

NON
ME
IV

**DIRECTION
FOR THE
BAY OF
BISCAY**



21
CP





IV-63 jag

IV-45 jag

IV-55 jag

IV-45 jag

Re

SAILING DIRECTIONS

OF BISCAY

BY JAMES H. HARRIS

OF THE U. S. NAVY

NEW YORK: PUBLISHED BY J. H. MASON

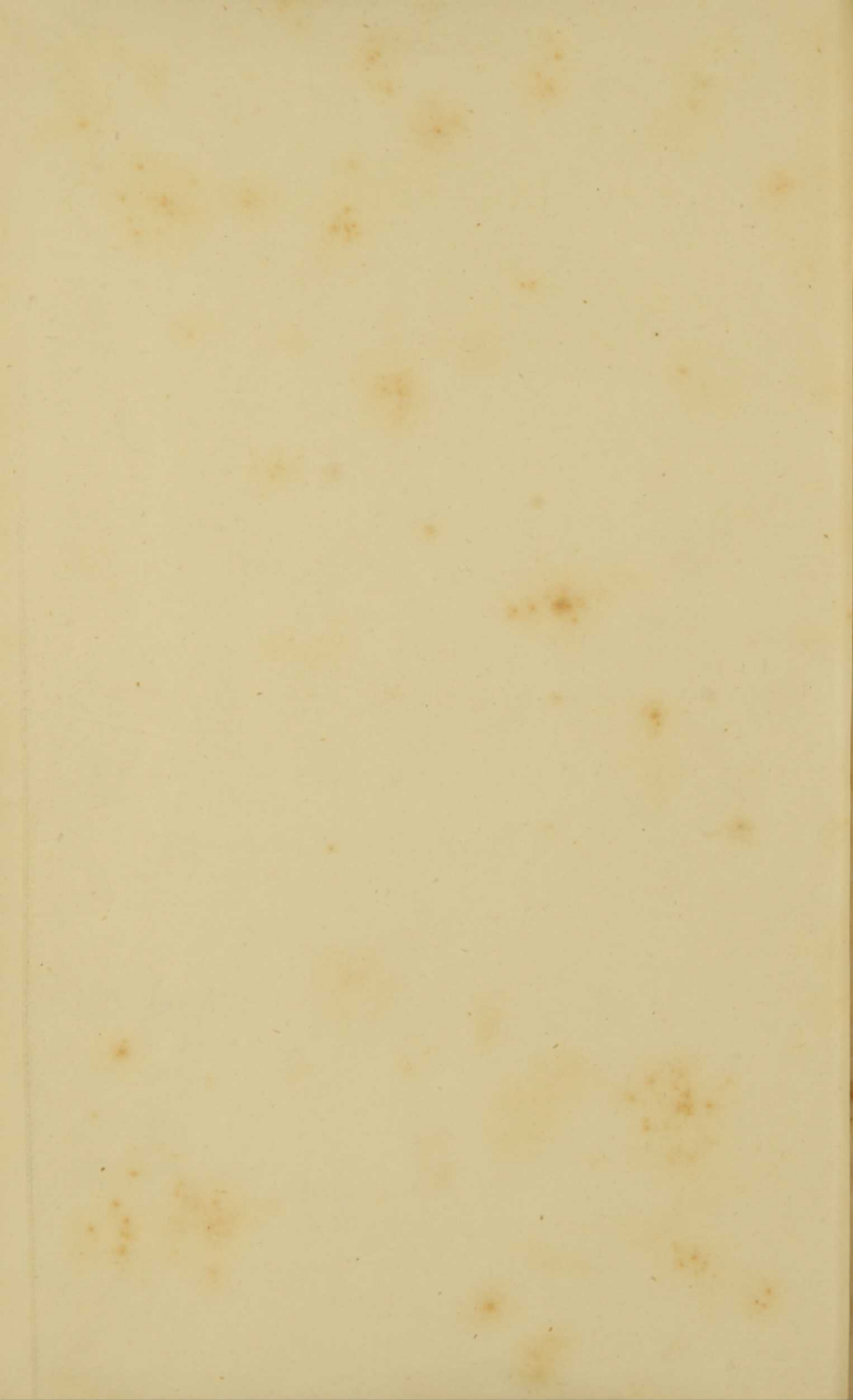
1870

PRINTED BY JAMES H. HARRIS

AND BY THE AUTHOR

IN NEW YORK

1870



R. 2. 262 N.M. 1586 - 1587 15680

✓ **SAILING DIRECTIONS**

FOR THE

BAY OF BISCAY.

Compiled from the most recent Surveys

MADE BY ORDER OF

THE FRENCH AND SPANISH GOVERNMENTS.

x

LONDON, E.:

PUBLISHED BY JAMES IMRAY AND SON,

CHART AND NAUTICAL BOOKSELLERS,

89 & 102, MINORIES.

1859.



* * THE PUBLISHERS RESPECTFULLY INVITE COMMUNICATIONS THAT
* MAY TEND TO THE IMPROVEMENT OF THIS OR ANY OF THEIR
* WORKS.

INDEX.

	PAGE		PAGE
AIGUILLON BAY	31	Douarnenez Bay	10
Aix, Ile d'	32	Douelan	15
Aliguen	23	Dumet Island	24
Archachon Basin	36		
Astrolabe Rock	7	ESTACA, CAPE	63
Audierne Bay	13	Eve, Pointe de l'	27
Aviles	59		
		FALAISE LIGHT	33
BALEINES, LES	31	Flotte, Port de la	31
Barquero	62	Fort de la Groix	18
Basse de l'Iroise	8	Fosse of Cape Breton	37
Basse du Lis	8	Four Passage	3
Basse Jaune	17	Four, Plateaux du	25
Basse Menehom	8	Fromveur Passage	4
Bayonne	38	Fuenterrabia	43
Beacons and Buoy	1		
Bec du Raz, The	11	GIJON	59
Belle Ile	20	Gilles Sur Vie, St.	30
Beniquet Islands	21	Gironde River	33
Bertheaume Bay	9	Glenan Islands	15
Beuzec Bank	7	Goemant Bank	7
Biaritz	41	Goulphar, Port	21
Bilbao	48	Grave, Passe de	35
Bonnes, Les Roches	43	Grave, Pointe de	33
Bouc, Le	8	Groix Island	17
Bourgneuf Bay	28		
Brest	6	HAEDIK I.	22
Breton Passage	31	Haut-Banc du Nord (N. W. Point of Ile	
Breton, Port	29	Re)	31
Busto, Cape	60	Helle Rock and Bank	3
		Houat I.	22
CAMARET BAY	9		
Cardinals, The	23	ILE D'YEU	29
Castro Urdiales	50	Introduction	1
Chassiron, Point	32	Iroise, the Basse de l'	8
Chaume, La	30		
Chaussée de Sein	12	JAUNE, BASSE	17
Chauveau Point	31	Jean de Luz, St.	41
Chevreau Rk., Le	8		
Chevre Rk., La	8	KERMORVAN POINT	2
Comillas	57		
Concarneau	14	L'ABERBENOIT	2
Conquet, Port du	2	Laberildut	2
Coq, Pointe du	14	Lanriec	14
Coq Rock	7	Leaches, The	8
Corbeau Rock, Le	7	Llanes	58
Cordouan Rock	33	Loctudy	14
Coubre Point	33	Loire, River	25
Crac'h, La	23	Louis and Lorient, Port	18
Croisic	25	Louzaouennou Rock	7
Cudillero, Port	60		
		MACHICAGO, CAPE	48
D'ANTIOCHE, Pertus	32	Martin de la Arena, San	55
Deba River	47	Martin, St.	31
Dinant, Le Basse de	8	Matthew's Point, St.	2

	PAGE		PAGE
Menehom, The Basse	8	Quimper River	14
Mendufa Rocks	8		
Minou Point	6	RAZ DE SEIN, THE	11
NAVALLO, POINT	23	Re, Ile de	31
Nazaire, St.	28	Requijada	56
Noirmoutier I.	29	Rivadeo	60
Nord, Passe du	34	Rivadesella	58
		Rochelle, La	32
OLERON I.	32	Roches Bonnes, Les	43
Olonne	30	Royan	33
Orrio de Tapia	60		
Ouessant I.	5	SANTANDER	52
PAIMBŒUF	27	Santona	51
Palais, Port	21	Sauzon, Port	21
Parquetes, Les	7	Sebastian, San	46
Pasages, Port	44	Sein Island	12
Passage du Four	3	Socoa	42
Passage du Fromveur	4		
Passage du Raz	11	TAS DE POIS, LE	8
Passe de Grave	35	Teignouse Rock	20
Passe du Nord	34	Terre Negre Tower	33
Penas, Cape	59	Tidal Signals	1
Penfret I.	16	Toulinguet Point	6
Penlan Point	24	Toulinguet Rocks	8
Penmarc'h Point	13	Tour d'Aiguillon	26
Penmen Point	18	Tour du Commerce	26
Pertuis Breton	31	Trepied Rock, Le	7
Pertuis D'Antioche	32	Tristan Island	10
Pilier I.	28		
Pontaillic Light	33	URDIALES, CASTRO	50
Pontchou Bank	7	Ushant I.	5
Pornic	28		
Portzie Point	6	VANDREE ROCK, LA	7
		Vares	62
QUIBERON BAY	23	Vicente de la Barquera, San	57
Quimperlé River	15	Vieille, The Basse	16
		Vilaine River	24
		Vivero Bay	61

ADDENDA.

BREST. The Basse Beuzec and Les Fillettes are now each marked by a buoy. Attempts have also been made to remove the Rose Rock; we believe with considerable success. Pages 6 to 9.

CONCARNEAU. Upon Cochon Rock a beacon, consisting of a small stone tower, has lately been erected. Page 14.

SAILING DIRECTIONS

FOR THE

BAY OF BISCAY.

* * THE BEARINGS AND COURSES THROUGHOUT THIS WORK ARE THOSE BY COMPASS, UNLESS WHEN EXPRESSED THUS [E.N.E.], AND ARE GIVEN AS FOR STILL WATER; THE UTMOST ATTENTION SHOULD, THEREFORE, BE GIVEN WHENEVER THEY LEAD ACROSS THE STREAM OF TIDE, WHETHER DIRECTLY OR OBLIQUELY, AND DUE ALLOWANCE MADE FOR ITS INFLUENCE. THE DEPTHS REFER TO LOW WATER, SPRING-TIDES. THE RANGE OF A TIDE MEANS THE DIFFERENCE BETWEEN ITS LOW AND HIGH WATER LEVELS. THE DISTANCES ARE IN NAUTIC MILES OF SIXTY TO EACH DEGREE. THE VARIATION ALLOWED IS 23° TO $20\frac{1}{2}^{\circ}$ W., THE LATTER BEING IN THE SOUTH-EAST ANGLE OF THE BAY. THE LINE OF DEVIATION IS ABOUT S.W. AND N.E. (TRUE); AND THE ANNUAL DECREASE $4'$.

WEST COAST OF FRANCE.

INTRODUCTION.—In August, 1855, the French Minister of Commerce and Public Works issued a new system of Tidal Signals, and as these are now used at most of the French ports, we give them here instead of repeating them in the instructions for each place. The same may be said of the buoys and beacons, as an uniform system of colouring is observed throughout France.

Tidal Signals.—These are made at most French ports by flags and balls hoisted on a mast, on which a yard is crossed. The balls are black.

One ball hoisted at the intersection of the mast and yard, denotes a depth of 10 feet in the channel between the jetties.

Each ball hoisted on the mast under the first denotes an extra depth of $3\frac{1}{4}$ feet.

Each ball hoisted above the first denotes an extra depth of $6\frac{1}{2}$ feet.

Each ball hoisted on the left yard-arm (coming in from sea) denotes an extra 10 inches.

Each ball hoisted at the right yard-arm denotes an extra 20 inches.

A white flag with a black cross, also a black pendant, are used to indicate the state of the tide. They are hoisted directly there are $6\frac{1}{2}$ feet in the channel, and lowered when the water has receded to that depth. During the flood-tide the pendant is above the flag; at high water and during the top of the tide the pendant is lowered; and during the ebb-tide the pendant is under the flag.

When the state of the sea prevents vessels entering the port, the above signals are replaced by a red flag hoisted at the mast-head.

Beacons and Buoys.—On the French coast all buoys and beacons painted red must be left to starboard, and those painted black to port. Beacons below the level of high water, and all warping buoys are coloured white. The small rocky heads in the frequented channels are coloured in the same way as the beacons, when they have a sufficiently conspicuous surface.

Each beacon or buoy has upon it in full length, or in abbreviation, the name of the danger it is meant to distinguish, likewise its number, showing its numerical order in the same channel. The numbers commence from seaward; the even numbers on the red buoys, and the odd ones on the black buoys.

The letters and numbers are painted in white on the most prominent parts of the buoys, and from 10 to 12 inches in length. The masts of the beacons which do not present sufficient surface are surmounted for this purpose by a small board. All the jetty heads and turrets are coloured above the half-tide-level, and on the former a scale of metres* is marked, commencing from the same level.

COAST EASTWARD OF USHANT.—The small harbour of L'Aberbenoit is immediately westward of Abervrac'h. Fronting the entrance is a rocky bank, named the Plateau de Rusven, upon each side of which there is a channel into the river. Within this bank the channels unite, but become much confined by some rocks and rocky islets. The depth of water decreases gradually as you advance inwards, till just within Ile Garo, where, at low spring tides, there is only about $1\frac{1}{2}$ fathom. The entrance is very intricate, on which account a pilot's assistance should be obtained.

From L'Aberbenoit to Le Four Rock and Portzpoder the coast runs round in a westerly direction, a distance of about 8 miles, and afterwards more southerly to Cape St. Matthew, the whole being fronted by rocks and rocky ledges, particularly in the former part, the principal of which, the Porsal Rocks, have their outer extremity about $2\frac{1}{2}$ miles from the shore. There are channels among these rocks, leading to the different villages upon the coast, but none that should be attempted by a stranger. Argenton and Portzpoder are small and shallow places, but afford good security to the native fishing craft.

LABERILDUT has its entrance about $2\frac{1}{2}$ miles southward of Portzpoder, and $11\frac{1}{2}$ miles E.S.E. from Ushant Lighthouse; it is only about a cable's length wide, between some rocks which appear at low water. At half a mile from the harbour's mouth the water rapidly decreases in depth, though previous to that there is not less than $4\frac{1}{2}$ fathoms in the fairway of the channel, but the harbour itself dries some 6 or 9 feet above low water level. The leading mark in is the steeple of Breles Church exactly in one with that of Lanildut, E. by S., and when up with the rocks named Men-garo, or about half a mile outside the mouth of the harbour, steer towards a rock situate within it.† Pass this rock on your port hand and bear away, first to the south-eastward and then to the north-eastward for the village of Laber, preserving the middle of the harbour so as to have the deepest water.

On full and change days it is high water about $3\frac{1}{4}$ h.; springs range 20, and neaps 9 feet.

PORT DU CONQUET is about $6\frac{1}{2}$ miles from Laberildut, and $1\frac{1}{4}$ mile northward of St. Matthew's Point, just within the peninsula of Kermorvan, between it and the semaphore on Point Renard. The harbour is formed by an arm of the sea which runs in above a mile, and is 1 and $1\frac{1}{2}$ cable's length in width, its direction in the outer part being east and west. At low springs it is dry; the bottom abreast of the town, $\frac{1}{4}$ of a mile inside the entrance, being then 5 and 10 feet above the sea level. You can enter by keeping in midchannel, at about an equal distance from either shore. The range or mean rise of springs is 21 feet, and of neaps 9 feet; high water full and change at 3h. 46m.

