstone.

*Centre Ledge.**Steeptholm.*

145. Steeptholm is an island 2 miles S.S.W. from Flatholm; it is of a narrow oblong shape, about half a mile long, in a S.E. by E. direction, and with a high steep shore, so as to make well out at night, being about 220 feet above high water, or three times the height of Flatholm. The eastern end only is accessible, where a spit of shingle dries 2 cables out to the S.E.; and there, as well as at the western end, a 3-fathoms shelf of rocks projects to the distance of half a mile, the island being otherwise pretty bold. There are from 6 to 8 fathoms sand and mud between it and the

Culver Sand; the same, but with foul ground, between it and Brean Down; and from 7 to 15 fathoms between it and Flatholm, but mostly rocky bottom. The nearest point of the English shore to Steepholm is Brean Down, which bears S.E. $2\frac{3}{4}$ miles, and which has been already described as a remarkable ridge rising from an extensive flat, and nearly insulated at high water. Few vessels pass to the southward of Steepholm, unless going to or returning from Bridgewater.

146. At Steepholm it is high water at fall and change at 6h. *Steepholm Tides.*
37m. Ordinary springs rise, 38 feet; neaps, 21 feet; and equinoctial springs, 41 feet. Both streams run with great violence.

147. We will now return to Lavernock Point, and the approach to Cardiff. *Approach to Cardiff.* The space between Flatholm and that point is much frequented, not only by the numerous coasters and other vessels proceeding to Cardiff, but by the Bristol and Newport traders, and the steam-packets who creep up the north shore against the ebb. In hauling round Lavernock Point, if the white buoy already mentioned should not watch, no vessel ought to approach nearer than to keep the outer extreme of Barry Isle in sight to the southward of Sully Island, W.N.W. $\frac{1}{2}$ W., which line will ensure $4\frac{1}{2}$ fathoms: and, when hauling to the northward, the Cardiff glass- *Ranie Spit.* houses must be kept at least a quarter of a point open to the eastward of Penarth Head (N. by E. $\frac{1}{2}$ E.), in order to avoid Ranie Spit, part of which dries at low water, and its extreme end bears E.S.E. half a mile from Lavernock Point.

148. On the other hand, should the wind hang from the northward, *Cardiff Grounds.* she must not stand to the eastward farther than to bring the eastern extreme of Steepholm within a quarter of a point of Flatholm, bearing S. $\frac{1}{2}$ W., that being the mark for keeping scarcely two cables distant from the tail of the Cardiff Grounds, in $4\frac{1}{2}$ fathoms. From the extreme point of this tail Lavernock Point bears W. $\frac{3}{4}$ N. a mile distant, and Flatholm Lighthouse S. $\frac{1}{2}$ W. $2\frac{1}{4}$ miles; Cardiff Church just touches the west side of the glasshouses N. $\frac{1}{2}$ E., and Ball House, which is white, is seen almost closing with Lavernock Point, W. $\frac{1}{2}$ N. A black buoy, *West Cardiff Buoy.* with a beacon, has been lately placed there, in 4 fathoms, with the E. end of Steepholm, and the W. end of Flatholm, just touching; but it lies too close to the shoal for a vessel to shoot inside of it in stays at low water, and a stranger should recollect that the flood-stream sets directly and strongly from Lavernock Point

*Cardiff
Grounds.*

towards the Grounds. The Cardiff Grounds consist of several ridges of very hard sand, and stretch across Cardiff Bay at a mile from low-water mark. The middle part of them rises to 10 feet, and the whole range, which shows at low water, extends altogether $3\frac{1}{2}$ miles N.E. by E., where it merges in the Peterstone Flats.

*Peterstone
Flats.*

149. These flats reach to the Welch Grounds, the interval being full of shallows and tongues of sand, which are too numerous and too variable to render a minute description of any use; and the only general rule that need be given is not to approach them till after a third or a quarter flood, when 15 feet may be expected over all, as far as the mouth of the Usk or Newport River.

*Cardiff or Pen-
arth Road.*

150. It is therefore a great benefit to the traders of both Newport and Cardiff, when arriving too early upon tide, or being headed by westerly winds if going out, that the convenient roadstead of Cardiff or Penarth offers itself between the Grounds and the Lavernock shore, with good anchorage, in 4 and 5 fathoms, and good holding-ground. The best position is with the western extremes of the two Holms in one, S. by W. $\frac{1}{2}$ W.; and a white house called Leckwith just coming in sight as it opens from Penarth Head, bearing N.N.W. $\frac{1}{2}$ W. Vessels may ride there in tolerably smooth water, except it blows hard from the S.W.; and should it become too boisterous to continue there, they will find

*Good Berths
on the Penarth
Flats.*

excellent berths on Penarth Flats, for a hundred sail, after three quarters flood. In this case they should bring up as soon as Flatholm disappears behind Penarth Head, keeping the glass-houses from N.N.E. to N.E. by N., so that the Penarth shore may not be approached nearer than a quarter of a mile, for fear of hanging on the steep mud-bank of the river Ely, which runs out close to Penarth Head.

Penarth Head.

151. Penarth Head is the highest headland on the north shore of the Bristol Channel; its cliffs are nearly perpendicular, and curiously veined with gypsum, and on their summit stands a small white church, without a steeple, at the height of 250 feet above high water. The head is rather more than 2 miles N.E. by N. from Lavernock Point, and the intervening shore is skirted by a broad flat shelf of rocks and shingle, which dry out at low water to 2 cables' lengths from the continuous cliffs.

Cardiff.

152. The town of Cardiff stands on a plain, 2 miles to the northward of Penarth Head; and about midway are the gates of the old Cardiff Lock, a little within which, on the eastern bank of

the canal, stand the two conical glass-houses referred to as leading marks. This lock cannot take vessels of more than 95 feet in length, and 27 feet beam, but it carries 25 feet water over its cill in springs, though only 5 feet at the dead of the neaps. The canal within retains 15 feet water at the lock, and 8 feet close to the town, to which it extends, with means of berthing 70 or 80 coasters. A great number of vessels resort to this place from all parts of Europe, it being the chief outlet for the Merthyr iron, which is conveyed there by a barge canal; and it also exports much coal, one description of which is well adapted for the use of steamers. The channel between Penarth and the Old Lock is not only very crooked and narrow, but the edges of the mud-banks are steep, and of course always covered in working-time, so that, if caught on one of those abrupt shelves, the vessel will probably stick there the whole tide, and may be greatly strained if not upset; and as there are no perches or buoys to mark this intricate channel, it has often happened that vessels have deviated from the channel, and remained there for ten days or a fortnight; nor have any efficient means been yet adopted to improve the pilotage, and a stranger ought to be well on his guard, in taking in a pilot off Lavernock, as to the qualifications of the man to whom he gives up the charge of his vessel in a navigation requiring peculiar skill and presence of mind, from the entire want of buoys and beacons.

Since the above was written by Lieutenant Denham new views have been opening on Cardiff in consequence of the splendid works undertaken by the Marquis of Bute for the improvement of the port. To the eastward of the old canal he has constructed a floating basin, with a superficies of 18 acres, and with a depth of 14 feet at the town-end, but increasing to 19 feet near the lock, and surrounded by quay-walls of masonry, alongside of which vessels of all sizes may be discharged and loaded. The entrance-lock is 152 feet long, and 36 wide, and communicates through an entrance-basin of 300 by 200 feet, surrounded by strong quay-walls, with the sea-gates, which are 45 feet wide. The cill of these gates is laid 15 feet under the high water of neap-tides, and 32 feet under that of springs, or 10 feet below the cill of the old Cardiff Lock: and from the sea-gates a straight cut of about half a mile in length is to be made through the mud-bank into the channel, from Penarth Road. It is likewise intended that all

*New Docks at
Cardiff.*

Cardiff.

heavy ballast should be discharged on the eastern side of this cut, so as gradually to form a protective mole from the S.E. gales.