On Kermorvan Point there is a lighthouse 59 feet high, exhibiting a fixed light at 72 feet above high water of spring tides. In clear weather it is visible 12 miles.

The outlying dangers in the vicinity of Conquet are, the Grand Vinotiere, Les Renards, and the Basse des Renards. The Grand Vinotiere consists of two small heads of rock, showing 3 and 9 feet at low water, and lies N.W. $\frac{3}{4}$ W. 7 cables' length from Pointe de Kermorvan. Point Kermorvan should have a berth of $\frac{1}{2}$ of a mile at least. Les Renards consists of three heads, 10, 13, and 15 feet above low springs, and the outermost bears West, 2 cables from Renard Point. The Basse des Renards has 8 feet over it at low tide, and lies West, southerly, 6 cables' length from the semaphore on Point Renard. For further directions for sailing to this place, see those given hereafter for the Chenal or Passage du Four.

St. Matthew's Point is distinguished by a lighthouse which exhibits a revolving or intermitting light at 177 feet above the sea. The building is 82 feet high, and shows the light to the distance of 18 miles. The flashes succeed each other every half minute, but the eclipses do not appear total within 7 or 8 miles. The importance

* A French metre is equal to 3·2809, or nearly $3\frac{1}{3}$ English feet.

† We believe that the rock is marked by a perch.

of this light will be evident upon an inspection of the chart, as by a single bearing of it the ship's position may be determined, and a course thence steered for the Four Passage, for Brest Harbour, or for the west end of the Chaussée du Sein.

Between this part of the French coast and the island of Ushant there are a number of small islands, rocks, and rocky shoals, with several channels among them, which are useful to the native coasters, but only two can be made use of by strangers, and these require the exercise of considerable care, namely, the Chenal or Passage du Four, and the Fromveur Passage. The whole of the group will be better understood by an inspection of the chart, than by any description, however plain, that we could give; we, therefore, confine our remarks to the channels on their eastern and western sides.

Many of the rocks are extremely steep-to, especially on the western and southern sides of the group, where almost directly off them are soundings of from 17 to 46 fathoms.

THE PASSAGE DU FOUR is the channel between this group and the main, the leading mark through it being St. Matthew's Lighthouse in one with the extremity of Kermorvan Point, or, at night, in one with the lighthouse on that point, bearing South, a little westerly. In coming from the northward, the first rock met with is the Four or Oven, so named from its resemblance to an oven; it is a large black rock always above water, lying about a mile from the coast north of Portzpoder, and E. $\frac{3}{4}$ S. $10\frac{1}{2}$ miles from Ushant Lighthouse, and appears very conspicuous when leaving Ushant to sail to Brest: it should not be approached nearer than $\frac{1}{4}$ of a mile. About a mile to the Westward of the Four is a small patch of $5\frac{1}{2}$ to 6 fathoms, called the Basse Bourreau, lying with Landunevés Church in one with the southern part of the Ile d'Iock, and St. Matthew's Point seen open 17' to the right of Point de Corsen; between this patch and the Four Rock are from 12 to 22 fathoms. The next is $2\frac{3}{4}$ miles to the W. by S. $\frac{3}{4}$ S. of the Four Rock, and is a dangerous shoal called the Basse Meur, of which the exact soundings are not known, but the depth around it is from $9\frac{1}{2}$ to $25\frac{1}{2}$ fathoms; it lies with St. Matthew's Lighthouse appearing between the Peninsula of Kermorvan and the Point of Kermorvan, and Landunevés Mill in one with a rock close to the shore, called Little Melgorne. Within Basse Meur Rock, and close to the shore, are a number of dangerous reefs, of which some appear just above the water at low tide, but as they are out of the track of vessels, the passage being to the westward of the Basse Meur, we shall not attempt to describe them.

On the opposite side of the Passage du Four are several dangerous ledges, the outermost of which, and those most in the way of vessels tacking hereabout, are, the Basses St. Charles and St. Louis; the former is a small patch of $6\frac{1}{2}$ fathoms, lying $2\frac{1}{2}$ miles W.S.W. $\frac{1}{4}$ S. from the Basse Meur: it lies with Ploumoguer Church in a line with a small rock close to the shore, called the Goatlock, and has around it a depth of 12 to 25 fathoms, bottom of sand, rock, and broken shells. The Basse St. Louis is about three-quarters of a mile to the south-eastward of the Basse St. Charles, and has no more than $2\frac{1}{2}$ fathoms upon it, with similar soundings close to; its marks are Portzpoder Church open a little to the right of the Great Liniou Rock, and La Helle Rock* open 38' to the left of Molene Island, S.W. by W. $\frac{1}{2}$ W. A short distance to the south-westward of this is another patch of 7 fathoms.

Continuing with the leading mark on, you will, after passing the Basse St. Louis, have on your starboard hand the Platresses, and on your port hand the Valbelle; this is the narrowest part of the channel. The Platresses are S. by E. $\frac{1}{2}$ E. about $1\frac{1}{2}$ mile from the Basse St. Louis, and about midway between the shore and the Plateau de la Helle. They consist of a bank of rocks about three-quarters of a mile in extent, several heads appearing at low tide, at which time they are from 1 to 12 feet above the surface. The mark that clears them to the northward is Plouarzel Church appearing between the Fourches Rocks, bearing S.E. by E. $\frac{1}{2}$ E., and to the southward, the ruins of Trezien Mill in one with Goatlock Rock, bearing E. by S. $\frac{3}{4}$ S. La Valbelle is $\frac{2}{3}$ of a mile eastward of the Platresses, lying exactly on the bearing given to avoid the northern

* La Helle Rock is high, and appears like a ship under sail. It is situated S.E. $\frac{1}{2}$ S. $6\frac{1}{2}$ miles from Ushant Light, upon an extensive bank of the same name, which is dangerous, as many heads of the rocks appear just above the surface when the tide is down. The passage between this bank and the Platresses is about $1\frac{1}{2}$ mile wide, and has from 6 to $32\frac{1}{2}$ fathoms in it, upon a very irregular rocky bottom.

Between La Helle Bank and the islands to the south-west, there is no safe passage which can be used by a stranger, on account of the numerous rocks that lie about.

side of those rocks, and consists of one small patch with only 10 feet upon it, with 6 and 9 fathoms close to all round.

When clear of the Platresses and the Valbelle there will be another 8 feet spot (the Tendoc) to guard against, situated also on the port hand; it is the outermost of several lying between it and the Goatlock Rock, and from it Trezien Mill (ruins) appears over the Goatlock, E. by S. $\frac{3}{4}$ S., the latter distant nearly one mile. Being to the southward of the Tendoc you can open the lighthouse more to the westward of Kermorvan Point to clear the Bank of St. Paul, another isolated patch of 15 feet lying W. by N. $\frac{1}{4}$ N., distant a mile from the semaphore on Pointe de Corsen, with one or two others between it and the point.

The channel now is clear and of a good width, with depths varying from 8 to 12 fathoms, but as you approach the peninsula of Kermorvan, there will be the Basse St. Pierre and the eastern bank of the Courleau to go clear of. The former has 17 feet upon it, and is $1\frac{1}{4}$ mile N. by W. $\frac{3}{4}$ W. from Kermorvan Point, and the latter, whereon the depths are 6, 11, and 17 feet, is rather more than $1\frac{1}{2}$ mile N.N.W. $\frac{1}{2}$ W. from the same point. Both will be avoided by not bringing St. Matthew's Lighthouse more eastward than S. $\frac{1}{2}$ E.

Anchorage can be had in the Anse des Blancs Sablons or Whitesand Bay, on the north side of Kermorvan Peninsula, in from 4 to $7\frac{1}{2}$ fathoms, bottom of fine sand, but the bay, though clear of outlying dangers, is open to north and north-west winds.

Kermorvan Peninsula is rocky, and a short distance off it are two rocks called Le Normand and Petite Vinotiere, which appear only at low water. The rock called the Grande Vinotiere, before mentioned in the directions for Conquet, lies in the middle of the Passage du Four, $\frac{3}{4}$ of a mile from the point; it shows only at low water, so that in sailing through the channel caution is requisite to avoid it. Kermorvan Point should have a berth of not less than $\frac{1}{4}$ of a mile, and if intending to go into Conquet, you must wait until there is water enough in the entrance, and then steer in, keeping in the middle of the channel. If bound out of the Passage du Four, round St. Matthew's Point, and being off Conquet, keep away from the main, so as to avoid the Banc Renard, already described, which is more than $\frac{1}{2}$ a mile West of Renard Semaphore, and the rocks within it. You will now have a clear channel $1\frac{1}{4}$ mile in width, till abreast of St. Matthew's Light; do not, however, stand towards the shore into less than $4\frac{1}{2}$ fathoms, or nearer than $\frac{1}{2}$ a mile.

In leaving the Passage du Four, the best channel is between the Vieux Moines and the Basse du Chenal. The Vieux Moines consists of several heads of rocks, the highest of which is 23 feet above low water; they lie $\frac{1}{2}$ a mile S.W. of Point St. Matthew, and are steep-to, with from 2 to $4\frac{1}{2}$ fathoms between them and the point, and 8 fathoms immediately outside. The Basse du Chenal is a small bank of 5 to 9 feet, situated $1\frac{1}{2}$ mile W. $\frac{1}{4}$ S. from the lighthouse on St. Matthew's Point. Its mark is Kermorvan Point in one with Portzmoguer Sands, and around it on all sides is deep water. At three-quarters of a mile to the westward of it are some rocks above water called the Bossemens.

To go between the Vieux Moines, or Old Monks, and St. Matthew's Point, you should pass those rocks pretty closely, as around the point a ledge of rocks extends some little distance out, and about half a mile to the eastward of the lighthouse are some rocks above water called the Respects, which run out fully half a mile from the shore in a south-westerly direction. Close to them there is deep water, so that in using this passage considerable caution is necessary to avoid them.

Vessels passing from the southward to the northward through the Passage du Four will find no great difficulty in reversing the order of the foregoing directions, remembering especially that the leading mark cannot be brought on till Kermorvan Point is passed, and that it must be very strictly adhered to in going between the Tendoc, Valbelle, and Platresses, the narrowest part of the channel. The tides set strongly through it, the flood to the northward, and the ebb to the southward.

The PASSAGE DU FROMVEUR, directly to the eastward and southward of Ushant, is nowhere less than one mile in width, and the soundings range from 17 and 18 up to 50 fathoms, on a bottom mostly of rock, the shallowest being also the narrowest part. Here the tide runs very rapidly, generally exceeding 4 knots, so that the passage must be considered as dangerous, and only to be used in cases of necessity, and then only with the tide. The course through is about E. by N. and W. by S. The northern side of the channel is bounded by a reef of rocks, showing in many places at low water, which line the shore of Ushant, and extend from it to the distance of $\frac{2}{3}$ of a

mile. Coming through the channel from the northward, the first rock met with on the eastern side will be the Loédoc, always above water, and at a short distance to the west of this is another, called Men Tensel, which dries 13 feet, the two rocks being connected by a rocky ledge, mostly under water. A little to the south of this is a group of rocks, called the Bannee, dry at all times; and there are several other dangers still further to the south-westward. In beating out to the southward it will be necessary, when tacking to the south-eastward, to bring Loédoc (largest) Rock nothing to the northward of N.E. by E. This will clear all the rocks and sunken dangers on the eastern side of the Fromveur Passage, including the Pierres Vertes; and, by not getting nearer to the south side of Ushant than $\frac{3}{4}$ of a mile, you will go well outside of those on the western side of the passage.

USHANT or OUESSANT.—Ushant is an irregular craggy island, about 4 miles in length from east to west, and 2 miles in breadth, and bears from different parts of the English Coast as follows:—

	MILES.
From St. Catherine's Point, in the Isle of Wight... W.S.W. $\frac{1}{2}$ W.....	191
From the Bill of Portland..... S.W. by W. $\frac{1}{2}$ W.....	157
From the Start Point S.W. $\frac{3}{4}$ W.....	117
From the Eddystone Lighthouse S.W. $\frac{1}{3}$ S.	106
From the Lizard Lights S.S.W.	88
From the Bishop Light (Scilly)..... S. $\frac{3}{4}$ E.	99

The tide flows at Ushant on the days of full and change till 3h. 32m.; the average rise of springs is $19\frac{1}{4}$, and neaps $8\frac{1}{4}$ feet.

The lighthouse on the north-eastern end of the island shows an excellent fixed light, at 272 feet above the sea, visible in clear weather to the distance of 6 leagues. Its position is lat. $48^{\circ} 28' 31''$ N., and long. $5^{\circ} 3' 32''$ W.

ANCHORAGES.—On the south-western side of the island is Lampaul Bay, a harbour frequented only by the French, and difficult to navigate. At the entrance of the bay between the rocks on either side, are soundings of 40 fathoms, with a bottom of rock and small shells, thence decreasing gradually to 5 and 6 fathoms at the head of the bay. In the middle of the bay is a rock called Le Corcé, which is always above water, and has a clear passage on either side of it; but this place is difficult to get into on account of the dangerous reefs which extend off this end of the island, drying in some places, but always breaking when there is any sea. The Jument Rock, the southernmost of the rocky ridge on this side of Ushant, dries 18 feet at low water; it lies about W.S.W. from the nearest point of the island, distant rather more than a mile, with Bélanger Mills open 2° to the right of Corcé Rock; and $\frac{2}{3}$ of a mile N.W. by N. from La Jument is the Basse Bridy. On the opposite side of the entrance to the bay of Lampaul a rocky ledge extends some distance from the land, and dries in several places. The outermost of this ledge is called Leurvas Rock, and is 4 feet above the sea at low water, and more than half a mile from the land. To pass in midchannel between these rocks, bring the Corcé to bear East, and keep it so; and when up with it, pass it on your port hand.

On the northern and eastern sides of the island are two bays, frequented only by the native vessels, which occasionally anchor here. The most eastern one, called Stiff Bay, is dangerous, on account of several rocky ledges in it, and is quite open to gales from the north-east and east. The other bay is named Beninou, and is well sheltered to the westward by a small island named Keller; here small vessels may anchor in $8\frac{1}{2}$ to 12 fathoms, sand and rocky bottom, and ride secure from all winds except those from the northward. The rocks on each side of the entrance are very steep, having 18 fathoms directly off them.

From Keller Island a rocky ledge extends $1\frac{1}{4}$ mile to the N.W. by W., and dries in various places. Its outermost ledge, called the Basse Callet, has 11 fathoms on it, with 37 or 40 fathoms close to; but immediately within it is much shallower water, so that no attempt must be made to go within it and the island; and vessels, in approaching this part of Ushant, do well not to go nearer the lighthouse than $4\frac{1}{2}$ and 5 miles. The marks for the Basse Callet are the lighthouse in one with the centre of Keller Island and the Bélanger Mills in one with the western part of Callet Rock.

Nearly $2\frac{1}{4}$ miles to the south-westward of the Jument Rock, on the southern side of Lampaul Bay, is Ushant Bank, a shoal about $1\frac{3}{4}$ mile long, and $\frac{1}{2}$ mile broad, on which are 26 to 40 fathoms, bottom of broken shells. Around it on all sides are 50

to 60 fathoms, with the same description of bottom; and between it and Ushant are 50 to 26 fathoms.

The westernmost patches of the group of rocks lying between Ushant and St. Matthew's Point are Les Pierres Vertes, or the Green Stones. These consist of sunken rocks which become dry in several places at low tide, at that time appearing about 7 feet above the surface of the water; their western part is $5\frac{1}{2}$ miles S.S.W. $\frac{1}{4}$ S. from Ushant Lighthouse, and the marks are Ar Men Guen Gondichoc Rock seen between the barracks and semaphore on Molene Island, and Bannec Rock N.E. $\frac{3}{4}$ E. To the S.S.E. $\frac{1}{4}$ E. of these, about 4 miles, is another patch of rock, called the Cleu Basseven; and about $1\frac{3}{4}$ mile further is the Boufoulloc, a sunken rock, having but 2 feet on it, upon which H.M.S. *Magnificent* was unfortunately wrecked in 1804; and $\frac{2}{3}$ of a mile outside this line of direction lies the Basse Occidentale des Pierres Noires, which has only 13 feet over it. Near the Boufoulloc are the Pierres Noires, or Black Rocks, which are always above water, and have 17 to 15 fathoms close to them. From the Pierres Noires a ledge of rocks, partly under water, extends to the eastward almost to St. Matthew's Point, and is called the Chaussée des Pierres Noires. The most prominent of this ledge are the Chiminees, le Ranvel, Basse Large, &c. But the whole of the south side of this group of islets and rocks will be better understood by an inspection of the chart.

While you are to the westward of the Black Rocks, you should not approach them nearer than $2\frac{1}{2}$ miles. On their southern side they are so steep, that the soundings along them, at no great distance, vary from 35 to 20 fathoms. At the distance of about 5 miles to the southward of them there is good anchorage, with easterly winds, in 32 fathoms, fine sand; and at 6 miles distance the depths are from 34 to 40 fathoms, with sand; and nearly the same thence to the southward.

The most south-eastern spot of the group is Basse Royale, from which St. Matthew's Lighthouse bears E. by N. $\frac{3}{4}$ N., distant rather more than 3 miles; on it is a depth of 4 fathoms at low water spring tides. It lies with the Diamond and Ranvel Rocks in one, N.W. $\frac{3}{4}$ W., and Le Bossemen Or open $1^{\circ} 23'$ to the left of Point Corsen.

BREST.—The approaches to Brest Harbour are incommoded on the northern side by the rocks and shoals between Ushant and St. Matthew's Point, and on the southern side by the Chaussée de Sein; besides which there are a number of isolated dangers within them, requiring great attention to guard against, before you arrive at the entrance, named the Goulet de Brest. This is the only entrance into the harbour; it is narrow, being not more than a mile in width, is defended on both sides by strong forts, and has water deep enough for the largest vessels; the land on the southern side is pretty bold, and clear of all danger, as is also that on the northern side, the only check to its free use being some rocks in the fairway. Kelern Peninsula, on the south side of the Goulet, is 3 miles in length, and $1\frac{1}{2}$ in breadth, where broadest.

Brest Harbour is one of the finest harbours in Europe, and one of the principal stations of the French Navy. It consists of a large land-locked bay, upwards of 20 miles in circumference, with two deep branches, the one of which receives the River Landerneau, and the other the River Chateaulin. The water is deep enough for the largest class of vessels, and there is room sufficient for 500 sail of large ships to ride securely. The basin or roadstead is 5 or 6 miles across, and the principal anchorage is about a mile from the town.

The town of Brest is situate partly on the slope of a hill, on the north side of the harbour, and about 2 miles within the Goulet. Here there is a magnificent arsenal, vast building slips, docks, magazines, and workshops, but very little commerce is carried on, the docks being appropriated to vessels of war. The town is separated from the suburb of Recouvrance by a deep tide inlet, alongside of which is the dockyard. To enter this inlet you will have to pass over a kind of bar, upon which, however, at low spring tides, there are $2\frac{1}{2}$ fathoms.

At Brest it is high water on the days of full and change of the moon at 3h. 47m., and the average rise of springs is 19 feet; neap tides range $8\frac{1}{2}$ feet.

Lights.—Besides the revolving light on Point St. Matthew, the fixed light on the Bec du Raz, and the flashing light on the Ile de Sein, the approach to the entrance of Brest Harbour is further facilitated at night-time by three others, one on Point Toulinguet, on the southern side of the entrance to the Goulet; another on Point Minou, on the northern side; and the third on Portzie Point, at the inner end of the Goulet. The light on Point Toulinguet is a fixed red light, 161 feet high, and visible to the distance of 10 miles. Minou Point light is fixed, and shown at the height of 105 feet

above the sea, and visible to the distance of 15 miles. And Portzic Point light is fixed, but varied by flashes every three minutes; these flashes are preceded and followed by short eclipses, which do not appear total within 8 miles; this light is 184 feet high, and visible to the distance of 6 leagues. Minou and Portzic lights in one lead to the entrance of the Goulet, avoiding the dangers, named the Coq and Basse Beuzec to the north, and that of the Vandree, &c., to the south, hereafter described.

DANGERS OUTSIDE THE GOULET DE BREST.—The isolated dangers before alluded to as being in the way of vessels approaching Brest Harbour, or the anchorages at Bertheaume, Camaret, &c., are very numerous. We shall take them in the following order, beginning with the outermost on each side of the main channel:—Le Coq and the Basse Beuzec on the northern side; and the Vandrée, Basse de l'Astrolabe, Le Goemant, La Parquete and Bank, Le Trepied, the Louzaouennou and Banks, Le Corbeau, Basse Pontchou, the Leaches, the Mendufas, and Toulanguet, on the southern side. Coming in from the south-westward, and making for one of the channels among the foregoing rocks, you will meet with the Basses de l'Iroise, du Lis, and Menehom; or from the southward, the Bouc, the Chevreau, the Chevre, and the Rocks off Pen-hir.

From St. Matthew's Lighthouse the coast continues in an E. by S. $\frac{3}{4}$ S. direction, about $2\frac{1}{2}$ miles to Point Crearc'h-meur, the western side of the Bay of Bertheaume, and upon which there is a fort and beacon. Midway at three-quarters of a mile from the land is the *Coq Rock*, which uncovers at low water, and lies with the beacon near Fort St. Merzan, bearing N.N.W., and Bertheaume Castle in one with the extremity of Point Crearc'h-meur. Between this rock and the land are 8 and 10 fathoms, and a safe passage by keeping near the shore; but it is more usual to sail outside it, as less danger is incurred.

About $1\frac{1}{2}$ mile in an E.S.E. direction from the Coq Rock is the *Beuzec*, a bank of 5 feet at low water. All around it is deep water of 8 to 10 fathoms, so that it is extremely dangerous for large vessels. The marks by which to know its position are, the Castle of Bertheaume, N.N.E., distant a mile, and the lighthouse, chapel, and semaphore on Point St. Matthew in a line.

By night the fixed and flashing lights on Points Minou and Portzic, in one, lead to the southward of the Coq and Beuzec, and also to the northward of those on the southern side of the channel.

The outermost of the rocks on the southern side of the channel are, *La Vandrée Rock*, a small patch of 6 feet water, which lies with the two peaks of the *Siège Rock* (in the Ushant Group) open a little to the right of the Chiminees Rocks, bearing N.N.W. $\frac{1}{4}$ W., and the tower of Crozon open 9° to the left of the Fourche Rock, E.S.E. $\frac{1}{4}$ S. From this rock foul ground of 12 to 16 fathoms extends in a westerly direction about one mile. On all sides of this rocky bank are 20 to 25 fathoms, so that the greatest caution is necessary to avoid the Vandrée. About half a mile to the E.S.E. of the shoal part of this rocky bank is the *Goemant*, a small patch of 5 fathoms; and at three-quarters of a mile N.E. by E. $\frac{1}{4}$ E. from the same shallow part of the Vandrée is the *Astrolabe*, another of similar depth.

The rocks named the *Parquetes* are situated to the east of La Vandrée about 2 miles, and bear from St. Matthew's Lighthouse S. $\frac{1}{2}$ W. $4\frac{1}{4}$ miles; they dry at low water, and appear at that time 6 and 20 feet above the surface; around them there is deep water, except at the distance of half a mile E.S.E. of the highest, where a depth of only 7 feet will be found.

Le Trepied Rock encroaches more into the channel than any of the rocks on the southern side; the highest head of rock is 9 feet above low water. Lochrist Steeple in one with Fort St. Merzan, and the southern extremity of the Lignes de Kelerin open a little to the north of Point du Grand Gouin, are the cross marks for its position. At the distance of half a mile S.W. by S. from Le Trepied is the *Louzaouennou Rock*, which is just a-wash at low water, and has two patches of about $3\frac{1}{2}$ fathoms, one about a cable's length from its northern side, and the other a little to the southward of its southern side.

Le Corbeau is on the western side of the Passage du Corbeau, and is 14 feet high when the tide is down. It lies S.S.E. $\frac{3}{4}$ of a mile from Le Trepied, with the Church of Lochrist open just to the eastward of Fort Merzan. On the eastern side, the Passage du Corbeau is bounded by the *Pontchou Bank*, upon which the depths are from 6 to 13 feet, the shoalest spot being $\frac{1}{4}$ of a mile west from a rock always above water. The Corbeau Channel is narrow, though deep, and should not be attempted by a stranger.

The *Leaches* are a group of rocks above and under water just to the eastward of the Pontchou Bank; they occupy a space of half a mile from north to south, and a quarter of a mile from east to west, and bound the narrow channel of Petit Leach on the northern side. The leading mark for Petit Leach Channel, the mill of Roscanvil in one with the rocks off Toulinguet Point, E. by N.,* clears the southernmost Leach Rock, upon which there is, or was, a beacon; and by not approaching the largest rock nearer than $\frac{1}{2}$ of a mile you will avoid the 12-foot patch on their eastern side.

The *Mendufas* and *Toulinguet Rocks* separate Toulinguet and Petit Leach Passages. The former consist mostly of sunken rocks, and lie W.S.W. of the Toulinguet largest rock; they extend N.E. by N. and S. W. by S. $\frac{2}{3}$ of a mile. There is a narrow channel between these two groups, used by the natives and the pilots. If intending to run through the Passage du Petit Leach, bring the leading mark on, namely, Roscanvil Mill in one with the rocks off Toulinguet Point, E. by N., when you are about $2\frac{1}{2}$ or 3 miles from the point, and follow it pretty closely, until nearly abreast of Toulinguet Rock, when you should steer to the north-eastward, so as to give it, as well as the point, a good berth. The Passage du Toulinguet is between the rock and point of that name. In approaching it from the westward you must be careful of the southernmost patch (2 feet) of the Mendufas, to avoid which it is advisable to keep within $\frac{3}{4}$ of a mile of Penhir Point and rocks, which are above water and steep-to, and then pass through the narrow part of the channel by giving Toulinguet Point a berth of $\frac{1}{4}$ of a mile.

The *Basse de l'Iroise* is the south-westernmost of the outlying rocks. It is a shoal bank of 4 fathoms, lying $2\frac{1}{2}$ miles to the S.S.W. $\frac{3}{4}$ W. of La Vandrée. Its marks are, Lochrist Mill open 3' or 4' to the right of the Chapel of Notre Dame de Grace de St. Matthew, about N.N.E. $\frac{3}{4}$ E.; Roscanvil Mill, on Kelern Peninsula, in one with the most northerly rock off Point Toulinguet, E. by N., nearly; and Lansmarc'h Point in one with the summit of Ménéhom Mountain, E.S.E.

The *Basse du Lis*, E. $\frac{3}{4}$ S., $2\frac{1}{2}$ miles from the Basse de l'Iroise, is the next rock in coming from the south-westward, after passing that shoal; upon it the depths are 5, 11, and 21 feet; from the first of which the Church of Lochrist appears in one with the Pignons de Keravel, and St. Sebastien Mill in line with Toulinguet Rocks, E. by N. $\frac{3}{4}$ N. Its length is about $\frac{1}{4}$ of a mile, and the depths around it 18 and 20 fathoms, so that it should be carefully guarded against.

On the *Basse Ménéhom*, which is $1\frac{1}{2}$ mile eastward of the Basse du Lis, there are three shallow spots, the S.W. rock having but 13 feet on it, the middle rock 22 feet, and the N.E. rock 19 feet. The first of these lies with Lochrist Church bearing North, and Toulinguet Rock N.E. by E. $\frac{1}{4}$ E.; and the last with the same church N $\frac{1}{2}$ W., and the rock N. $\frac{3}{4}$ E. They are distant from each other nearly $\frac{2}{3}$ of a mile in an E.N.E. and W.S.W. direction. The middle shallow is between them, but rather nearer the S.W. than the N.E. rock.

Le Bouc, *Le Chevreau*, and *La Chevre* are three rocks which dry respectively 23, 20, and 22 feet at low water of spring tides, and lie between Cape de la Chevre and Pointe de Dinant, *Le Bouc* at the distance of $2\frac{3}{4}$ miles N.W. $\frac{3}{4}$ N. from the south-west extremity of the cape, *Le Chevreau* $3\frac{5}{8}$ miles N. by W. from the same point, and *La Chevre*, which is $\frac{2}{3}$ of a mile within *Le Chevreau*, at $1\frac{1}{4}$ mile W. $\frac{1}{2}$ N. from the middle of Pointe de Dinant. Toulinguet Rock, seen clear either to the eastward or westward of the outermost rock off Penhir will clear *Le Bouc* and *Le Chevreau*.

The *Penhir Rocks* or *Les Tas de Pois* are all above water, and steep-to; they extend to the westward off Penhir Point, a distance of more than half a mile. No attempt should be made to pass through the narrow channels among them, but in rounding their southern side be careful of the *Basse de Dinant*, which bears from the outermost S.E. $\frac{2}{3}$ E. rather more than $\frac{1}{2}$ a mile, and has only 8 feet on it, with from 7 to 11 fathoms inside it.

These comprise the dangers in the way of the approaches to the Goulet de Brest. Among them are numerous passages, but the only one recommended to a stranger is that which is bounded on the south by La Vandrée Parquetes, Trepied, &c.