When all these works, which are in active progress, are completed, when the channel is properly buoyed and beacons placed at the elbows of the banks, when a harbour-light is judiciously placed, and the pilots placed under proper regulations, then will Cardiff, though still a tide-port, be a place of great commercial importance.

Approach to Newport.

153. A vessel bound to Newport, and hauling for that purpose through Penarth Road, cannot pass round the Cardiff Grounds till after the first quarter of the flood-tide; and when the Grounds are entirely covered, the tide having risen 10 feet, she will carry 14 feet at the least all the way up to the Usk Light; at half-flood there will not be less than 8 or 9 feet over the highest part of those shoals. To facilitate this inshore passage, a black and white chequered buoy has been placed by the Trinity House on the north-west elbow of the Cardiff Grounds, in 2 fathoms. It is called the Cardiff Hook Buoy, and lies with Cardiff Church steeple, its apparent length open to the eastward of a conspicuous clump of trees, N.N.W. $\frac{1}{4}$ W., and Peterstone Church midway between the two churches in Newport, N.E. by E. The Usk Lighthouse bears from it N.E. by E. $\frac{3}{4}$ E.

*Cardiff Hook Buoy.**Monkstone.*

154. Vessels that prefer the outer passage to Newport, and all those that from the neighbourhood of Lavernock are going towards King Road, must be careful to avoid the Monkstone, which is a single flat rock about 100 fathoms in diameter, and over which both flood and ebb streams set furiously. It dries above water on a low spring ebb about 10 feet, and lies exactly in a line passing through the outer extreme of Barry Island, and the point of the main land inside of Sully Island, bearing about W. by N.; Flat-holm bears from it S.W. a little more than 2 miles, and Penarth Head in one with Leckwith House, N.N.W. $\frac{1}{2}$ W. As there is only 9 feet water on it at half-tide, it must be considered as a dangerous impediment to navigation till full three-quarters flood, and has therefore been marked by the Trinity House with a green buoy, which lies in 3 fathoms, about half a cable's length from its western side; but it is said that a beacon will be erected on it hereafter.

Monkstone Buoy.

The channel between it and the Cardiff Grounds is about a mile wide, with 5 and 6 fathoms, and nothing projects from the rock but a sandy spit from its N.E. corner, about a quarter of a mile.

To pass a third of a mile south of it, keep the south points of *Monksstone*. Barry and Sully Islands in one, W.N.W. $\frac{1}{2}$ W. (View N.) To pass a quarter of a mile north of it in 4 fathoms, bring Sully Island just its apparent length open of the main land at Lavernock, W. $\frac{1}{2}$ N. (View O.), which mark also shaves the Cardiff Grounds. To pass half a mile west of it, bring the western extreme of Steephholm to close with the eastern extreme of Flat-holm, S.S.W. $\frac{1}{4}$ W.; and keeping Brent Knoll on the eastern extreme of Brean Down will give it a berth of three-quarters of a mile to the eastward. Neither of the two last marks should be used farther to the northward than while Sully makes out distinctly as an island.

We may remark here that the Monkstone and the highest part of the Cardiff Grounds cover and uncover at the same time; and that the Wolves and the tail of the Cardiff Grounds also agree in the time of covering.

155. The general courses of both the flood and ebb streams are not interrupted by any deflecting influence of the land at the distance of 3 or 4 miles from the north shore, but preserve their steady direction up and down at the rate of 3 or 4 knots on the neaps, *Fair Set*. and 5, and even 6, on the springs. Both streams turn at the times of high and low water on the shore, but there is a difference of 23 minutes between each of those periods at the Nash Point and at Flat-holm. Farther off the N. shore, however, and approaching within 2 or 3 miles of the Culver, their fair course is partially diverted into and out of Bridgewater Bay, so as to set obliquely across that Bank N.W. and S.E., and this circumstance will require great attention when near that bank, in thick weather, or during the night. *Tides between Nash Point and the Holms. They cross the Culver Sand obliquely.*

PART III.

FROM FLATHOLM TO KING-ROAD.

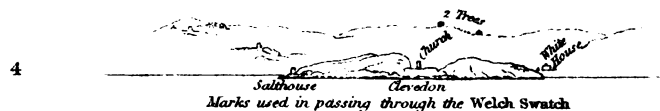
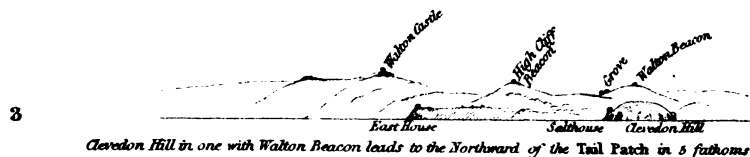
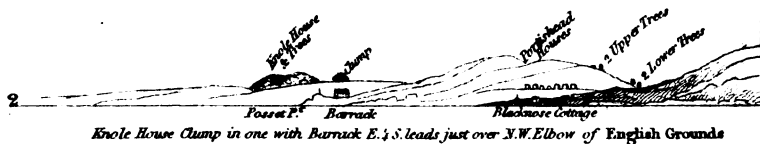
156. THE directions in the foregoing pages, as well as the charts and plans which they embrace, were the work of Lieutenant (now Commander) Denham ; but after they were printed it was discovered that the great banks in the Bristol Channel, above the Holms, had materially changed their positions and limits since the execution of his survey. The Lords Commissioners of the Admiralty, therefore, directed Captain F. W. Beechey to proceed there, in Her Majesty's steam-vessel *African*, to investigate the changes which had taken place, laying down correctly the outer edges of the Welch and English grounds, and showing the depth and direction of the intermediate channel, as far as King-Road. But it was not thought necessary to examine in detail at that time the swatches and inner passages, as a new and more elaborate survey of those great banks must be made hereafter, when the previous outlines will satisfactorily show not only the precise amount of the change which will have taken place in the interval, but the general tendency of the movement.

The following sailing directions from the Holms to King-Road are consequently the result of Captain Beechey's examination ; and in order to familiarize the seaman with the appearance of the various land-marks which he has adopted, a brief description of them is first given, with references to the sketches, in the adjacent plate.

*Description of
the marks from
Flatholm to
King-Road.*

157. 1. A conspicuous Row of houses at Portishead (or Posset). They afford a good guide to those who will use their telescopes, as they are often visible, by that means, when larger but more distant objects are obscured. The Row consists at present of seven houses, of which the 4th and 5th (counting from the north) are smaller than the remaining five ; so that if other houses should be hereafter built there, the two small ones will show which had

SKETCHES OF THE MARKS FOR THE SEVERN



been employed as marks in these directions.—See Sketches 1 and 2. *Description of the marks from Flatholm to King-Road.*

2. Two pairs of trees on the slope of the hill beyond the above-mentioned Row of houses. The upper pair is to the northward of the lower pair.—See Sketches 1 and 2, and Views R. and S. in Chart.

3. The Barrack-house on Portishead (or Posset) Point.—See Sketches 1 and 2, and Views R. and S. in the Chart.

4. Aust Cliff, a bluff headland on the south-east side of the Severn, about 9 miles above Portishead, bearing E.N.E. $\frac{1}{4}$ E. when in one with Denny Island.

5. Knole House.—A distant mansion, standing in a large grove of trees, which appear like a round hill. The house is seldom visible without a telescope; but the trees are conspicuous as being the only high protuberance upon the distant land, which is flat. There is also a small dark grove of trees just to the southward of Knole House, called the Clump. Sketch 2 and View S. in the Chart.

6. Blacknose Cottage.—The only Cottage upon Blacknose Point: it is within 200 yards of the shore. Sketch 2.

7. Walton Castle, a single building upon the top of one of the hills between High Cliff and Blacknose. Sketch 3, and View T. in the Chart.

8. East House, of High Cliff.—This is literally the easternmost house of the village, and the last of a range of buildings on the top of the cliff. Sketch 3, and View T. in the Chart.

9. High Cliff Beacon.—This is a small building upon the top of a pointed hill, close behind High Cliff village. Sketch 3, and View T. in the Chart.

10. Walton Beacon.—A ruined hut, upon a pointed hill, about a mile S.E. of High Cliff. These two hills are very much alike, yet they cannot be mistaken, as one is on the coast, and the other inland. On the north slope of Walton Beacon there is a grove of trees, which is sometimes used as a mark. Sketch 3, and View T. in the Chart.

11. Clevedon, a small hill upon the coast, appearing like an island at a distance. From the N.W. the top of the church appears in the saddle of the hill, and a little white building on the northern point is called the Salthouse. Sketch 4, in which will also be seen the white house, serving as a mark for the Swatch, and two single trees on a ridge inland, which are occasionally employed as marks.

*Description of
the marks from
Flatholm to
King-Road.*

12. Worle Mill, a conspicuous mill upon the ridge of a high Down, called Worle Hill. There is a hut upon the same ridge, a little to the westward of it, called Worle Beacon. Sketch 5.

13. See-me and See-me-not is an inland pointed hill, which, from the channel near the N.W. elbow of the English grounds, is seen just topping the ridge of Worle Hill. Sketch 5.

14. Swallow Cliff or Point.—The bluff part, where it breaks down, is to be understood as the mark, and not the sloping part of the point, which is covered at high water. Sketch 5.

15. Brean Down, a high hill, $2\frac{1}{2}$ miles S.E. $\frac{1}{2}$ E. from Steep-holm. It makes like an island at a distance. Sketch 6.

16. Brent Knoll, a remarkable hill, bearing S. $\frac{1}{2}$ E. from the eastern end of Brean Down, and which, from its peculiar form, can never be mistaken for any other hill in the Bristol Channel. Sketch 6.

*Severn Light
Vessel.*

158. It may also be here stated that the elder brethren of the Trinity House have conferred a prodigious benefit on the navigators of the Bristol Channel by placing a Light vessel between the South-west patch of the Welch Grounds and the projecting elbows of the English Grounds. She shows a Revolving light, and lies on the southern side of the channel in $6\frac{1}{2}$ fathoms at low water. Flatholm lighthouse, in one with the high land of Minehead, bears from her W. by S.; Usk lighthouse N. by E. $\frac{1}{2}$ E., and See-me and See-me-not on with St. Thomas' Head S. $\frac{1}{2}$ E.

DIRECT COURSES AND DISTANCES.

*Courses and
distances.*

159. From Flatholm to the N.W. elbow of the English Grounds E. by N. $5\frac{1}{2}$ miles.

From Flatholm to the tail of the S.W. patch of the Welch Grounds, E.N.E. $\frac{1}{2}$ E., 6 miles.

N.W. elbow of English Grounds to north elbow, E. $\frac{1}{2}$ N., 2 miles.

N.W. elbow of English Grounds to Light vessel, E. $\frac{1}{2}$ N., $1\frac{1}{2}$ miles.

North elbow of English Grounds to the Pigeon House, E.S.E. $\frac{1}{2}$ E., 5 miles.

Pigeon House to Blacknose Point, E.N.E., $1\frac{1}{2}$ miles.

Blacknose Point to Portishead, E., $1\frac{1}{2}$ miles.

Portishead to King-Road, E. 2° S., 2 miles.

160. It is not to be supposed that any stranger would voluntarily run so far up as the Holms, especially at night, without a pilot; and if he has not obtained one off Lundy Island, or in other parts of the channel, he should endeavour to procure one at Flatholm Island, where, as there are generally some boats under its lee, he will most likely succeed, on making the proper signal and rounding to. But as he might be compelled by various circumstances to venture farther than prudence would otherwise justify him, the following directions if strictly followed, with the aid of a good helmsman, the leads constantly going, and a correct computation of the tides, will carry him safely to King-Road.

Directions for a stranger if compelled to proceed up the Severn.

In approaching Flatholm from the westward, the lighthouse should be brought to bear to the northward of east, and the island rounded on the south side at about one-third of a mile distance or less, and then care must be taken not to shoot so far as to bring the lighthouse to the westward of W.N.W., unless certain of being a full half mile to the eastward of the island, in order to avoid a shoal, called the New Patch, as already stated in page 107.

Passing Flatholm.

161. If it be low water at Flatholm, or even if it be a falling tide at springs, but with a breeze strong enough to run over the stream, the mariner may proceed at once, provided always that the leading marks can be seen. But if not, or if he does not well know the mark objects used in these directions, he should by all means wait until the tide has flowed two hours at least.

RUNNING up at low water.

Being acquainted with the marks, and having determined to run at low water, he is to steer E. by N. from Flatholm, keeping the lighthouse on it strictly W. by S., or in one with the high land of Minehead, until Swallow Cliff comes in one with Worle Mill, bearing S.S.E. $\frac{1}{2}$ E. (Sketch 5), and then edge half a point to the northward, so as to bring the Light vessel just to the southward of Denny Island, or about east. His attention must now be directed to Worle Beacon, which will be seen nearly in one with a small distant peak, called See-me and See-me-not, just topping the ridge of Worle Hill on which the beacon stands. But before this peak, See-me and See-me-not comes in a line with Worle Beacon, the Light vessel must be brought to the southward of east; or the Barrack House on Portishead to the southward of the distant clump of trees near Knole House, in order to clear the N.W. elbow of the English Grounds. View S.* and Sketch 2.

Course to the Light Vessel.

* The mark in View S. leads over the edge of the N.W. elbow of the Grounds, in two and a half fathoms at low water.

*S. W. Patch of
the Welch
Grounds.*

He must be very careful that, at the time when Worle Mill comes in one with See-me and See-me-not, he is not so far on the north side of the channel as to bring the Row of the seven white houses on Portishead to the northward of the cottage on Blacknose Point, or he will be too close to the tail of the S.W. Patch of the Welch Grounds, a very dangerous bank, over which the tide sweeps furiously. But from the time that See-me and See-me-not comes in one with Worle Mill, until the Light vessel is in one

*Running on the
Mid-Channel
Marks.*

with the same mill, the vessel must be kept between the lines of the southernmost of the above seven houses of Portishead in one with Blacknose Cottage for her limits on the north side of the channel and Knole House Clump open of the Barracks on Portishead, for her limits on the south side.

Sailing between these marks, she will close the Light vessel, which should be rounded on its northern side, and then kept half a point to the southward of Flatholm, until the third house on Portishead (reckoning from the north) comes on with Blacknose Cottage; at which time the Usk Lighthouse will have come to the bearing of N. $\frac{3}{4}$ E. She will then have cleared the north elbow of the English Grounds; and by steering about E.S.E., will gradually lock in the Portishead houses, until the north end of the Row is in one with Blacknose Cottage, about the time that Walton Castle bears S.E. by E.* This will lead clear of the S.W. elbow of the Welch Hook.

From this station a vessel may run boldly for Blacknose Point; from whence she may keep alongshore, and round Portishead, a cable's length, if necessary.

From Portishead to King-Road the bearing is E. $\frac{1}{4}$ S., and the course for it must be guided by the soundings on the south side; taking care to keep Blacknose Point shut in with Portishead, when about half-a-mile above the latter, on account of some out-lying patches of the Welch Grounds.

* It is necessary to attend with great vigilance to the leading marks in this part of the channel, lest the tide should set the vessel upon the south elbow of the Welch Hook, which projects a considerable distance from the high sand that dries at low water, and thus forms a dangerous spit.

The south house of Portishead, in one with Blacknose Cottage, just clears that elbow in 4 fathoms, but not more than half a cable's length from the depth of 9 feet, which is, of course, too near, especially with a flood-tide.