DIRECTIONS.—At night the lights on Points Minou and Portzie, kept in one will lead to the entrance of the channel, clear of the Coq and Basse Beuzec on the north,

* The best mark for Petit Leach Channel is the summit of the road to Paris, behind the town of Brest, seen exactly in the middle of the Goulet, bearing E.N.E. nearly, as this will lead through in mid-channel clear of all danger.

and the Vandrée, Parquettes, &c., on the south side. Or, if in the daytime, you will pass to the southward of the Coq by steering about S.E. by S. from St. Matthew's Point, taking care to keep the north end of the isle of Biniguet well open of it, until Lochrist Mill, situated upon the land to the northward, bears N. by W. $\frac{1}{4}$ W., when you will have passed the rock. The Beuzec may be passed on either side; but the best way is to run to the northward of it, and along shore, at the distance of two cables' length from the latter, and thus sailing S.E. by E. $\frac{1}{2}$ E. across the entrance of the Bay of Bertheaume. In sailing through the Goulet, be careful to avoid the Plateau des Fillettes, the Basse Goudron, and Mengam Rocks, which lie right in the fairway. The first is the outermost, and has some rocks upon it which uncover, and others with only a few feet over them; they are very steep-to, and lie $\frac{2}{3}$ of a mile N. $\frac{1}{2}$ W. from a rocky islet off Pointe des Capucins. The Mengam is $8\frac{1}{2}$ cables E. by N. $\frac{1}{2}$ N. from the dry heads of the Fillettes, and has a beacon upon its highest rock. The Basse Goudron is nearly midway between them, in the same line of direction; it has two shallow spots of 2 and 5 feet only. The Mengam is half a mile from the shore at Fort Cornouailles. Having passed these in entering the Rade de Brest, give Pointe des Espagnols a berth of one quarter of a mile to avoid La Cormorandiere Rock, a rock which dries 22 feet at low springs, and bears from the extreme of the point E. by N. $\frac{1}{2}$ N., distant $1\frac{1}{2}$ cable's length. There is a passage between this rock and the point, but strangers should go outside, and thus avoid any risk. When the town of Brest appears open of Portzic Point, you may steer for it, and anchor in 8 or 9 fathoms, or more to the southward, in 15 or 10 fathoms.*

Bertheaume Bay is $3\frac{1}{2}$ miles eastward of St. Matthew's Point, and is free from danger, except a few rocks situated immediately off its western point. The anchorage is in 8, 10, and 12 fathoms, sand and mud. Ships in this road are sheltered from the N.E., N.N.E., and N.W. winds. This is commonly called the outer anchorage.

CAMARET BAY.—Camaret Bay is 2 miles to the southward of the western entrance of the Goulet de Brest, and round to the eastward of Toulanguet Point; it is about $1\frac{1}{2}$ mile in width, and $\frac{3}{4}$ of a mile deep, with soundings of from $3\frac{1}{2}$ to $8\frac{1}{2}$ fathoms at low water, bottom mostly of sand and mud, and free from outlying dangers. The small port of Camaret is in the S.W. corner of the bay, but being dry some 4 or 5 feet at low water, can only be of service to small craft, these will lie sheltered from all winds. A letter in the *Moniteur de la Flotte*, in speaking of this place, says, "On leaving the harbour of Brest by the South Channel, and after passing the fort on Point Capucins, about half of the extensive bay of Camaret is seen, its extremity terminated by the rocky point of Toulanguet."

The port itself, nearly in the form of a trapezium, the largest side of which is that containing the quays of the town, opposite the promontory of Trez Kouz, which forms the second side, has the natural dyke of Roch Madou. This dyke, which is several yards above the highest tide, has at its extremity, near the Chapel of Notre Dame de Roch Madou, a small fort with moats and a drawbridge. A few yards from this defence, the beginning of a dyke, intended, it is said, for the shelter of vessels in the roads, shows a half-finished towering work, like a bar of iron deprived of half its length.

The depth of water in the port only allows access to vessels of 150 or 200 tons, and drawing less than 12 feet. Even vessels of much less draught than this cannot at all times approach the quays. The bottom is good holding ground, consisting of mud and sand, with weeds here and there, and affords good shelter from every wind excepting the North; with this wind tide-rips are frequent, in consequence of the situation of the port, and the very slight increase of depth from its entrance up to the quay.

That part of the bay situate at the entrance of the port, and forming the harbour, affords good anchorage in various depths, with any wind from West, round south, to East. The prevailing winds in the fine season are, N.W., N.E., and S.E., but towards the equinoxes and during winter, severe northerly gales are common in the bay, bringing destruction and wreck to those vessels which are unable to take refuge in the port. At any moment in such a storm a vessel may drag her anchor, drift ashore,

* In July, 1846, a notice was issued from the British Consulate, to the effect that all vessels entering Brest Roads are to steer for the guardship, which is the outermost anchored ship, and is known by having a white and blue broad pendant at the fore, and by her having jury-masts. The ship coming in is hailed by the guard-ship, and told where to anchor. A yellow flag is sent on board, and must be kept flying until the ship is released from quarantine by an officer of the Board of Health, whose boat comes off from Brest as soon as possible.

and be dashed to pieces by the fury of the sea. Under circumstances of so fatal a nature, the bay of Camaret, being open to the northward, should be avoided as a dangerous place."

Passing round Toulanguet Point, the light on which has already been described, to the southward, keep in the middle of the channel between the point and Toulanguet Rock, or rather nearer the latter than the former, as before directed on page 8. There is anchorage from easterly winds, off a sandy beach, with the extremity of Toulanguet Point bearing North, distant $\frac{1}{2}$ a mile, in from 5 to 7 fathoms, sandy bottom. You may also pass to the westward of Toulanguet Rock through the passage du Petit Leach, by keeping the summit of the Paris Road, over Brest, exactly in the middle of the Goulet, which will carry you to the northward of the Pélén or Mendufa Rocks (see page 8), between them and the Petit Leach Rock, upon which is, or was, a beacon, in from $7\frac{1}{2}$ to 14 fathoms, rocky bottom.

About $1\frac{1}{2}$ mile to the southward of Toulanguet Point is Pen-hir Point, which is steep and rocky, and has 5 or 6 large rocks, called Les Tas de Pois, extending off it to the south-westward nearly $\frac{2}{3}$ of a mile. These rocks are always above water, and are steep-to on all sides, but there is a patch of 8 feet above $\frac{1}{2}$ a mile S.E. $\frac{2}{3}$ E. from the outermost, which must be avoided. From these rocky islets the coast bends to the E.S.E., and runs in that direction about $2\frac{1}{2}$ miles to the small sandy bay of Dinant, in which are $6\frac{1}{2}$ to $3\frac{1}{2}$ fathoms, shoaling gradually as you approach the head of the bay. The coast then bends to the southward about $4\frac{1}{2}$ miles to Point la Chèvre, which is forked and makes in two points, and has some small rocks about it, and a sandy spit of $2\frac{1}{2}$ to 6 fathoms, running out above a mile into the sea, in a W. by S. direction.

About $1\frac{1}{4}$ mile northward of the semaphore on Cape de la Chèvre, and $\frac{1}{2}$ a mile from the adjacent rocky shore, a vessel may anchor, sheltered from easterly winds, in 7 or 8 fathoms water, on a sandy bottom. In coasting between Pen-hir Point and Cape de la Chèvre, those outlying rocks, La Chèvre, Le Chevreau, and Le Bouc, mentioned on page 8, must be remembered. Being steep-to and covered at high water, they are very dangerous, and their positions, therefore, should be carefully shunned. The islet Guénéron is small, and surrounded with a rocky ledge; it lies close to the shore at about $1\frac{1}{2}$ mile to the northward of Point la Chèvre, and has deep water close to it on all sides, but no passage between it and the main.

The south side of Cape de la Chèvre should have a berth of over $\frac{3}{4}$ of a mile, for there are several rocks lying off it, the Basse Laye, the outermost, which is nearly awash at low water, being distant $\frac{2}{3}$ of a mile from the land.

Basse Vieille.—At the entrance of Douarnenez Bay, and $2\frac{1}{4}$ miles W.S.W. $\frac{1}{2}$ S. from Point la Chèvre is a rock called the Basse Vieille, which is above the surface of the water at low tide, at that time appearing about 5 feet in height. It is steep-to on all sides, and at half a mile from it are 10 to 17 fathoms, so that in entering the bay considerable caution is necessary to avoid it. It lies with the following marks:—the westernmost of the rocks called the Tas de Pois in one with the western part of Toulanguet Islet, and the Men-cos Rock, off the eastern part of Point la Chèvre, in one with Kidizient Mill, bearing E. by N. $\frac{1}{2}$ N.

DOUARNENEZ BAY lies immediately to the eastward of Point la Chèvre, and is extremely capacious and commodious, having a very wide entrance, and ground so clear as well as such regular soundings, as to require no leading mark; and if a proper berth is given to the rocks laid down on the chart, no danger can be incurred. These rocks are few in number, and situated in the northern and south-eastern parts of the bay. The outermost of those in the northern part is La Pierre Profonde, which is always above water; just within, to the northward and eastward, are the Taureau and Verre Rocks, forming, with La Pierre Profonde, a triangle which has a patch of $2\frac{3}{4}$ fathoms near its centre; La Taureau uncovers 5 feet at low water. Between these rocks and the shore to the north-eastward there is a passage half a mile wide, with from $4\frac{1}{2}$ to 8 fathoms in it. The rocks in the south-eastern part of the bay are named the Basses Meur and Neuve, and have from 8 to 17 feet water on them; they lie within $\frac{2}{3}$ of a mile of the shore, just to the eastward of Pointe de Léidé.

DOUARNENEZ.—This little place is situate in the south-eastern corner of the bay, behind a small island named Tristan. In the roadstead abreast the town the depths are 5 and 6 fathoms, sand, mud and shells, at the distance of $\frac{2}{3}$ of a mile therefrom, which depths decrease very gradually as you go nearer in. On Tristan Island a fixed light is shown at the height of 114 feet above the high water level, visible to the dis-

tance of 10 miles in clear weather. Within this island is the mouth of a small inlet which becomes dry when the tide is down.

Directions.—The course from a position of about 2 miles off the south-western part of Ushant Island to the entrance of this bay will be S.S.E. 9 or 10 leagues. There will be nothing in the way to take your vessel up, until you arrive at the Basse Vieille, which you may avoid by observing a clump of trees, with a little chapel in the midst, which stands on the north side to the eastward of Point la Chèvre, having a windmill to the westward, and two to the eastward; and when the windmill next to the eastward of these trees comes just open of Point la Chèvre, you will have passed the rock, and may steer for that part of the bay you please, all being fair and clear excepting what may be seen above water, and what may be near the shore. The best ground is, however, considered to be that towards the north side of the bay, the bottom being of clear sand, in a depth of from 9 to 12 fathoms. The general depths over the bay are from 9 to 17 fathoms, and all, as before observed, is clean ground.

From Point la Chèvre the bay runs in to the eastward for an extent of about $3\frac{1}{2}$ leagues, and has a general breadth of fully 6 miles. In the northern part of the bay there are several spots of rocky and foul ground, some of which appear above water; but they all have deep water about them of $4\frac{1}{2}$ to 8 fathoms, so that vessels frequenting the anchorage in this part of the bay will have to take precaution that they may avoid them. Within these rocks is the Cove of Morgat, adjacent to the town of Crozon, which is distinguished by a high black tower.

If bound to Douarnenez, the best course will be to the southward of La Vieille Rock, as you may then steer towards the town without any impediment whatever until past Point Léidé, to the eastward of which are the two small sandbanks, called Basse Meur and Basse Neuve, the former having 17 or 18 feet water over it, the latter 8 and 9 feet; by keeping out a mile from the land you will avoid both.

From the entrance of Douarnenez Bay, the coast runs in a westerly direction to Pointe du Van, a distance of 6 miles, the coast between being high and steep, having several steep points projecting into the sea, which are dangerous to approach, being surrounded with rocks. Pointe du Van has numerous rocks and rocky patches about it, which extend in a westerly direction from it about 1 mile, with passages for small craft between. At a mile N.E. from the point is a rock called Basse Jaune, which dries 2 feet in height when the tide is down; it is surrounded with a bank of $7\frac{1}{2}$ to 10 fathoms, and lies with Le Chlec Rock (just off Le Van Point) in one with the extremity of the Bec du Raz. Between it and the shore are 14 to 20 fathoms, but no attempt should be made to pass between, unless acquainted with this locality.

From Pointe du Van the coast bends round to the south-westward to the Bec du Raz, a distance of $1\frac{3}{4}$ miles, and forms the small bay of Trépassés, in which are soundings of 16 to 4 fathoms, shoaling gradually upon a bottom of fine grey sand.

The BEC DU RAZ has a chain of rocks above and under water, running to the W.N.W., $\frac{3}{4}$ of a mile from it. They are, as well as the point, steep-to, and therefore should be approached with caution by those attempting the Raz de Sein.

A lighthouse also stands on the highest part of the Bec du Raz, which shows a fixed light at 259 feet above the level of high water, at equinoctial spring-tides. In clear weather it may be seen 6 leagues off.

THE RAZ DE SEIN, or the Passage du Raz, is the channel between the rocks off Pointe du Van and Pointe du Raz, and the Chaussée de Sein. It is much encumbered with rocky and shallow patches, and should only be attempted by a stranger in case of necessity. To the N.N.W. of the Bec du Raz is a bank of rocks, about $1\frac{1}{4}$ mile in length and breadth, which divides the northern entrance of the Raz Passage into two channels. The largest of these islets or rocks, near the middle, is called Tevennee, and appears very conspicuous, as it is high and can be seen at a considerable distance. It bears from the Ile de Sein signal-post nearly E. by N., distant $3\frac{1}{4}$ miles, and is surrounded by rocks principally under water, so that in going through the channel great caution is necessary to avoid them, more particularly as the stream sets over them with considerable force; for it is to be observed, that here the tides run very strongly, the flood to the northward and the ebb to the southward. A berth of fully a mile should, therefore, be given to the highest of the Tevennees, and also to Pointe du Van, making allowance for the set of the tide.

The Bec du Raz must also have a similar berth given it, as several rocks lie to the W.N.W. of it, of which the highest is called the Vieille, or Old Woman, and is the furthestmost from the land; near this, at about half a cable's length distance, is a rock under water, called La Plate.

The western side of the Passage du Raz is bounded by a ridge of rocks, which extends a considerable distance from the Ile de Sein, called the Pont des Chats (or Cats' Bridge). Some of these rocks uncover at low tide, and the easternmost one bears from La Vieille W. $\frac{1}{4}$ S., distant 2 miles; consequently, in using this channel, considerable caution is necessary not to approach the island too closely. There are, however, some other patches in the southern part of the Raz de Sein, which are detached, and have 10, 26, 27, and 35 feet water over them at low tide. The first is named the Cornoc Bras, and bears from Ile de Sein Lighthouse S.E. $3\frac{3}{4}$ miles, and from that on the Bec du Raz W. $\frac{1}{4}$ S. $2\frac{1}{4}$ miles. The channel between it and the Pont des Chats is $\frac{3}{4}$ of a mile wide, with soundings varying from 4 to 14 fathoms. The 26-foot patch is $\frac{1}{4}$ of a mile more to the E.N.E.-ward. The third of these shoals, named the Masclougreiz, lies with the outer rock (Le Chlec) above water off Pointe du Van in line with the extremity of the Bec du Raz, N.E. $\frac{3}{4}$ E., at the distance of $1\frac{1}{2}$ mile from the latter; the last, 6 fathoms, is nearly $\frac{1}{4}$ of a mile to the eastward of this.

In sailing through the Passage du Raz from the southward, the Tevennee may be passed on either side; but the eastern channel is considered the best, although the other, with a scant wind, gives the ship the advantage of laying through with tacking, and the stream within it is weaker.