The centre-house, on with the cottage, will be a more prudent course; but a stranger should keep still farther off, not venturing to let more than the northernmost house be seen to the northward of the above cottage.

*

At King-Road there are two mooring-buoys, to which vessels *King-Road.* may make fast. A ship, in anchoring, must avoid the outer buoy, as its chains lie N.W. and S.E., and may foul her anchor: the inner buoy is secured by a screw-sinker.

162. The tide in this great river rises so rapidly, and to such a height, that many of the low-water dangers may be freely run over at half flood. In passing across the English Grounds, it is necessary to observe that, about the line of Worle Beacon in one with Middle Hope Beach, there are some high patches of sand, but that from that line a short cut may be made much to the southward of the Light vessel by bringing Aust Cliff in one with Denny Island, or Blacknose Beach (near the nose) in one with the Barracks. And after the Light vessel bears N. by W. the Barracks may be brought on with the cottage on Blacknose. As, however, these Grounds appear to be constantly shifting, it is not advisable, with the ebb especially, to shut in the Barracks with Blacknose Cliff, while Walton Castle bears to the eastward of S. E. by E., or while to the westward of the Swatch mark; namely, the East-house of High Cliff in one with Walton Beacon S. E. $\frac{1}{4}$ E. (View T.)

163. We shall now give some directions for *working* a vessel from Flatholm to King-Road; in doing which the utmost attention must be paid to the marks and to the soundings, and especially to the set of the tides near the banks, in order to avoid being swept on them in stays. Vessels must, above all, be careful not to go about in the drift of any shoal part of the banks, so as to endanger her being carried on it before she comes round.

Supposing, therefore, a vessel to start from Flatholm on the larboard tack, the first danger to guard against is the Tail Patch of the English Grounds, which carries only 10 feet water, and lies E.S.E. $\frac{1}{2}$ E., $2\frac{1}{2}$ miles from Flatholm. It may, indeed, be passed on either side, but a stranger had better not come too near it, and should therefore tack when Brent Knoll comes over the east shoulder of Brean Down, bearing S. $\frac{1}{4}$ E., View U., and Sketch 6; and when Clevedon Hill comes on with Walton Beacon E. $\frac{1}{4}$ S., View W. and Sketch 3.

If, however, it should be thought advisable to stand on to the eastward, within the Tail Patch, Brent Knoll must not be opened to the eastward of Brean Down until Walton Beacon is so far clear to the southward of Clevedon Hill, that the small grove of trees, already described (p. 115, 10) as being on the north slope

*

Working up to of Walton Hill, has come to the southward of the middle of Clevedon Hill. (View V.)

Having passed these lines, and being about on the starboard tack, Walton Beacon must not be brought on with Clevedon, till Bearn Island comes nearly on with Brent Knoll, bearing S. $\frac{1}{4}$ W., as this mark will carry a ship as near to the east part of the Patch as she ought to go.

Passage inside the Patch. In passing between the Tail Patch and the English Grounds, the latter must not be approached nearer than the line of Swallow Cliff on with Worle Mill,* before the water has deepened to 10 fathoms, when she will have passed off the grounds into the channel, and may stand on close by the wind.

Monkstone, and North side of the Channel. But, supposing the ship to have tacked to the westward of the Tail Patch, as above recommended, she may stand on to the N.W., until Barry Island is shutting in with Sully Island, and then tack; which will clear the Monkstone on the S.E. side. This is the only danger, on the north side of the channel, of which the lead will not give warning, between Flatholm and a line passing through Worle Mill and See-me and See-me-not (or through Middle Hope Beach, which is in the same line). But it is not advisable to stand too far to the northward, on account of the tides, which take a northerly direction, and of the chance of the wind falling, which would inevitably compel the ship to anchor for fear of

S.W. Patch of Welch Grounds. being carried to the northward of the S.W. Patch of the Welch Grounds. Keeping in the fairway of the channel there is nothing to fear except the English Grounds (directions for which have just been given—p. 117), until Worle Mill comes on with See-me and See-me-not, bearing S. $\frac{1}{4}$ E., when, to avoid the S.W. Patch of the Welch Grounds, the vessel should go about before the southern house of Portishead Row comes on with Blacknose Cottage E. $\frac{1}{4}$ S. From the time of crossing the above line, until the Light vessel comes on Worle Mill, the tacks must be confined, on the northern side of the channel, to that latter mark; and, when closing the southern side of the channel, to Knole House Clump, just open to the northward of the Barracks on Portishead Point, about east, or to the Light vessel appearing three-quarters of a point to the southward of Denny.

Limits of each board.

* If the English Grounds be too much closed, so as to bring Worle Beacon on with Swallow Cliff before the Light vessel is in one with Denny, E. by N., there will be danger of touching on both sides of the N.W. elbow of the English Grounds.

There is a deep Bight between the N.W. and N. elbows of the English Grounds, in which the Light vessel lies, and into which a ship may safely stand, until Knole House Clump comes on with the Barracks, or till the lead, in 4 fathoms, gives warning to tack: but, after tacking, if the Light vessel should have been brought to the bearing of N.N.W., the ship must be kept out, with her head to the southward of Flatholm, or about west, in order to clear the north elbow of the Grounds.*

After the Light vessel comes in one with Worle Mill, or bears S. by W., the S.W. Patch may be approached until Blacknose Cottage is in one with the upper pair of trees on the eastern ridge of Portishead; and when she comes abreast of the Swatch, until the two lower trees (which are larger than the former pair) come in one with the cottage; but the latter mark must not be brought on unless the Light vessel is full half a point to the southward of Flatholm.

Abreast of the Swatch the Channel turns towards Walton Castle E.S.E., and (with a flood-tide) a vessel may feel her way by the lead over the English Grounds, all the way to the southern shore; but the Welch Hook must be everywhere carefully avoided by going about immediately when the northern house of Portishead Row comes on with Blacknose Cottage, as long as Walton Castle remains between S.E. and S.†

Having arrived at this part of the Channel, with Walton Castle about S. by E., our stranger may stand boldly in towards the southern shore and work along it; but he should not stretch off more than a mile, on account of the Welch Hook, for approaching which there is no good mark: there is not, however, much danger of touching it, if a quick lead be kept, and the ship tacked the moment the soundings decrease. Blaize Castle, in one with the two lower trees behind Posset Row (page 115), clears the dry edge of the Hook. View R.

To the eastward of Portishead the channel narrows, but the soundings will give warning when to go round; and by the time

* The Light vessel, Denny, and Flatholm, are on the same line of bearing, which just crosses the two elbows of the English Grounds, so that keeping her in one with either of them will lead a ship into 15 feet at low water, either to the eastward or westward.

† The southern house of Portishead, in one with Blacknose Cottage, just touches the edge of the south elbow of the Welch Hook in 4 fathoms, and only half a cable's length within which there are but 9 feet.

*Horse-shoe
Rock.*

King-Road.

*Running up in
THICK WEAT-
HER.*

a vessel can arrive there it will be more than half flood. No vessel should stand close into the bight above Portishead on account of the Horse-shoe, as well as of a projecting point steep-to, about a quarter of a mile N.E. of the Pill, or creek which will be seen opening east of the Head. When half a mile above Portishead, Blacknose must be kept shut in. The mooring buoys at King-Road will be seen, to which a vessel may make fast if necessary, or she may anchor near them in about 6 fathoms.

164. If it should be a matter of such great importance as to warrant a stranger in running up in thick weather, he must proceed very cautiously; everything will depend on the expertness of his leadsman, and the vessel should not go too fast for quick up and down soundings. He should also minutely calculate the different periods of the tides, and have them by him in a written memorandum. With a vessel drawing 15 feet water, the best pilot would hesitate in thick weather at low water; a stranger, therefore, should on no account attempt it until the tide has risen at least two hours, because it is absolutely necessary to get hold of the English Grounds and to keep along them, which cannot be done at low water without striking.