THE CHAUSSEE DE SEIN is an extensive and dangerous ridge of rocks and shoals, occupying a space of 11 or 12 miles long in a S.E. by E. $\frac{1}{2}$ E. and N.W. by W. $\frac{1}{2}$ W. direction, and of an average breadth of $1\frac{1}{4}$ mile. The Ile de Sein is upon the eastern part of the Chaussée, is low and flat, and bears from the Bec du Raz W.N.W., $4\frac{1}{4}$ miles; it has a village and a small port, drying every tide, and surrounded by ledges of rock, with narrow channels to it among the outlying dangers. The harbour is frequented by coasting vessels, which anchor in safety on a bottom of gravelly mud; none but those well acquainted can run for it. At this little place it is high water on the full and change of the moon at 3h. 21m., and the range of spring and neap tides is $17\frac{1}{2}$ and $7\frac{1}{4}$ feet.

The lighthouse erected on the northern point of the Ile de Sein shows a flashing or intermitting light of the first order, which appears at an elevation of 141 feet above the base of the tower, and 148 feet above the level of high water at equinoctial spring tides. The flashes appear every 4 minutes, being preceded and followed by short eclipses, which, however, are not total within the distance of 4 leagues. The weaker light, which continues about 3 minutes, between the flashes, is visible in clear weather at a distance of six leagues. This light is $5\frac{1}{2}$ miles from the Bec du Raz Light, on the bearing of N. 86° 50' W. (true). This bearing, which is likewise the general direction of the whole chain of rocks, passes about 4 cables' length to the southward of the north-western extreme of the chain, which is 9 miles from the Sein light, and $14\frac{1}{2}$ miles from that on the Bec du Raz.

Many of the rocks on the Chaussée de Sein dry at low water, but should not be approached too near, as little or no warning is given by the lead, there being from 30 to 45 fathoms within a mile of them on a bottom of rock and broken shells. The most dangerous part of the Chaussée is that nearest the Ile de Sein, where for a space of about $4\frac{1}{2}$ miles the ridge is studded with rocks more or less above water, and which takes the name of the Pont de Sein or Saint's Bridge. The outermost point of the Chaussée de Sein bears from St. Matthew's Point Lighthouse W.S.W. $\frac{1}{2}$ S., distant 20 miles, and from Ushant Light S.W. by S. $\frac{1}{2}$ S., distant $25\frac{1}{2}$ miles.

DIRECTIONS.—When sailing in the vicinity of this dangerous reef of rocks the greatest circumspection will be necessary, and a near approach should not be made unless you have on board a good pilot from the Ile de Sein, as it is possible that all the dangers may not yet have been discovered.

Between the Saints and the group of islets and rocks in the space within Ushant, is the channel called the Iroise, in which is a depth of from 60 to 30 fathoms, soundings of sand, rock, and putrid shells. North and N.W. of the western extremity of the Chaussée de Sein the flood runs to the north-eastward $1\frac{1}{2}$ mile an hour, and the ebb to the south-westward about one mile an hour, the flood commencing 5h. 50m. after high water at Ushant.

In approaching these rocks from the westward, the first light seen will be the flashing light on the Ile de Sein, and a bearing of it will indicate to the mariner whether he is to the northward or southward of the line of direction of this light and that on the Bec du Raz. In clear weather the Bec du Raz light will not be seen till the vessel is within 4 or 5 miles of the western extreme of the chain of rocks.

When it is intended to pass to the southward of the rocks, a course should be steered so as to open the light on the Bec du Raz to the right, or southward of that on the Ile de Sein. But if it be intended to pass to the northward, or to enter the Iroise, no time should be lost in quickly opening the Bec du Raz Light to the left, or northward of that on the Ile de Sein.

The Ile de Sein Light bears a great resemblance to the Penfret Light (on one of the Glenan islands), but this resemblance cannot occasion any mistake, as the light of Penfret is within the horizon of the great light of Penmarc'h, the flashes of which are at half minute intervals, and which, in fine weather, are seen as far as the Bec du Raz.

About $3\frac{1}{2}$ miles S. by W. from the western extremity of the Chaussée is a small patch of 19 fathoms, called Fouquet Bank, from the name of the pilot who discovered it. It is of very small extent, but has deep water of 25 to 30 fathoms close to, with soundings of rock and small shells. The sea breaks on it occasionally, but never so violently as on the Chaussée de Sein.

AUDIERNE BAY.—From the Bec du Raz the land trends first south-eastward and then southward, a distance of 20 miles to Penmarc'h Point, the coast bending in and forming an extensive bay called Audierne Bay, in which are soundings of from 30 to 6 fathoms. In the northern part of the bay is a cluster of shallow patches of 2 to $4\frac{1}{2}$ fathoms, with 8 to 9 fathoms between them and the shore, and 13 to 14 fathoms close to, outside. The shallowest of these patches, called Les Ninkinou, lies opposite Plougof Church, at about $1\frac{1}{2}$ mile from the land, with the Bec du Raz Lighthouse bearing N. by W. $\frac{2}{3}$ W. distant 3 miles: Esquibien Church E. $\frac{3}{4}$ S.; and Plougof Church N.E. All these patches are within $1\frac{1}{2}$ mile of the main.

At about 6 miles south-eastward from the Bec du Raz is a small open bay named Cabestan, which is occasionally frequented by vessels in cases of necessity, and but very seldom even then, as it affords no shelter. On each side are rocks dry at low water, that to the northward being known as the Guilcher Rock.

At nearly 7 miles from the Bec du Raz is the harbour of Audierne, which can be entered at high water only, but vessels when inside lie sheltered from all winds.

Before it is the rocky bank of La Gamelle, situated about a mile from the shore, on either side of which small vessels may safely pass, by keeping near the land. Between this bank and the shore, on both sides, are several sunken rocks. Here there are two small fixed lights, one upon the extremity of the jetty on Raoulic Point, the other near the garden of the Capuchins; they are distant from each other about 600 fathoms, on the bearing of N.E. $\frac{1}{2}$ N. and S.W. $\frac{1}{2}$ S. If the red light be kept in one with the white light, it will lead clear of the Gamelle Rocks. It is high water here on the days of full and change of the moon at about 3h. 14m.; springs rise 13 and neaps $6\frac{1}{2}$ feet.

From Audierne the land is high until within a few miles of Penmarc'h Point, when it sinks into a valley, in which are a village and several churches. At three-quarters of a mile S.S.W. from the town are a number of rocks, of which some are always above water. On the land side of them are channels, which can be used by boats and small vessels, but the navigation is very difficult, and only known to the fishermen of the coast.

Just round to the northward of Penmarc'h Point is the small bay of La Torche, in the lower part of which, at a place called Portz-carn, vessels of moderate size can take the ground without risk, when embayed in Audierne Bay, and unable to double the rocks of Penmarc'h, or keep the sea. Hence to the river of Pont l'Abbé, the shore is bordered by rocks, which extend out nearly a league from the land, so that in running along the coast it will always be necessary to give it a wide berth. These rocks have deep water close to them, there being near to their outer edge a depth of 20 to 30 fathoms, sand, gravel, and shells; but in coming from the westward, you will be clear of all danger from them, when Beuzec Church comes in one with the signal post-house in Forest Bay.

The lighthouse on Penmarc'h Point stands near the church of St. Pierre, and shows a revolving light of the first class, the eclipses of which take place at half minute intervals. It is 135 feet above the sea, and visible 22 miles. In ordinary weather, the eclipses do not appear total within the distance of 10 miles.

About 10 miles to the eastward of Penmarc'h Point is Benodet Bay, in which are soundings of 4 to 9 fathoms; but the place is so besprinkled with dangers, that when bound to any of the places within the bay, the assistance of a pilot becomes indispensable.

On the west side of the bay is the little river Du Pont l'Abbé, which is accessible

only at high water, being barred with banks, through which is a small navigable channel at high tide. When within the entrance the channel deepens, and small vessels may ride at anchor under shelter of the small island of Tudy, and opposite the village of Loctudy. A lighthouse is in course of erection at Loctudy, from which it is intended to show a small fixed light.

QUIMPER RIVER lies about $2\frac{1}{2}$ miles eastward of the river Pont l'Abbé, there being several dangerous rocks between that must be carefully avoided; a strand of sand also lines the shore, and extends some considerable distance into the sea.

The entrance of the river is of considerable breadth, and has a moderate depth of water, there being at low tide from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms in the fairway. On each side of the entrance there is a battery, and a rocky ledge extends from the shore on either side a short distance out. There are also two small rocky shoals in the middle of the entrance called Verres and Four, and near the western point of the river is another, called Rousse, all of which become dry at low water. It is high water here on the days of full and change at about 3h. 13m.; springs rise 13 and neaps $6\frac{1}{4}$ feet.

On Point du Coq, a short distance within the entrance, is a fixed red light, at 33 feet above the sea, visible 7 miles. And at 291 yards N. 14° W. from this is another fixed light, but of the ordinary colour; this is 56 feet above the sea, and can be seen 9 miles. These lights kept in one lead into the entrance of the channel.

The mark for anchoring in Benodet Bay is the eastern point of Pen-an-guern Rock, situated a little eastward of Mouton's Isle, in one with the lighthouse on Penfret Island, bearing S. by E. $\frac{3}{4}$ E. In steering hence to the entrance of the river, caution is necessary to avoid the Mats, Taro,* and other dangers which lie about a mile from the eastern shore. The mark to run into the river is the two lighthouses on Point du Coq in one, which will lead up in mid-channel between the Verres and Four Rocks and the rocky ledge, called the Rousse, in from 6 to $4\frac{1}{4}$ fathoms. When approaching Fort du Coq, steer up the river in mid-channel, and anchor before the town of Benodet in from 5 to 7 fathoms, sand and mud with a little gravel.

CONCARNEAU.—At nearly five miles eastward of Benodet is Forest Bay, the land between being bordered by shoals and rocks, many of which appear at low tide; it, therefore, is necessary to be very cautious when navigating in this part. On the western side of Forest Bay is Beg-meil Point, distinguished by a battery and signal-post, off which a rocky ledge extends about three-quarters of a mile, and on the opposite side is Fort Cabellou, with several dangerous ledges close to. Forest Bay has a great many shoals in it, with several rocks above water, but affords shelter to vessels well acquainted with the coast, which anchor in 5 to $6\frac{1}{2}$ fathoms, muddy bottom.

The harbour of Concarneau is on the eastern side of the bay, near Fort Cabellou. The entrance is strewn with rocks, upon one of which, named Cochon, there is or was a beacon. Most of these dangers dry at low water, and then appear from 1 to 16 feet above the surface of the sea, but there are some patches which at that time have not more than 2 to 5 feet over them. The Men-Cren is a rock situated on the west side of the channel-way into the harbour, and always above water, eastward of this is the road, and here small vessels lie in 5 to $6\frac{1}{2}$ fathoms, sand, mud, and shells.

Two fixed lights have been established at this port. One is shown from Fort La Croix at 46 feet above the sea, and can be seen 9 miles off. The other is situate between Concarneau and Beuzec, at 2052 yards N.E. $\frac{1}{2}$ E. from the former, and is 177 feet above the sea, and can be seen at the distance of 12 miles. These lights point out the direction of Concarneau Road. A red light is also shown at Lanriec.†

When approaching from the southward, after passing the Basse Jaune Bank, care is necessary to avoid the Corven de Trevignon, Les Soldats, and other dangers off Point

* The marks for this rock are Tregune Church in one with Point Moustierlin, and Benodet Church in one with Fort du Coq. This latter mark also clears to the westward, the dangerous rocks which extend nearly 2 miles to the southward of Moustierlin point.

† The red light at Lanriec, eastward of the harbour of Concarneau, is intended to guide to the anchorage such vessels as may have passed the shoal of Men-fall after having followed the direction of the lights at Concarneau. It only lights an area of 19° free from danger, and the line of separation of light and darkness on the south side will pass about 90 yards northward of the Men-fall; it will, also, be lost to sight before the vessel reaches the shore on which it stands.

If desirous of entering the little harbour of Concarneau at night, keep very exactly (especially when near the Cochon Rock) the lights of la Croix and Beuzec in one, until the red light at Lanriec becomes visible, when the latter objects should be steered for.

Trevignon. It is recommended to keep the lead going, and to preserve a depth of 17 to 16 fathoms, shoaling gradually to 12 and 11 fathoms as you approach the port, on account of the dangers being all steep-to, and but few of them appearing above the surface of the water, except at low tide, when *Les Soldats*, *Flaharn*, and others uncover: the bottom is generally green mud and clay. To sail into the harbour in the daytime, bring *Beuzec Church* exactly in one with *Concarneau Church*, which leads in, in the best water, between the rocky patches called *Lue-vras*, *Men-cren* on the one side, the *Men-fall*, *Barzie*, and *Cochon* on the other side. When close to the *Men-cren* you must bear up towards the *Mill du Bois*, and steer into the port, avoiding the rocks close to the jetty-head.

At $1\frac{1}{2}$ mile to the southward of *Fort Cabellou* is *Point Jument*, which is rocky to some distance off. About half a mile from the point, there is an extensive flat of $3\frac{1}{2}$ to 7 fathoms, with several shoal spots upon it of $\frac{1}{2}$ to 3 fathoms. The outermost of these patches is called the *Corven*, and has $2\frac{1}{4}$ fathoms upon it at low water. Hence to *Point Trevignon*, the distance is $3\frac{1}{2}$ miles in a south-easterly direction, the coast being bordered all the way by dangerous shoals: this point is distinguished by a fort and a signal-house. The outermost of the rocks, called the *Corven de Trevignon*, lies $1\frac{1}{2}$ mile from the point, with *St. Philibert Church* bearing nearly E. by N., distant $2\frac{1}{2}$ miles. A short distance N.E. by N. from this rock is the *Flaharn*, which dries; and to the northward of the *Flaharn* is an extensive group of rocks, visible at low water, called *Les Soldats*.

From *Point Trevignon* the coast runs easterly about 5 miles to the entrance of the small rivers *Aven* and *Belon*. About midway there is an islet at a mile from the shore called *Verte*, or *Green Island*; and within this there is another called *Raguenés*, close to the land. There are also numerous dangerous patches, which render a near approach to the shore imprudent. Before the entrance of the rivers are two rocky ledges, called *Verres* and *Cochon*, which dry at low water, and also a bank of $3\frac{1}{2}$ fathoms, called *Trepied*; so that in making the entrance you must steer in such a manner as to leave these on the starboard side. The passage in, is in 8 to 10 fathoms water, decreasing as you advance; and when you get between the points of the river, you will have 3 to $2\frac{1}{2}$ fathoms;—or, in coming from the eastward, you can enter the rivers by keeping near the shore, there being 3 to $4\frac{1}{2}$ fathoms all the way; but both rivers are shallow and barred.

About $2\frac{1}{2}$ miles to the southward of these rivers is *Beg Morg Point*, close to which are some rocks, dry at low tide, called *Cochons*. Immediately to the eastward of this point is a small place called *Brigneau*, with rocks on each side of the entrance; and three-quarters of a mile further on is another place called *Meryen*, the entrance to which is also rocky. A little more than a mile from *Port Meryen* there is a signal-house: and at the distance of $1\frac{3}{4}$ miles from the same place is a creek called *Port de Douelan*. Two lighthouses are building at *Douelan*, one on each side of the entrance, from which the intention is to show small fixed lights. Hence to the little river *Quimperlé* the distance is 3 miles. The entrance of the river is narrow and shallow, but when within it deepens; and the small town is about seven miles from the entrance. Here a considerable trade is carried on.

From *Quimperlé* the coast turns to the southward, forming the bay of *Pouldu*. The soundings in the bay are generally 10 fathoms, decreasing gradually as you approach the river, before the entrance of which there are but $2\frac{1}{2}$ at low water. At the entrance of the river there are also some rocky ledges, which dry 4 feet in height at low tide. From *Quimper River* to *Talut Point* the distance is $5\frac{1}{2}$ miles, with some extensive rocky patches about midway, which must be carefully avoided; it is therefore recommended not to go within 2 miles of the coast. Many of these patches dry, and upon one of them near the shore is a small fortress, called *Kergan*. From this fortress to *Talut Point* the coast is rocky all the way to some distance out, and should not, therefore, be approached too near. From *Talut Point* the coast runs easterly about 3 miles, to the entrance of *Port Louis*, and is rocky all the way.

GLENAN ISLANDS.—The *Glenan Islands* are an extensive group of Islands and rocks, situate south of *Benodet Bay*. The largest and principal islands are called *Penfret*, *St. Nicolas*, *Loch*, *Drenec*, and *Castel-bras*; and between them are numerous channels, well known to the fishermen of the neighbourhood. Upon *Cygogne Island*, the centre of the cluster, is a fortress, which is said to be bomb-proof. It is well secured, as it is entirely surrounded by water, which is in many places so shallow that a man may cross on foot to the islands in the vicinity. Within the islands there is no anchorage or

passage unless for very small vessels, and these will lie within reach of shot from the fort.

The largest and most easterly island of the group is Penfret Island, which is nearly a mile in length, being low in the middle, but rising at its extremities so as to form two hills. It is cultivated, and supplied with excellent water. On the northern point of the island is a lighthouse, which exhibits a fixed light, flashing every 4 minutes. The light is 72 feet above the ground, and 118 feet above the level of high water at equinoctial spring tides. Bright flashes regularly succeed each other every 4 minutes, and last about 8 or 10 seconds. The faint light, which is perceptible during the intervals, is preceded and followed by short eclipses; the flashes may be seen in clear weather five leagues off.* On both sides of the island are fine sandy bays, and boats may always land to leeward.

The northern side of the Glenan Islands is, in general, moderately clear, and those well acquainted may sail near the largest of the group, and anchor in 9 and 10 fathoms; but this must not be attempted by strangers.

Eastward of Penfret Island, on which side it is steep-to, and free from danger, there is excellent anchorage, in from 15 to 20 fathoms, muddy bottom, at the distance of from 1 to $2\frac{1}{2}$ miles. Here ships may lie well sheltered from the West S.W., N.W., North and N.E. winds, being exposed only to those from between East and South, and in that direction the shoals of Basse Jaune, &c., reduce the force of the sea.

The following directions were written many years since, but may still be of service:—"In the winter the safest anchorage is well to the northward, with the flagstaff of the fort bearing W.S.W., and the north hill on Penfret S. by E. $\frac{1}{2}$ E., about 2 miles distant, in 16 fathoms water, good holding ground. If a situation nearer the island be preferable, for the purpose of watering, the flagstaff may be brought on with the extreme northern part of Penfret, bearing W. $\frac{3}{4}$ N.; and the rocks which are to the S.E. of Penfret, W.S.W. This spot is about 1 mile from the island; depth 15 fathoms, good ground, but more exposed than the former during S.E. or southerly gales."

A little northward of the Glenan Islands is a rocky bank called the Pourceaux, with many rocks appearing above water. To the north of the Pourceaux Rocks are the Moutons or Sheep Islands and Bank; and to the northward of this group, towards Benodet Bay, are a number of dangerous shoals and rocks, some of which appear at low tide.

The passage between the Glenan Islands and the Pourceaux Bank is about three-quarters of a mile wide, and has soundings in it of from 10 to 14 fathoms, sand, mud, and clay. To sail through it, bring the outer rock, [E. $\frac{1}{2}$ N. fully half mile from St. Nicolas Island] on with the north point of Penfret Island bearing S.E. $\frac{1}{2}$ E., and sail on thus until Cygogne Fort flagstaff comes just open eastward of St. Nicolas Island, then steer directly E.S.E., or E. by S., which will carry you into 14 and 15 fathoms water, when you may anchor.

The southernmost cluster of the Glenan group of rocks is the Jument, which is a reef of half a mile in extent, the eastern part of which is the shoalest, and has over it not more than 2 or 3 feet water. The depth increases quickly to the southward, for at the distance of half a mile are 22 to 24 fathoms; but on the north side, and clear of the shoal, there are overfalls of 5 and 7 fathoms, and probably of a less depth. On the shoalest part, St. Philibert Church appears on with the low south point of Penfret, bearing N.E. by E. $\frac{1}{2}$ E.; the flagstaff of Fort Cygogne on with the middle of Loc'h (a low flat island), or rather nearer to its western end, N.E. $\frac{1}{2}$ N.; and the western rocks, $2\frac{1}{2}$ miles from the flat island, N. $\frac{3}{4}$ W.

At the distance of $3\frac{1}{4}$ miles eastward of the Jument Rock is a small reef called Basse an Ero, which is not so extensive as the former. At low ebbs, a small part of it is even with the water. About it there is shoal water of 5 to 7 fathoms. From its shoalest part Penfret Lighthouse bears N. $\frac{1}{4}$ E.; the highest of the rocks south-east from Penfret, about 3° open of the north-east part of that isle, N. $\frac{1}{2}$ E.; the upper part of a remarkable peaked rock, which is seen just over the south part of the Loc'h

* There is but little apparent difference between this light and that near Noirmoustier Island, on the Pillier, in lat. $47^\circ 2' 36''$ N., long. $2^\circ 21' 45''$ W.; but there is no danger of mistaking one for the other, as it is not possible for any vessel from seaward to arrive in sight of Penfret light, without having previously seen either the light of Belle Island or that of Penmarc'h; and when approaching the Chaussée de Sein, there are visible at the same time the flashing light on the Ile de Sein, and the fixed light on the Bec du Raz.

Island, N.W. $\frac{2}{3}$ N., close to the south of a large black rock, which is about half-way to the island. The Basse an Ero is nearly $2\frac{1}{4}$ miles from Penfret.

About $1\frac{1}{4}$ miles southward of the Basse an Ero, are some patches of from 5 to 10 fathoms, called the Laouenou. Close to these small shoals is a depth of 10 to 17 fathoms, and to the eastward and southward of them, at the distance of half a mile, 20 to 30 fathoms.

At rather more than 2 miles eastward from the Glenan Islets is an extensive bank of 8 to 15 fathoms, called the *Basse Jaune*. On the eastern side of this bank is a cluster of shoal spots with 6 to 2 feet on them; one of them also dries. The marks for this dry rock are, Cygogne Fort open 50' to the left of Castel Raet Rock about W.N.W. $\frac{1}{4}$ N.; and the western part of the summit of Locrenan Mountain behind Forest Bay, on with the eastern slope of Beg-meil high land, bearing N. $\frac{3}{4}$ W. Another mark that has been made for these patches is, the little Men-du Rock, a little to the westward of St. Philibert Church, and on with some blue-slated houses; these blue-slated houses will then appear on with the centre of the small sandy bay which is immediately to the eastward of the fort on Trevignon Point.

The Pignon is a small rock of $5\frac{1}{2}$ fathoms, situate upon the Basse Jaune Bank. Around it are irregular soundings and a rocky bottom. It lies nearly E.S.E. $\frac{1}{4}$ S. from Penfret Lighthouse, distant $3\frac{1}{4}$ miles, with the church of Tregune on with Menhuelon Wood, which lies further inland, and Vaux Glenan Island in one with Castel Raet Rock, the small rock in the middle of the sandy bay of Penfret.

The mark to sail between the Glenan Islands and the Basse Jaune Bank, is Moutons Island open a little north of the north point of Penfret Island bearing N.N.W. $\frac{1}{4}$ W., which will lead through in the deepest water, in from 25 to 15 fathoms, sand, mud, gravel, and rocky soundings. It is high water at the Glenan Islands, on the days of full and change of the moon, at 3h. 12m.; springs rise 13 and neaps $6\frac{1}{2}$ feet. The eastern or flood tide usually runs about an hour longer where it is uninterrupted.

According to M. Beauteemps Beaupré's charts, there is a small shoal of $9\frac{1}{2}$ fathoms, about $3\frac{1}{2}$ miles eastward of the Basse Jaune Rock. It is called the Basse Doun, and has 25 to 15 fathoms a short distance from it on all sides. Its position is in the line of direction in which is seen Fort Cygogne open 50' to the left of Castel Raet Rock.

GROIX ISLAND. The Ile de Groix is situate about 18 miles from the Glenan Islands in a S.E. by E. direction, and is nearly three miles from the mainland. The island is about 4 miles long, and $1\frac{1}{4}$ mile broad, lying in a S.E. by E. and N.W. by W. direction. It is defended by batteries, and easily distinguished at night by its lighthouses.

The coasts of the island are clean all round, the eastern and south-eastern sides excepted, from which rocky reefs extend a considerable distance. The reef extending from the eastern extremity of the island runs out from the island nearly half a mile; it is called the Basse Milit, and dries in many places at low tide—close to the rocks is a depth of 9 to 13 fathoms, so that great caution is necessary to avoid them. The reef at the south-eastern end of the island, called Les Chats, is situated at the extremity of a rocky bank which extends to the distance of nearly a mile from Pointe des Chats, and frequently dries at low water; no passage must be attempted between this rock and the shore, as such an attempt would undoubtedly prove fatal, there being numerous ledges in the way, which appear when the tide is out. Nearly a mile westward of the Chats, and nearly midway between them and Pointe d'Enfer, are also some shallow spots, extending about a mile from the island, which must be avoided.

A small shoal of 12 feet, called the Basse des Chats, and by the English, the Venerable Rock, lies S. by E., distant $1\frac{3}{4}$ mile from the Pointe des Chats. Its marks are, Pointe d'Enfer and Point St. Nicolas, the south-western extremities of the island in one, and Port Lorient tower in one with the citadel of Port Louis. There is a small patch of 4 fathoms a little to the north-westward of this rock, but in every other part between the Venerable Rock and Les Chats ridge there is deep water. It is recommended, however, that you keep outside the rock when approaching Port Lorient.

The northern side of the Ile de Groix is bordered with a bank of 7 to 15 fathoms, sand, mud, and gravel, called the Basse des Bretons, which extends about half-way over the north approach to Lorient Harbour. When bound to Port Lorient, and sailing north of the Ile de Groix, it is requisite to give the northern side of the channel a good berth, on account of a dangerous rocky ledge called the Grasu, which lies fully half a mile from the shore. The whole of the northern side of the channel from Point Talut to Lorient Harbour is rocky, and should not be approached closely until the entrance of the river has been made.

On Pen-men Point, the north-western extremity of the island, there is a lighthouse exhibiting a fixed light at 75 feet from the ground, and 194 feet above the level of high water. In favourable weather, it can be seen at the distance of six leagues.

On Fort de la Groix at the eastern part of the island is a bright light which is varied every 3 minutes by a red flash, preceded and followed by short eclipses. It is 171 feet above the level of high water, and visible in clear weather at the distance of 10 miles all round the horizon, except in the direction of the Glenan Islands, when it is hidden by the heights on the western part of the Ile de Groix.

It may be observed that vessels from the southward will perceive the light on Belle Island, which revolves every minute, before the light on Pen-men Point can be seen; and that in approaching the Ile de Groix, the flashing light on the eastern point of the island will be seen at the same time as the light on Pen-men Point. In like manner vessels coming from the westward will be exposed to no risk of mistaking the lights; for before the light on Pen-men Point is visible, they will almost always have seen Penmarc'h Light, already described, and also the light on Penfret Island, which flashes every 4 minutes.

PORT LOUIS and LORIENT. Port Louis is an excellent harbour, but the entrance is rendered difficult of access by numerous rocks. The town stands on the eastern side, and is fortified. To run into the harbour the mark is, the edge of the citadel in a line with St. Catharine's little convent, standing upon a point projecting into the sea, east of Ile St. Michel; and when you are within the citadel, anchor in 5 or 6 fathoms; or, if it should be high tide, run aground under the town to the northward, for at low water you cannot come under the town, it being dry every tide.

Lorient is about 2 miles above Port Louis, at the bottom of the bay formed by the rivers Pont-scœrf and Blavet.* Two fixed lights visible 9 or 10 miles are exhibited here, the one from the little hill of Periere, and the other from the church; the former is elevated 75, and the latter 148 feet above high water level. Two small fixed lights

* Lorient, the principal place of the third maritime arrondissement of France, is a secure and well-sheltered port, far removed from the attacks of an enemy. There is a school of gunnery established on Pointe de Gavre, where experiments are constantly carried on with guns intended for vessels of war. Many ships are built here, and every facility for the armament of vessels of the largest class is possessed in abundance. The following interesting account of the port is from a French local newspaper.

"Passing Ile de Groix, when running northerly, Pointe de Gavre is seen, forming the extremity of the peninsula of that name, and marking the entrance of the roads and channels of Lorient. Between this point and the bay of Kerguelin, there are several groups of islands, of which the principal are named Baril Ronde, Errants, Truies, and Coteron. Hence to Port Louis is an extensive roadstead, reaching to the mouth of the river. It is an outer roadstead, measuring about 1500 fathoms from north to south, and 2000 fathoms from east to west. In this basin, on its western shore, there is a group of islands, named Pierre d'Orge, another called Saisies, also on the coast the fort of Loquelas, and the hamlet of Larmor; on the eastern shore are the little groups of islets, Souris, Potée de Beur, Sœurs Cabon, Paix, Goelan, and the bay of Goerem, with the peninsula of Gavre.

This exterior road decreases in breadth gradually, and at its northern extreme forms a narrow pass, which, at the place where the citadel of Port Louis stands, is not more than 100 fathoms across. In the middle of this pass is a large rock, called Jument; it defines the entrance of the road properly so called, which thence to the *avant-garde*, bounding the entrance to the port of the arsenal, is 2200 fathoms long.

The port of Lorient from the *avant-garde* to the *arriere-garde*, occupied only by war vessels, is 750 fathoms long and 110 wide. From the *arriere-garde* to the suspension bridge, near which are more establishments belonging to the arsenal, is a distance of 545 fathoms. The total area of the roads and channels of Lorient is about six miles, containing numerous excellent anchorages. The port is established in the Scœrf, formerly called the river of Pont-scœrf: below this and about 325 fathoms from the *avant-garde*, the River Blavet falls into the Scœrf, near Penmane.

Below the *avant-garde* is the channel into the commercial port, which is 380 fathoms long, and communicates with a basin of 215 fathoms.

The town and arsenal of Lorient, although separated from each other, are still enclosed within the same lines of fortification. They cover an area of about 29 acres, including the entrance of the port. The town, which dates only as far back as the beginning of the 18th century, is handsome and well built, and has a most respectable population. The arsenal is admirably built, containing all the materials for an establishment, and everything required for vessels.

The Scœrf, which forms the port of Lorient, has its source at 3 miles from Greemenée in the arrondissement of Pontivy. This river is navigable at the Bridge, and mingles its waters with those of the Blavet, after a course of about 4 miles. The Blavet rises in the department of the Côtes du Nord, and becomes navigable at Hennebon, a little town of Morbihan, 5 miles from Lorient. Besides these two rivers, the Ter, a small river, falls into the road at Ile St. Michel."

are also shown at Kerbel, Port Louis, on the eastern side, as a mark for the Grande Passe; if brought in one, bearing E. $\frac{1}{2}$ N., they lead through clear of danger.