From Flatholm the first course should be to the eastward of that recommended for clear weather, say E. $\frac{1}{2}$ N., in order to pick up the English Grounds, which must be done before 5 miles are made good from that Island, and allowing for a tide carrying the vessel $3\frac{1}{2}$ or 4 miles an hour on springs. If, when reckoning the ship to be about 5 miles from Flatholm, the soundings continue deep, haul to the southward until a cast of 3 or $3\frac{1}{2}$ fathoms is obtained, a sure indication of being on the edge of the English Grounds. Then an E. by N. course should be steered, yawing to the northward when the soundings are under 4 fathoms, and to the southward when above 5 fathoms. In this manner he must continue feeling his way up to the Light vessel, which he can scarcely miss, but he must on no account continue longer than three or four casts in more than 5 fathoms water.

On perceiving the Light vessel he should close her, and steer on E. $\frac{1}{2}$ N. to pick up the North Elbow of the English Grounds in 3 fathoms, (allowing for the rise of the tide.) At the first deep cast afterwards, that is of 7 or 8 fathoms, he should alter the course to E.S.E., but still feeling the edge of the English Grounds occasionally in 4 or 5 fathoms, in order to be certain of being on

the south-eastern side of the channel. In this cautious but simple manner he may proceed, for unless the weather should thicken to an actual fog he will be able to perceive the high land about Walton, which is bold; and from the Pigeon-house to Portishead he may freely pass within a cable's length of the rocks. *Running up in thick weather.*

Endeavouring to keep in view the south shore, and steering E.N.E. from the Pigeon-house to Blacknose Point, and east from thence, he must contrive to see Portishead before he runs on to King-Road, the course to which is E. $\frac{1}{4}$ S., and distance 2 miles. Let him then keep as near the south shore as the soundings will allow; as it is better to run upon the mud on that side than upon the hard sands of the Welch Grounds, where the tides sweep with great rapidity: but there will be no danger of either, if unremitting attention be paid to the leads, in both chains, observing that in mid-channel there are from 5 to 7 fathoms at low water up to the buoys of King-Road, and recollecting that about the time of his arrival at King-Road it will be nearly high water, provided the foregoing directions have been followed as to the time of leaving Flatholm, so that as spring tides rise 7 fathoms, the ship will be in 13 fathoms if she is in the proper channel. As soon as the buoys are seen the vessel can be safely steered to a berth, and if not seen, she should be anchored when the estimated distance (allowing for the tide) has been run. *King-Road.*

The necessity which has been supposed in the former cases might force a vessel to run up this channel at night, and if the lights can be fairly seen there will be but little danger in so doing at half, or at two hours flood. Let Flatholm Light be kept W. by S. till the floating light be seen, and when within 2 or 3 miles, bring it to bear E. $\frac{1}{4}$ N., passing close on her northern side. Then steer E. $\frac{3}{4}$ N., keeping the Light vessel open to the southward of Flatholm about half a point till Usk light bears N. by E., or until the water deepens to 7 or 8 fathoms, and then immediately alter the course to about E.S.E., so as to bring the Light vessel W. $\frac{1}{4}$ N. or W. $\frac{1}{2}$ N. before the Usk light bears N. by W. Steer towards the southern shore about E.S.E., and get close in with it, haul round Portishead closely, and steer E. $\frac{1}{4}$ S., by the lead, 2 miles into King-Road, from whence the Usk light bears N.W. $\frac{3}{4}$ W. *Running up at Night.*

If in running these courses any doubt should arise as to the situation of the vessel, feel the edge of the English Grounds and keep along them. If this should be done with an ebb tide,

Running up at night. on the eastern side of the English Grounds, haul off eastward immediately on shoaling to 5 fathoms, for the bank there is steep-to and the tide runs furiously over it. But the Usk light must not be brought to the westward of N. by W. while the Light vessel is to the westward of W. $\frac{1}{2}$ N., until the southern shore is close on board. The facility of running up to King-Road will be very much increased when the Avon Light is completed. The tower for it is now building on the eastern side of the river, inside of Dunball Island.

New Avon Light.

The Welch Swatch.

165. Between the Welch Hook and the S.W. Patch there is a navigable Swatch or passage used by coasters and steamers, with $2\frac{3}{4}$ and 3 fathoms at low water; but these depths are confined to a very narrow channel, and in passing through great attention must be paid to the leading marks.

In coming through the Swatch from the N.W. with a flood tide the eastern house of High Cliff must be brought in a line with Walton Beacon (view T.) about the time that Worle Mill comes on with the Light vessel. If the mark expressed in that view, T., be kept strictly on, it will lead fairly through; and this mark must not be quitted until the two upper trees of Portishead come on with Blacknose Cottage, or until the Light vessel comes in one with Steepholm, when the vessel will be in the fair channel.

In running down from the eastward, the same mark in View T. must be brought astern by the time the two upper trees are in one with Blacknose Cottage, or that the Light vessel comes in one with Steepholm; and so nicely must this mark be kept on, that, at low water, even the second house of High Cliff on with the cottage will lead upon the edge of the Welch Hook.

When Worle Mill comes in one with the Floating Light, the vessel may haul up round the north elbow of the S.W. Patch, and steer W. by S. until Worle Mill comes on with See-me and See-me-not, or with Middle Hope Beach, and then Barry Island must be opened to the southward of Sully Island, in order to avoid the Monkstone.

There are three other marks which may be used for this Swatch, in case the house of Highcliff, here given as the mark, should be rendered indistinct by new buildings; but neither of them will lead so directly through the channel, or in the best water.

First (and this is the mark of the pilots), the west end of Clevedon (a steep cliff) in one with a large white house standing

alone low down in the country, 3 or 4 miles beyond it, on the bearing of S.S.E. $\frac{1}{4}$ E. ; it may be found by two large trees standing near each other on the ridge of the distant land to the south-eastward. On entering the swatch from the south-eastward, this house must be brought on as above by the time the Light Vessel comes on with Steepholm ; and, when the two lower trees of Portishead come on with Blacknose Cottage, the house must be shut in so that its place can be just discerned, and opened again in full view when Blaize Castle comes on with the two lower trees of Portishead (View R.) ; after which the house must be opened gradually until Worle Mill comes on with the Floating Light, when the north end of the S.W. Patch may be rounded as before directed. *The Welch Swatch.*

The second mark is the two trees on the distant ridge beyond Clevedon (just mentioned with reference to the foregoing leading mark), appearing one on each side of the above-mentioned white house. Clevedon Church may be used in entering from the S.E., and gradually opened to the westward of Clevedon, until the eastern tree is equidistant from the church and its companion, by the time that Worle Mill is in one with the Light vessel.

The third mark is a large red house standing conspicuously on the west slope of High Cliff Hill, in one with a cluster of trees on the distant ridge near Nailsea ; but this is a still worse mark than either of the others.

166. The above directions, it is believed, will be sufficient to enable the intelligent seaman, in a manageable vessel, to proceed from the Holms to King-Road under almost any circumstances that are likely to occur, provided he is sufficiently acquainted with the appearance of the shore to recognize the marks without hesitation, and provided he makes a due allowance for the tides, not only as they affect the depth, but especially as they change their set or direction in different parts of the channel. With a brief account of the tides we shall, therefore, conclude these directions. *Tides in the Severn.*

When the banks are dry at low water, the tides naturally assume the direction of the channels, except about the tail of the S.W. patch, and in the Swatch. But when the banks are covered they take a more northerly or southerly course, according as it is flood or ebb.

From Flatholm to the Welch Grounds the flood strikes towards the S.W. Patch, where it splits ; one part sweeping rapidly over the tail of the patch towards the Usk, the other setting truly along

*Tides in the
Severn.*

the channel in which the Light vessel is moored E. $\frac{1}{4}$ N. Towards the eastern end of this channel, or about the north elbow of the English Grounds, before the banks begin to cover, there is a rush of flood from the Swatch, which passes along the eastern side of the English Grounds towards Walton, until turned into the regular course of the stream round the south elbow of the Welch Hook.