The following directions by M. D'Apres de Mannevillele were written many years since, but are given, as they may still be found useful:—

“Whether you weigh from the Ile de Groix, or are approaching from the offing, to pass to the westward of the Truies or Sows,* which reef is marked by a beacon, through the great channel, steer so as to keep Larmor Tower E.N.E. till the southern mill of Kerbel, standing eastward of Port Louis, is in one with the extremity of the fortifications of the town. With the latter mark on you will sail in mid-channel between the Saisies de Larmor and the Sows, and as soon as you are so far advanced as to perceive the high land of Penmane in one with the western corner of the citadel of Port Louis, steer in that direction till the westernmost point of St. Michael's Island is brought on with a white mark lying to the westward of the storehouses of Lorient Harbour; this will lead safe between the Jument Rock, on which is a beacon, and the foot of the citadel. From this situation ships, as most convenient, may pass either to the westward of St. Michael's, or between St. Michael's and St. Catharine's.

When past the Jument, you may sail either to the eastward or westward of St. Michael's Island. If taking the western passage you will proceed until Keroman's house is in one with the miller's white house by the mill near shore, leaving on the starboard a rock of 12 feet, and on the port side another called the Hog, covered at half tide, and marked by a beacon. You will thus pass between the Turk and the Kerneval bank; the former has a buoy at its southern extremity, and has only 2 feet water on it. Sail on in the above direction, until you have the white mark of the storehouse in one with a single house on the beach till athwart of St. Michael's, when you may proceed for the road of Penmane, leaving the half-tide rock called Pengarne, on which is a beacon, on the starboard side.

The mark for the eastern passage is, the corner wall of St. Catharine's garden in one with a white house standing in the middle of Nezenel Town. This takes you athwart of the south end of St. Catharine's, and should be kept on until the little wood of Kerbel, near Port Louis, is seen through the causeway or stone bridge which joins St. Catharine's to the main. You will thus pass the Pengarne, which is to be left on the starboard, and when you are a ship's length within it, proceed for the road. It is, however, to be observed, that vessels drawing more than 21 feet cannot make Penmane road unless at high water, spring tides; in that case you must anchor at Port Louis.

In passing the Errants, by mid-channel, it will be necessary to bring Lorient tower in one with the western bastion of Port Louis citadel, at as great a distance as possible,† by which you will leave the Errants on the port, and the Bastresses Rocks, which are generally marked with a buoy, on the starboard side. You will also pass the Three Stones; and when you have proceeded so far as to bring the fountain on the beach of Gavre, in one with the single tree N.E. of the village, keep Larmor windmill on with two houses nearest the Point of Larmor. You will then enter the great channel, at the point whence the high land of Penmane may be seen in one with the western corner of Port Louis citadel, and may proceed as already directed.”

The eastern or Gavre channel, the passage under Pointe de Gavre, is used by small vessels only, and being intricate should not be attempted unless by those well acquainted. The mark is Larmor windmill in one with the two houses nearest the extremity of the point, which will lead into the great channel, when you may proceed as before directed.

It is high water on the days of full and change between Port Louis and Lorient at 3h. 11m. The rise of tide at springs is about 13 feet.

From Port Louis the coast bends to the southward towards the peninsula of Quiberon. The distance from the port to Beg-en-aud Point, the northern extremity of the peninsula, is 13 miles, and the land between is, in general, low, with downs, &c.; but there are several rocks off it at a considerable distance from the shores.

* The Saisies de Larmor cover at three-quarters flood. The Truies are entirely uncovered at spring ebbs, and covered at half-ebb. The Errants are never completely under water, but dry at low water about 10 feet above the surface. Inside the harbour, the Paix, Potée de Beurre, and Jument, all appear above the surface at low tide.

† It should be observed that this mark must not be used until you are past the Pointe des Chats, the south-eastern extremity of the Ile de Groix, as it is the mark for the Basse des Chats, or Venerable Rock, mentioned in page 17, and upon which are only 12 feet water.

The first of the dangers met with, after leaving Port Louis, is the ledge called the Daniel rocks, which lies about a mile from Pointe de Gavre, and is dry at low water. At about the same distance southward of Pointe de Gavre, there are some spots of $3\frac{1}{2}$ fathoms, called the Basses de Gavre, which have deep water close to them of 6 fathoms. At $3\frac{1}{2}$ miles from the same headland, and close to the shore, are some rocks called La Vache; and a mile further on, in the same direction, is a rocky ledge, called the Magoëro Rocks, which extends a considerable distance from the shore, and appears above the surface of the water when the tide is down. Behind the latter rocks on the shore is a beacon.

At the distance of 2 miles from the Magoëro Rocks is the small river d'Etel, the entrance to which is impeded by a bar, and about a mile from the mouth of the river, in a north-westerly direction, are two rocks called Roheu, which are 17 and 19 feet above the surface at low water. From the entrance of the river southward to Point d'Ardevenne the distance is rather more than a mile; this point is rocky all round to some considerable extent, and many small heads of rock appear at low tide, the principal of which, called Rohellan, is always dry. At two miles south-westward from the point is an extensive rocky bank of 2 to 7 fathoms, with numerous patches of a much less depth upon it, there being in many places not more than 10 feet water. Upon the western part of this bank are some rocks called the Black Stones, or Chiviguete Rocks, which dry at low water: they lie with Ardevenne Church in one with the centre of Rohellan Rock, and Men-toul Rock in one with the southern part of Fort Penthièvre. All round this bank are 8 to 10 fathoms, grey sand and rocky soundings.

From Point d'Ardevenne to Beg-en-aud Point the distance is nearly 6 miles, the shore being low all the way, until you get near the last-mentioned point, when it rises a little and becomes bolder. A short distance from this point is Fort Penthièvre, already given as a mark for the Chiviguete Rocks. Here, at a mile from the shore, are the Teviec Islet and numerous rocks, which extend still further to the northward and westward, and are extremely dangerous to vessels rounding the peninsula of Quiberon. These rocks join Beg-en-aud Point, and run to the northward of it nearly 3 miles, so that no stranger should approach this part of the coast too near.

About $5\frac{1}{2}$ miles westward of Beg-en-aud Point is the Birvideaux Shoal, an extensive bank of 4 to 7 fathoms, rocky soundings. Near the centre there is much less water, there being in one place but 8 feet, which lies with Portivi windmill in one with Point du Portz-guen, bearing East, and Borderun Semaphore, on Belle Isle, in one with the guard-house of the battery on Point du Vieux Chateaux, bearing S. $\frac{3}{4}$ W. Between this bank and Belle Isle is deep water of 20 to 25 fathoms, increasing gradually as you approach the island, the bottom being rocky near the bank.

From Beg-en-aud Point the land to the southward, forming the peninsula of Quiberon, is high, and appears with a bold cliffy shore. Off its southern extremity it is foul to a considerable distance, there being many rocks above and under water. Of these the outermost, called the Teignouse, is distinguished by a lighthouse, showing a light which flashes every three minutes. The lantern is 59 feet above high water, and each flash of the light is preceded and followed by short eclipses. It can be seen in clear weather about 12 miles off.

The Teignouse Rock, a large high round rock, is distant from the extremity of Quiberon Peninsula about $1\frac{1}{2}$ miles. Within the lighthouse there is no passage, being all foul ground; but outside the lighthouse, between it and the Chaussée du Beniguet, is a channel called the Teignouse Channel, which is frequently used.

BELLE ILE.—This island is extensive, being above 9 miles long from N.N.W. to S.S.E., and nearly 5 miles in its greatest breadth from E.N.E. to W.S.W.: as it is high and steep it may be seen at a considerable distance; it also affords good shelter during westerly and south-westerly gales. The island is well cultivated, producing corn in abundance; it is also strongly fortified, batteries commanding its most accessible parts.

The northern extremity of the island lies in lat. $47^{\circ} 23' 18''$ N. and long. $3^{\circ} 14' W.$, and is rocky to a considerable distance off, a reef called the Poulains surrounding the point to the extent of about a mile. Many of these rocks appear above the water at low tide, and there are numerous shoal spots near them, so that it is prudent to avoid approaching this part of the island nearer than 2 miles, particularly as the rocks are steep-to, there being within a short distance of them a depth of 11 to 15 fathoms, rocky bottom with a little sand. On the southern side of the island are a great number of rocks above and under water, all of which are within a mile of the shore.

Palais, the capital of the island, is on the north-eastern side. The haven is formed

by a pier of stone 200 feet long. There is also a citadel, which is built on a rock, and its walls bound the haven, which is entirely dry at low water, and has only 5 feet water in it when the tide is up. The road is considered a safe one, but there is a shoal in it of $4\frac{1}{2}$ fathoms, called the Basse du Palais, about half a league from shore, and eastward of the citadel. It is high water here on the days of full and change of the moon at 3h. 18m.; spring tides rise $14\frac{1}{2}$ and neaps $6\frac{1}{2}$ feet.

On the north side of the island, at rather more than 3 miles from Palais, is Port Sauzon, the harbour of which is considered preferable to that of Palais, although the latter is most frequented. It is said to be capable of receiving vessels of 50 tons, but which, however, must lie dry at low water.* There are several other roads for small vessels. Those principally used are on the north-eastern side of the island under the citadel of Palais, and about a league eastward of Palais; and others on the eastern side of the island, south of Point Kerdonis. Larger vessels may ride in good anchorage all the way from Sauzon to the road of Le Grand Sable, which is a short distance from the eastern point of the island, only taking precaution to keep a good mile from the shore, in from 7 to 15 fathoms.

When approaching from sea, and making the island with the wind at N.W. or W.N.W., you may run along the south side of the island at the distance of 2 miles to Point de l'Echelle (Beg-er-squèle), the southern extremity. From this point haul up towards Point Kerdonis, the eastern point of the island, which is situated about 2 miles from the former, as under shelter of this point you may find anchorage in from 15 to 8 fathoms, and ride secure from N.W., and westerly winds. Should the wind veer towards the S.W., you may run to the northward of this point, and anchor on the north-east side of the island, upon a bottom of sand, mud, and shells.

The lighthouse at Port Goulphar at the south-west point of the island exhibits a powerful revolving light, which is eclipsed every minute. Its height above the level of high water at equinoctial spring tides, is 276 feet, by which it is rendered visible at the distance of 27 miles in clear weather. That this light may not be mistaken for the light on the Plateaux du Four to the eastward, observe that the flashes of that light succeed each other at intervals of 30 seconds, and that this light presents between the flashes a fixed light, visible in clear weather at a distance of 12 miles. Also, that the elevation of this light exceeds by 197 feet that of the Plateaux, and further, that on approaching this light, the high land of the island can generally be distinguished even at night. Again, it is scarcely possible that a vessel standing in from sea can make the light on the Plateaux du Four, without having seen either that of the Ile d'Yeu, or of the Pilier, or that on Belle Ile.

The harbour light at Palais on the north-eastern part of the island, is situated on the head of the great mole, at the south side of the entrance to the port. It is a small fixed light, being only 30 feet above the sea, and can be seen 9 miles.

In the channel between Belle Isle and the islands on the South side of Quiberon Bay the depth is from 8 to 12 fathoms, excepting about mid-channel, where are some shoals of $3\frac{1}{2}$ to 8 fathoms, called the Bancs de Tallefer. These lie with Palais Citadel bearing S.W. $\frac{3}{4}$ W. and Teignouse Lighthouse N.E. by E. $\frac{1}{4}$ E. From these shoals, southward to Palais, are a series of shallow ridges, but none are dangerous, there not being upon any of them less than 10 fathoms water.

QUIBERON BAY is formed by the peninsula of Quiberon, followed by an extensive range of islands and rocks, the first in succession being called the Beniguet Islands, Houat and its group, and Haedik. The whole being terminated by the high rocks called the Cardinals. We shall follow them in this order in our description.

The BENIGUET ISLANDS are a cluster of small islands and rocks lying upon a bank of shallow water at the distance of about $1\frac{1}{2}$ miles from the Teignouse Lighthouse. At the northern end of the bank are some rocks which become dry at low tide called the Esclassiers, and close to them are some patches of $1\frac{1}{2}$ to 3 fathoms. The marks for these rocks are Fort Penthievre, $2^{\circ} 6'$ open to the right of Fort Riberen, and Les Sœurs Men Fourchec, and La Vielle Rocks all in one, bearing S.E. $\frac{1}{3}$ E. In the passage between these rocks and the Teignouse Lighthouse are very irregular soundings of from 10 to 20 fathoms, upon a bottom of rock and shells. The tide sets directly through it, that is, E.N.E. and W.S.W.; spring tides running at the rate of 2 or $2\frac{1}{2}$ knots.

Nearly in the centre of the western entrance of this channel is a shoal called Goué-

* It is intended, we believe, to exhibit a small red light on the extremity of the Mole at Sauzon,

vas, upon which are in many places not more than 6 feet water. It is about half a mile in extent, and has from 6 to 12 fathoms close to all round. Its marks are Les Sœurs Men Fourchee, and La Vielle Rocks all in one, and Petit Mont open $2^{\circ} 20'$ to the right of Teignouse, bearing E. by N. $\frac{1}{2}$ N. Within this bank, towards the Beniguet Islands, are a number of small patches of 4 to 5 fathoms, called the Basses du Milieu; between and around them are 10 to 12 fathoms.

At the eastern entrance of the passage, at about two cables' distance S.S.E. from the Teignouse Rock, is a small shoal of 6 feet called Basse Nouvelle. It lies with Loc-Maria Church in one with the rock bearing N.W. $\frac{1}{2}$ N., and has 11 fathoms at a short distance southward of it.

If off the north end of Belle Ile, and desirous of sailing through this channel, steer E. by S. $\frac{1}{2}$ S. until Teignouse Lighthouse bears N.E. by E. $\frac{1}{2}$ E. Or, if from the south-east end of the island, steer N. $\frac{1}{2}$ E., until the lighthouse comes upon the above bearing. Steer then with the lighthouse in that direction between the Goué-vas Bank and the small patches called the Basses du Milieu, until Fort Penthièvre appears open $2^{\circ} 6'$ to the right of Fort Riberen, when you may change your course to E. $\frac{3}{4}$ S. and run into Quiberon Bay.

You may sail into the channel to the north of the Goué-vas Bank, by bringing the lighthouse to bear E. $\frac{3}{4}$ N., but this passage is much narrower than the former.

HOUAT ISLAND lies about $5\frac{1}{2}$ miles to the south-eastward of Quiberon Peninsula, and immediately to the southward of the Beniguet Islands, being separated from them by a narrow channel of 10 fathoms water. This is an irregularly shaped island about 2 miles long, lying S.E. and N.W. It is moderately clear on the northern side, but on the south-western side are a number of islands and rocks, called the Chevaux, many of which are covered, and only appear when the tide is down. These rocks and islets run in a direction nearly parallel to the island, being distant from it about $1\frac{1}{2}$ mile, and there is deep water of 8 to 10 fathoms immediately to the southward of them. The north-western extremity of the Chaussée de l'Ile aux Chevaux, as it is called, is a rock of $2\frac{1}{2}$ fathoms, lying with Chevaux Islet in one with the south-west point of Hædik Island; and the Rouleau Rock off the north-western point of Houat Island open $56'$ to the left of the Men-er-broc Rock, which lies off the northern end of that island.