But after the banks are covered the flood sets over the Welch Grounds, and will carry a ship upon the S.W. Patch, and more especially on the south elbow of the Hook, if, when approaching it, sufficient room is not given to counteract its effects. From the south elbow of the Welch Hook the flood-tide sets truly along the channel.

The ebb-tide sets truly down the main channel until it arrives at the south elbow of the Welch Hook, and then across the channel towards the English Grounds, over which it sweeps with great rapidity, until towards the end of the tide: it then slackens considerably upon the Grounds, but continues to run fast along the channel, taking a more north-westerly direction, and, near the Swatch, striking right through it. The middle of the stream runs in a direct line as far as the Light vessel, but from thence it seems to be turned by the S.W. Patch, and strikes off towards Steepholm.

The above gives only a general view of the tidal system in this part of the Bristol Channel, but the experienced seaman will easily fill up the outline by allowing for the effects of the gradual change of the depth of water on the banks, and particularly near their elbows, which have so much influence in deflecting the stream.

INDEX.

- Abefaron Entrance, 88.
- Aberthaw Creek, 102.
- Adair Colliery, 66.
- Advantages of Porth Cawl, 95.
- Afon River and Perches, 89.
- Amroth Castle and Church, 57.
- Anchor Head, 26.
- Angle Bay, Church and Shelf, 33.
- Anns St. Head and Lighthouses, 29.
- Appledore Point, Pier, and Town, 10.
 - .. Tides, 11.
- Aust Cliff, 115.
- Baggy Point and Leap, 11.
- Barnstaple Bay and Bar, 7, 9.
 - .. Pilots for, 10.
 - .. Tides on, 10.
 - .. Creek, Tides, 11.
- Barrack House, 115.
- Barry Isle, 102.
 - .. Race of Tide off, 103.
- Bearn Rock, 26.
- Berge Isle, 65.
- Berrow Church, 25.
 - .. Flats, 23.
- Bideford or Braunton Lighthouses, 9.
 - .. Creek, Reach, and Tides, 11.
- Black Nose, 28.
 - .. Cottage, 115.
- Black Pool, 39.
- Blaize Castle, 28.
- Blockhouses, 62.
- Blue Anchor Head, 20.
 - .. Road, best anchorage in, 20.
- Bosheston Church, 44.
- Braunston, or Bideford Lighthouses, 9.
 - .. Burrows and Flat, 9.
- Brean Down and Rock, 26, 116.
- Breaksea Point, Shelf, and Buoy, 98, 101.
- Brent Knoll and Church, 23, 116.
- Bridgewater or Burnham Lighthouses, 22.
 - .. Bar, approach to, 24.
 - .. Pilots for, 25.
- Brimstone Rocks, 40.
- Bristol Channel Entrance, 1.
 - .. Approach to with S.W. winds, 1.
 - .. Approach to with N.W. winds, 2.
 - .. Northern Shore, 29.
 - .. Southern Shore, 12.
- Broad Haven, 43.
- Broad Oak, Shipping Place, 67.
- Broughton Bay, 65.
- Brussels Hole, 48.
- Bucks Ledge, 8.
- Buggy Pit and Overfalls, 15.
- Bull Point, 12.
- Bullslaughter Bay, 42.
- Burnham or Bridgewater Lighthouses, 22.
 - .. Church and Sandhills, 24.
 - .. Pool and Tides, 25.
- Burry North Bar, 68.
 - .. Inlet, 62.
 - .. Buoys and their marks, 70.
 - .. Cross Swathway, 73.
 - .. Directions for, 72.
 - .. Furnace Lights, 62.
 - .. Holms, 65.
 - .. Inner Bar, 70.
 - .. South Bar, 73.
 - .. Tides, 72.
- Caermarthen Bar and Buoys, 59.
 - .. Bay, 50.
 - .. Tides, 61, 62.
 - .. or Towy River, 58.
- Caldy Island, 47, 51.
 - .. Lighthouse, 48.
 - .. Road and anchoring marks, 52.
 - .. Sound and Rock, 55.
 - .. Sound, Passage through, and Tides, 56.
 - .. Spire, 51.
 - .. Small Sound, 48.
- Capel Chapel, 66.
- Capstone Hill, 13.
- Cardiff, approach to, 109.
 - .. Church, 108.
 - .. Grounds and Wolves, 108.
 - .. Lock, 110.
 - .. Hook Buoy, 112.
 - .. New Docks, 111.
 - .. or Penarth Road, 110.
 - .. Town, 110.
 - .. West Buoy of Grounds, 109.
- Carew Beacon, 55.
- Carr Lightvessel, 35.
 - .. Rocks and Spit, 35.
 - .. Spit, Channel round, 36.
- Castell Llŵchwr, 67.
 - .. Morlais, 89.
- Castle Pit Creek, 34.
- Caswell Bay, 77.
- Catharine St. Isle, 46.
- Cefn Bryn, 81.
 - .. Hooper Shelf, 62, 63.
 - .. Patrick Sand, 63.
 - .. Sidan Sands, 59.
- Centre Ledge, 108.

- Chapel Rock (Milford Haven), 31.
 Chapel Rock, 102.
 Chapman Rock, 8.
 Cherry Stone, 78.
 Chisel Rocks, 23, 24.
 Christophers St. Knoll, 81.
 Clevedon Brow, Village, and Church, 27.
 .. Hill and Salthouse, 115.
 Clovelly Road and Pier, 8.
 Cobs Pill, 66.
 Coddon Hill, 12.
 Colhugh Point and Reef, 101.
 Coldknap Point, 102.
 Constantinople Cottages, 89.
 Copperas Rock, 15.
 Copper Smelting Chimneys, 89.
 Cornborough Summer-House, 9.
 Cornel Mawr, 62.
 Courses and Distances above Flatholm, 116.
 Course from Mumble to Nash Lights, 100.
 Coygen Crag, 58.
 Crow Ridge, 10.
 Crow Rock, Toes, and Sound, 41.
 Croyde Head, or Down End, 9.
 Crymlyn Burrows, 88.
 Culver Sand, 25, 104.
 .. Buoys, 105, 106.
 .. Clearing Marks, 26, 105.
 Cwm Ivy Tor, 66.

 Dale Bay, 32.
 .. Castle, 33.
 Dangers Reef, 76.
 Decuman St. Steeple, 21.
 Directions for the Burry Inlet, 72.
 Directions from Flatholm to King Road,
 117.
 Dock Yard (Pembroke), 37.
 .. Bank, Buoys, and Beacon, 36.
 .. Channel, 37, 38.
 .. Mooring off, 38.
 Donats St. Bluff and Castle, 101.
 Down End, or Croyde Head, 9.
 Drift Rock, 49.
 Dunball Island, 28.
 Dunkery High Range, 18.
 Dunraven Promontory, 91.
 .. Head, Flagstaff, and Castle, 97.
 Dunster Gazebo, 20.

 Eastmoor Cliffs, 44.
 East Pennar Flat, 36.
 East Pool, 70.
 Eel Point, 48.
 Eligug Stack, 40.
 Ely River Bank, 110.
 English Grounds, 27, 121.
 .. N.W. Elbow, 117.
 .. crossing them, 119.
 .. Tail Patch, 119.

 Fenning Island, 25.
 Ferry Point, 60.
 Ferryside, 58.
 Fidlers, 52.
 Flatholm Island, 107.

 Flatholm Lighthouse, 106.
 .. New Patch and Buoy, 107.
 .. Anchorage, 107.
 .. for Pilot, 117.
 .. Approach to, 117.
 Flimstone Head and Brick-kiln, 42.
 Foreland and Ledge, 17.
 .. Soundings and Tides off, 17.
 .. Saddle, 22.
 Foul Ground, 13 feet, 91.
 Foul Shore, 13.
 Fremington, 11.
 Freshwater Bay, West, and Tides in, 39.
 .. East, 44.

 Gallantry Bower, 8.
 Gannet Stone, 3.
 Gateholm, 29.
 Gellyswick Mill, 33.
 General Rules for the Burry Bars in ex-
 treme cases, 75.
 Gilman Point, 57.
 Giltar Head, 45.
 .. Spit and Marks, 52.
 Ginst Point, 58.
 .. Channel of Towy River, 58.
 Glasshouses, Cardiff, 108.
 Glenthorn and Beach, 17.
 Gore Point, 17.
 .. Sand, or Bank and Buoy, 23, 24, 25.
 Goskar Islet, 47.
 Govens St. Head, 3, 42.
 .. Soundings off, 43.
 Graham Banks, 26.
 Grasholm, 2, 29.
 Great Castle Head, 33.
 Great Hill Burrows, 57.
 Great Tor, 77.
 Greenaley Point, 18.
 Green Grounds, 86.
 Groes House, 97.
 Gurnfreston Farm-house, 46.
 Guy Old Channel, 59.
 Gwendraeth Fach Stream, 58.
 .. Fawr Stream, 59.

 Hangman Hills, or Heights, 15, 16.
 Hakin Point, 34.
 Harbour Rock, 32.
 Hartland Point, Quay, and Tides, 7.
 .. Tings Ridge of Rocks, 7.
 Hats and Barrels, Tides, 3.
 Haverfordwest, 39.
 Helesborough Hill, 13.
 .. Overfalls, 14.
 Helwick Shoals, 78.
 .. Buoys, 78, 79, 80.
 .. Clearing Marks, 78, 80.
 .. Pass and Marks for it, 79.
 .. Swatch and Marks for it, 79.
 .. Tides, 80.
 Hen Castle, 57.
 Hen and Chicken Rocks, 4.
 High Barrow, 72.
 High Cliff Spit, Caldy, 48, 51.
 High Cliff, Beacon and East House, 115.

- High Patch, 9.
 High Pennard, 77.
 Highweer Point, 16.
 Hobbs Point, 36.
 .. Packet Slip, 37.
 Holiday Hill, 16.
 Holloway Causeway and Old Mill, 45.
 Hooper Sands, Mark for, 75.
 Horseshoe, 28, 122.
 How Rock, 26.
 Hubberstone Observatory, 33.
 Hugo Bank, Marks, 91.
 Huntspill Creek, 25.
 Hurlestone Point, 18.

 Ilfracombe Pier and Light, 13.
 .. Buoy and Anchorage, 14.
 .. Pilot Boats and Tides, 14.
 Inkey Point, 23.
 Irish Channel Indraught, 2.
 Ishmaelston Village, 58.
 Issel, St. Church, 57.
 Itchey Sand, 61.

 Kenfig Burrows, 89.
 .. Channel, Leading Mark, 91.
 .. Church, 89.
 .. Patches, 89, 91.
 Kidwelly Guy, or Channel, 59.
 .. Town and Quay, 58, 59.
 Kilve Church and Patch, 22.
 Kilvey Mill, or Old Mill, 78, 85.
 King Road Buoys, 28, 119.
 Knaves Head, 90.
 Knightstone, 27.
 Knole House and Clump, 115.

 Lakes-nose Rock, 8.
 Lanion Pill, 37.
 Lantern Hill, Lighthouse and Rocks, 13.
 Larks or Stert Spit, 24.
 Laugharne Burrows, 57.
 .. Inlet, or River Taf, 58.
 .. Sands, 58, 59.
 Lavernock Church, 103.
 .. Point, Spit, and Buoy, 103.
 Lidstep Bay and Point, 45.
 .. Ledge, Clearing Marks, 55.
 Limekiln Point, 65, 71.
 Linmouth Village and Creek, 16.
 .. Bay and Anchorage, 17.
 Linney Farm and Head, 39.
 .. Rocks, 40.
 Linton Village and Creek, 16.
 Little Haven, 44.
 Little Stoke Point and Spit, 21.
 Llanelly Breakwater, Church and Docks, 64.
 Llangenydd Church, 72.
 Llan-Ishmael Church, 58.
 .. Cliff, 60.
 Llanmadoc Church and Hill, 66.
 Llanrhidian Marsh and Sands, 66.
 Llausaint Church, 58.
 Llanstadwell Church and Shelf, 36.
 Llanstephan Castle, Village, and Flats, 58, 61.

 Longford Grounds, 27.
 Longland Bay, 77.
 Loughor or Lwchwr Point and River, 66, 67.
 Lundy Island, 3.
 .. East Bank, 5.
 .. Hen and Chickens, 4.
 .. Jennys Cove Anchorage, 5.
 .. Lighthouse, 3.
 .. N.W. Bank, 4.
 .. Rat Island, 4.
 .. Rattles Anchorage, 5.
 .. Road, advantages of, 5, 6.
 .. Shutters Point, 4.
 .. Tibbet Point, 5.
 .. Tides, 6.
 .. Bearings and Distances from, 6.
 Lynch Pool, Spit, and Sand, 68, 69.
 .. Anchorage, 69.
 Lighthouses—St. Anns, 29.
 .. Biddeford or Braunton, 9.
 .. Burnham or Bridgewater, 22
 .. Cald, 48.
 .. Carr (Floating), 35.
 .. Flatholm, 106.
 .. Ilfracombe (Tide), 13.
 .. Lundy, 3.
 .. Minehead (Tide), 20.
 .. Mumble, 78.
 .. Nash, 97.
 .. Pembrey (Tide), 63.
 .. Severn (Floating), 116.
 .. Smalls, 2.
 .. Swansea (Tide), 88..
 .. Usk, 112, 118.
 .. Weare (Floating), 35.
 .. Watchet (Tide), 21.

 Machynys Bluff and House, 65.
 Man of War Road (Milford Haven), 34.
 Manorbear Bay and Castle, 44, 45.
 Marcroes Hill and Church, 57.
 Margam Trees, 89.
 Margaret Island, 47.
 Men of War Road (Caldy Island), 50.
 Middlehope Beach, 27.
 Middle Head, 77.
 Middle Ridge (Biddeford Bar), 9.
 Middle Patch and Spit (Caermarthen Bar), 59.
 Middle Ridge, 66.
 Middle Sand and Spit, 69.
 Milford Church and Town, 34.
 Milford Haven, access easy, 30.
 .. to enter by night, 30.
 .. to enter by day, 31.
 .. Road and Shelf, 34, 37.
 .. General Directions, 37.
 .. Tides, 38.
 Mill Bay, 32.
 Minehead Land and Pier, 18, 19.
 .. Outer Anchorage, 18.
 .. Tides and Tide Light, 19, 20.
 .. Approach to, 21.
 Mixon Shoal and Buoy, 81, 82.
 .. Clearing Marks, 82.

- Monkstone, Point and Stack (Tenby), 47.
 Monkstone and Buoy (Severn), 112.
 .. Directions for clearing it, 113.
 Morte Bay and Point, 12.
 .. Stone and Race, 12.
 Morfa-torcedi, 67.
 Mumble Lighthouse, 78.
 .. Flats, 86.
 .. Heads, 77, 85.
 .. Outer Sound, 77.
 .. Road, Anchorage, 77, 86.
 .. Tides, 83.
 Mussel Scare (Giltar Head), 45.
 Mussel Bed (Kenfig Channel), 92.

 Nash Point, 97.
 .. Lighthouses, and their uses, 97.
 .. Sands, 98.
 .. Anchorage within, 98.
 .. East Patch and Buoy, 98.
 .. West Buoy and Marks, 99.
 .. Passage, 99.
 .. Swatch Buoy and Marks, 100.
 .. Tides, set of, 100.
 Neath Bar, Channel, and Buoys, 88.
 Newcomes Patches (Severn), 28.
 Newcomes, 68.
 Newton Burrows, 95.
 .. Down Windmill, 89.
 .. Nottage Church, 95.
 .. Sand Hills, 91.
 Newtown Noyes, 34.
 New Lodge House, 63.
 Newport, approach to, 112.
 New Quay, 43.
 Neyland Point, 37.
 Nicholaston Pill, 77.
 North Bar and Channel (Burry), 68, 74.
 Northam Burrows, 8.
 .. Church, 10.
 North Hill Tor, 66.
 Nose Barrel Post, 59.

 Ogmore Cliffs and River, 96.
 Old Castle Head, 45.
 One Fathom Bank and Buoy, 103, 104.
 Orieltion Park Trees, 41.
 Oxwich Point, 76.
 .. Bay and Anchorage, 76, 81.
 .. Castle and Church, 77, 81.
 Old Guy Channel, 59.
 Oyster Beds off Stackpole Head, 44.
 .. Ground off Oxwich, 81.
 .. Patch, 68.

 Paddock, 58.
 Parret or Bridgewater River, 23.
 Pater Fort, 35.
 Patrick Spit, 69.
 Pembrey Barrel Post and Breakwater, 63.
 .. Burrows, 59, 62.
 .. Church and Court House, 62.
 .. Pier, Light, and Tides, 62, 63.
 .. Pool and Anchorage, 68, 69.
 .. Scot, 70.
 Penally Church, 45.

 Penarth Head, 110.
 .. or Cardiff Road, 108, 110.
 Penclawd Village, 66.
 Pencoeidisaf Shipping place, 67.
 Pendine Heights, 57.
 Penrhyn-gwn Point, 65.
 Penrice Church and Castle, 77.
 Penthathroe House, 60.
 Pen Towyn Point, 59.
 Pennar Entrance or Gut, 35.
 Pennar-mouth, 35.
 Pennard Pill, 77.
 Penmaen Church, 81.
 Peterstone Flats and Church, 110, 112.
 Petrox, St., Church tower, 42.
 Pigeon House, 28.
 Plas Mansion, 58.
 Pole Rocks, 39.
 Popton Point, 36.
 Porlock Bay and Quay, 18.
 Porthcawl Point and Inn, 89.
 .. Harbour, 92.
 .. Harbour-master's directions, 93.
 .. Tides and Pilots, 95.
 Porth Eimon Bay and Church, 76.
 .. Head and Signal Staff, 76.
 .. or Skyesea Anchorage, 80.
 Porthkerry Church, 102.
 Portishead or Posset, Houses, 28, 114.
 Port Tennant, 87.
 Priory Bay, 48.
 Proud Giltar, 45.
 Pwlchrohon Flats, 35.
 Pwl-Du Bay and Head, 77.
 Pwl Quay, 63.

 Quantock Hills, 21.
 Quarantine Ground (Milford Haven), 33.

 Ragwen Point, 57.
 Ranie Spit, 109.
 Rat Island, 38.
 Red or Bathing House, 95.
 Red House, 87.
 Red Ord Point, 48.
 Rosecrowth Church, 33.
 Rhossily Bay, Church, and Downs, 71.
 .. Hill and Point, 71.
 .. Bay Anchorage, 72.
 Rhwchiwyns Farm-house, 89.
 Ridgeway, 45.
 Ridges and Marks for, 51.
 Rillage Point and Ledge, 15.
 Rockham Bay and Shoal, 12.
 Rocknose, 8, 9.
 Roos Point, 102.

 Saddle Head, 42.
 Salthouse Point and Barrel Post, 66.
 Sandy Haven Bay, 33.
 Sand Ridge and Passage within, 16.
 Saundersfoot Bay, 56.
 Scar House and Point, 89.
 Scarweather Sands, 89.
 .. East Buoy, 90.
 .. West Buoy, 90.

- Scarweathers—Clearing Marks, 90.
 Severn Light Vessel, 116.
 Sheep Island, 29
 Shord Passage or Channel, 91.
 Skear Rock, 46.
 Skomar Island, 29.
 Skysea or Porth Eion Anchorage, 80.
 .. Islet, 76.
 Slades Bluff, 76.
 Sluice Pill Jetty, 66.
 Smalls Lighthouse, soundings off, 2.
 Small Ord Point, 48.
 South Bar (Burry Inlet), 68.
 South Channel to Sluice Pill, 74.
 .. to Pembrey and Llanelly,
 73, 74.
 South Hook Point, 33.
 South Hooper Sand, 68, 69.
 Spaniel Ledge, 50.
 Spitty Point and Quays, 67.
 Sprat Ridge, 10.
 Spritsail Tor and Flagstaff, 65.
 Stackpole Stack and Court, 43.
 .. Quay and Road, 44.
 Stack Channel (Milford Haven), 33.
 .. Rock, 33.
 .. Rock, Monkstone, 47.
 Stert Island and Flats, 23, 24, 25.
 Stoke Patch, 22.
 Sully Island, 103.
 Swallow Cliff, and Sand Bay, 27, 116.
 Swanslake Bay, 44.
 Swansea Bay, and approach to, 83.
 .. Set of the tides, 92.
 .. Tide-table, with examples,
 84, 85.
 .. Town and Harbour, 83, 87.
 .. Bar and Warping Buoys, 87.
 .. Tides and Pilots, 88.

 Taf River, or Laugharne Inlet, 58.
 Talwen Point, 57.
 Tapley House, 10.
 Taw or Barnstaple River, 9.
 Tawe River, 83, 87.
 Tenby Old Castle, 46.
 .. Town and Pier, 46.
 .. Pier and Road, 54.
 .. Church and Old Mill, 46.
 .. Old Mill-house, 51.
 .. Cliffs, 45.
 .. Sands, 46, 47.
 .. Tides, 56.
 Tennant Port, 87.
 Thistle Bluff, 87.
 Thomas, St., Head, 27.
 .. Church, 58.

 Thorn Point, 37.
 .. Island and Sound, 32.
 Torridge River, 9, 11.
 Towy, or Caermarthen River, 58, 59.
 .. Tides, 61, 62.
 Towyn Back, 62.
 Trevoise Head, Soundings off, 1.
 Turbot Bank, 40.
 Turnpen Point, 57.
 Tusker Rock and Buoy, 96.
 .. Pool and Rocky Patches, 96.
 .. Passage round, 96.
 Tut Head, 86.
 Twinel, St., Church, 35, 42.

 Uphill Church, Creek, and River, 26.
 .. Bay, 27.
 .. Usk Light, 112, 118.

 Vention Cottage, 12.

 Walton Castle, 28.
 Warlo Bluff, 58.
 Warren Point, 20.
 Warren Church Spire, 42.
 Watchet Pier, 20.
 .. Approach to, 21.
 .. Tides and Tide-light, 21.
 Watermouth Cove, 15.
 Waterwinch Cove and Cottage, 47.
 Weare Point and Light-vessel, 35.
 Welch Grounds and Hook, 27, 118.
 .. S.W. Patch, 118, 120.
 .. Swatch, 124.
 West Angle Bay, 32.
 Westmoor Cliffs, 44.
 Weston Church and Ledge, 26, 27.
 Weston-super-Mare, 27.
 Whiteford Barrel Post, 65.
 .. Burrows and Point, 65.
 .. Creek, 66.
 White Bank and Patches, 52, 53.
 White Horses Race, 4.
 White Oyster Ledge, 82.
 White Obelisk, 48.
 Wildersmouth Creek, 13.
 Witford Point, 88.
 Wolves Rocks and Buoy, 107, 108.
 Woodland Castle, 85.
 Woodspring Abbey and Point, 26, 27, 116.
 Woolhouses Rocks, 53.
 .. Buoy and Clearing Marks, 53.
 Worle Windmill, 27, 116.
 Worms Head, 75.

 Yowan Patch, 54.

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