To sail from Quiberon Bay through the Beniguet Passage, which is the narrow channel between the islands of the same name and Houat Island, get the south-east end of Belle Ile open, and you may run boldly on, close to the rocks, and run in and out with great safety. The channel is not more than 2 cables' length wide, and there are 11 to 12 fathoms midway between the rocks that form the passage, and 7 fathoms close to the rocks on either side of it. If bound out through this passage from Quiberon Bay, bring St. Gildas Monastery to bear E. by N. $\frac{1}{2}$ N. till you have passed the rock Men-er-broc, then steer West or W. by S. There are three small rocks about a musket-shot from the north-west end of Houat which must be left on the port side.

The tide sets directly through this passage, that is, in an E. by N. and W. by S. direction, with greater strength than it does in the Teignouse passage.

Pointe de Kerdonis, the south-east end of Belle Ile, bears from this passage nearly S.W., and the north end of the same island W.N.W. By these bearings the course may be shaped for either side of Belle Ile, but if for the southern side you must be careful to avoid the outermost ledge of the Chaussée de l'Ile de Chevaux, the marks for which have been already given.

From the eastern point of Houat Island a bank of 3 to $3\frac{1}{2}$ fathoms extends in an E.S.E. direction about $2\frac{1}{2}$ miles. It is called the Bank of Houat, and bounds Hædik Road on the northern side.

HAEDIK ISLAND, with its group of rocks, lies about 3 miles from Houat Island, being separated from it by a narrow and intricate channel called Les Sœurs, through which the tide sets with considerable strength. The depth here is from 5 to 7 fathoms, but as there are numerous patches of much less water, a stranger should not attempt to run through, unless guided by an experienced pilot.

The island is about a mile in extent, and produces excellent water; shingle ballast can also be obtained and fine sand in abundance. It is surrounded by rocks and foul ground to a considerable distance, many heads of the ledges appearing above water when the tide is down. To the S.E. of the Island, about $1\frac{1}{2}$ mile distant, is a group of rocks named the Cardinals, many of which are always above water. The southern extremity of these rocks bears from the south-eastern end of Belle Ile above E. $\frac{3}{4}$ S. 9 miles.

The lighthouse upon the island stands about 601 yards westward from the eastern

point, and shows a fixed light at 85 feet above the sea, visible 10 miles. The building is 39 feet high, and was erected in the year 1836. It is high water here on the days of full and change at 3h. 40m.; spring tides rise about 14 feet.

Should your vessel be driven to the eastward of Belle Ile, give the Cardinals a good berth,* and then haul up to the northward for anchorage. In Haedik road there is good riding in from 8 to 12 fathoms, upon a bottom of clear soft clay and mud, with the Cardinals bearing from South to S.S.W. With these bearings you will be shut within a bank of 7 to 10 fathoms, called Artimon, and which consists of foul ground, having an extent of about 3 miles. This bank bears from the Cardinals E. by N. to N.E. and is very destructive to hempen cables.

QUIBERON BAY is extensive, being 7 miles wide at its entrance; that is, from the island of Houat to Point St. Gildas, and you may sail within gun-shot of either. In the northern point of the bay are the towns of Vannes, Navallo, and Auray, and vessels bound to either should pass to the eastward of the Cardinals. At Aliguen, on the eastern side of Quiberon Peninsula, there is a small fixed light visible six miles. There are also two fixed lights on the left bank of the river La Crac'h in the northern part of the bay; the southern is a red light, and bears from the northern one S. by W., distant 574 yards.

To the northward of Houat Island there is good anchorage, also hence to Morbihan. Excellent anchorage is also found in the north part of the bay, under Quiberon Peninsula, by bringing the Teignouse Rock to bear from W. by S. to S.W. by S. The place to lie in is about midway between the rock and the coast of Vannes, towards Mount St. Michel, in from 10 to 11 fathoms, mud and sand. There is very little tide in the bay.

The course from the east end of the Cardinals, for the rivers Auray, or Vannes, is about N. $\frac{1}{2}$ E. $4\frac{1}{2}$ leagues, the entrance to both being the same; on the west side of this entrance is a rocky bank, having upon it the small islands of Meaban, which extend 3 miles from the land, in a southerly direction. Having arrived within the islands, which are passed on the east side, proceed towards the eastern shore, in 7 and 8 fathoms, and when within the inlet, you will perceive the two rivers. These have always a rapid current, and an entrance should not be attempted without a pilot.

Upon Point Navallo on the south side of the harbour, is a fixed light at 72 feet above the sea, visible 10 miles. It is high water here on the days of full and change at 3h. 45m.

From Point Navallo the coast trends to the southward, a distance of 4 miles, to Point du Grand-Mont, near which is the monastery of St. Gildas. From this point a bank of $3\frac{1}{2}$ and 4 fathoms extends nearly 3 miles in a W. by N. direction. It is called the Plateau du Grand-Mont, and has numerous shoal spots upon it, the outermost of which is called the Basse de Thumiac, and has but $3\frac{1}{2}$ fathoms upon it. This lies immediately before the entrance of Morbihan, at the distance of about 2 miles from the bar, with Point Navallo in one with Badene Church, and St. Gildas Monastery in one with Trest Mills, bearing E. by S. Nearly midway between this patch and the bar of Morbihan there are two other small spots of 2 and 3 fathoms,

Within the Basse de Thumiac towards Point St. Gildas, there is another shoal of but 2 and 3 feet water, lying with the monastery bearing E.S.E., distant $1\frac{1}{2}$ mile. It is called the Basse de St. Gildas, and has 12 to 13 feet between it and the shore. There is another small bank called the Basse du Grand-Mont, having 5 feet water upon it, and a rock which dries when the tide is down, lying three-quarters of a mile from Point du Grand-Mont, with St. Gildas Monastery bearing N.E. $\frac{1}{2}$ E., distant 1 mile, and Lomariaker Church and Point Navallo in one, bearing N. by W. $\frac{1}{4}$ W.

At rather more than a mile south-eastward from Point du Grand-Mont, is Point Banzec, off which is a rock which is connected to the shore by a rocky ledge, and becomes dry at low tide. About a mile further on is Point St. Jacques, which is foul some distance off, and has a shoal of $1\frac{1}{2}$ fathoms at a mile to the S.S.E. of it, called the Basse de St. Jacques; between this shoal and the land are 9 to 20 feet, and outside it, a little way off, about $3\frac{1}{2}$ fathoms.

About 3 miles southward from Point St. Jacques, is an extensive shoal, running for

* It is requisite to give the Cardinals a wide berth on account of some shoal spots lying about three-quarters of a mile from them. A shallow patch of 3 fathoms, called the Basse des Cardinaux lies S.S.W. from the rocks, distant nearly a mile: there are 10 fathoms all round it, so that great care is necessary to avoid it. In 1842, a vessel called the *Pearl* from Nantes, was reported to have struck upon a sunken rock, bearing from Haedik S. W. $\frac{1}{2}$ W., distant 3 miles; but this danger, we think, is scarcely likely to exist, the French surveyors having found a depth of 18 to 20 fathoms hereabout.

an extent of nearly 5 miles in a direction parallel to the coast. It is called the Plateau de la Recherche, and is in breadth about half a mile. The general soundings on it are $3\frac{1}{2}$ to 7 fathoms, although there are places where there is a much less depth of water. The west end of the shoal, in 4 fathoms, lies about $4\frac{1}{4}$ miles S. by W. $\frac{3}{4}$ W. from St. Gildas Church, and $5\frac{1}{2}$ miles N.E. $\frac{3}{4}$ N. from the lighthouse on Haedik Island, with Lomariaker Church open $2^{\circ} 30'$ to the left of Port Navallo Point. Hence the soundings on the bank are 4 to 7 fathoms to a small knoll of $6\frac{1}{2}$ feet, called Lomariaker Rock, which lies in nearly the centre of the bank, with Lomariaker Church in one with Point Navallo N. by W. $\frac{1}{4}$ W., and the north part of Dumet Island in one with the south part of Beaulieu Wood, bearing S.E. by E. $\frac{1}{2}$ E. The distance from this knoll to another of almost similar depth is about $1\frac{1}{4}$ mile. The last patch is called Sarzeau Rock, and has several small shoal spots of $2\frac{1}{2}$ to 3 fathoms around it; its marks are, Point Petit-Mont open $35'$ to the left of the Point du Grand-Mont N. by W. $\frac{3}{4}$ W., and the north point of Dumet Island bearing S.E. $\frac{3}{4}$ E., distant 6 miles. The eastern end of the bank lies with Dumet Island bearing S.E. $\frac{1}{4}$ S., and Point Penvins N.E. by E. All round this bank are 8 to 9 fathoms, bottom of mud and clay, and vessels running for Vilaine River will do well not to approach it too closely, but keep in mid-channel with Dumet Island, which will be about $2\frac{1}{2}$ miles from the island.

If sailing to Morbihan, and steering up from the Cardinal Rocks, you will go clear of the west end of the Plateau de la Recherche, by bringing St. Gildas Church to bear N.E. by N.

RIVER VILAINE. From Point St. Jacques the coast runs E.S.E. about 10 miles to Point Kervoyal, at the northern side of the entrance to the river. Nearly half-way between is Point Penvins, off which the ground is foul some distance, and to the eastward of this point is a small place called Port Penerf, situated at the entrance of a little river, which will be useful for shipping, when beacons are erected to point out its channels. Between Point Penvins and Point Kervoyal is a large extent of foul ground called the Plateau des Mats, which extends about $1\frac{1}{2}$ miles from the shore, and consists of ledges of rocks which uncover with every tide.* In making the river, it will be prudent to keep $1\frac{3}{4}$ miles from the shore in order to avoid these rocks.

The best course to the river is north of Dumet Island. From a point $1\frac{1}{2}$ mile south-eastward from the Cardinals, steer 8 miles N.E. by E. until Dumet Island bears S.E. 3 miles distant. Steer then for the entrance of the river, which will be about 8 miles distant. When steering thus you must be careful to avoid running upon the shoal ground surrounding Dumet, and precaution must be observed to give a berth to the Plateau des Mats off the north side of the entrance to the river. The soundings will shoalen gradually in this course, for from 12 fathoms off the Cardinals, you will come into 8 near the island, and find only 10 to 4 feet at the entrance of the river.

Dumet Island is small and of irregular shape, its extent being not more than half a mile. A bank of $3\frac{1}{2}$ to 4 fathoms surrounds it on every side, running in a north-easterly direction from the island about $1\frac{3}{4}$ mile. There are several shoal spots on it of 3 to 9 feet and more, so that it is advisable when sailing on the east side of the island, not to approach it too closely, more particularly as a sunken rock lies about half a mile from the island, and appears at low water, at which time it is 4 feet above the surface.

When running for the river, you can go on either side of Dumet, but the northern is considered the best, the channel being wider and clearer. If you sail on the southern side of the island, it will be requisite to keep the lead going, and be exceedingly cautious not to approach the island too near, on account of the above-mentioned rock and shallow flat which lie off it. Between the island and Point Castelli, there is an extensive bank called the Plateau de Piriac, which extends from the point towards the island about $1\frac{3}{4}$ miles. The soundings on it are 6 to 4 fathoms, decreasing towards the land, but there are many much shoaler spots, which make the bank dangerous.

On Point Penlan, the northern side of the entrance of the Vilaine, is a small fixed light, which is shown from the turret of a building lately erected on the point. It is 52 feet above the sea, and visible in clear weather about 10 miles off. In steering into the river, a berth must be given to the rocks which extend about half a mile from Point Halguen, the south side of the entrance. When within these you may anchor. It is advisable to obtain a pilot, as the navigation of the river is somewhat intricate.

* A mark that has been given for the most eastern part of this Plateau, is the wall used as a beacon, behind Point Kervoyal, in one with the point; in passing the rocky ledge, an approach must not be made northward of this line of direction.

It is high water here on the days of full and change at about 3h. 40m.; spring tides rise 13 feet and neaps 6 feet.

CROISIC. From the River Vilaine to Croisic the distance is about 12 miles, the land between being generally low and flat. A short distance inland from Croisic is seen the high pointed steeple of Guérande, together with another of stone situated within Point Croisic, called the Tour des Bâts, which marks materially assist in making the coast.

In steering for this port from the River Vilaine, it is requisite to be very cautious when passing the Point du Castelli, on account of the rocky bank, already mentioned, which extends from it towards Dumet Island. After rounding this point there is no danger, and you may steer direct for the harbour. If from the Cardinals, your course is between Dumet Island and the Plateaux du Four, which is distinguished by a lighthouse. To go clear of all danger, you must not bring the Tour des Bâts to the southward of Point Croisic.

This place is of difficult access, its entrance being impeded by rocks and strong currents; for no sooner is it high water than the ebb forces you back, and one as well as the other carries the ship directly towards the dangers. It is therefore visited by small vessels only. The harbour dries with every tide.

Two small fixed lights now facilitate an entrance to the port. They are situated on the shore, at 492 yards N. $\frac{1}{4}$ W. from the church, and are distant from each other 50 yards in a North and South direction. Their respective lanterns are 13 and 33 feet above high water, and the lights are visible, in clear weather, at a distance of 6 miles. The lights in one lead into the harbour from the N.W., but it should be noticed that this direction ranges very near two rocks, situate half a mile S. 6° E. from a beacon on a rock called La Trehic, which uncovers to the height of 3 to 5 feet at low water. It would, therefore, be imprudent to attempt the passage by night without the assistance of a pilot.

The extensive bank called Plateaux du Four lies about $3\frac{1}{2}$ miles W.N.W. from Point Croisic. It is about three miles long and from 1 to $1\frac{1}{2}$ broad, and has on it from $\frac{1}{2}$ to 3 fathoms, excepting on its northern part, where for a considerable extent it dries at low water. At the southern end of the bank is a patch of 5 feet called Goué-vas, which lies with the Semaphore de la Romaine open 43° to the right of Guérande Church. Within this and the dry part of the bank, is a small rock that appears at low tide, at which time it is about $3\frac{1}{2}$ feet above the surface.

There are other spots on the bank equally dangerous, so that a good offing must always be given to it when approaching the River Loire.

The lighthouse on the Plateaux du Four stands at the northern end of the shoal, upon the extremity of the rocky ledge that dries. It shows a revolving light, the flashes of which succeed each other at intervals of 30 seconds, but the light does not entirely disappear within the distance of 7 or 8 miles. The lantern is elevated 79 feet above high water, and the light can be seen the distance of 18 miles in clear weather.

About midway between the lighthouse and Point Croisic, is a shoal of 3 to 5 fathoms, called Basse Hikeric; the depth around it is from 8 to 9 fathoms, but there are several patches hereabout of like soundings. Point Croisic is rocky some distance out towards the north, there being at three-quarters of a mile from it in that direction some small spots of 2 feet called the Basse Castouillet.

A small shoal of 6 fathoms, but in one spot of only $3\frac{1}{2}$ fathoms, lies $3\frac{1}{2}$ miles from the lighthouse in a W. by S. $\frac{2}{3}$ S. direction. It is called the Basse Capella, and is situate on the northern end of a bank of 6 to 8 fathoms called the Guérande, which runs to the southward about $5\frac{1}{2}$ miles.

RIVER LOIRE. The North Channel to the entrance of the river is bounded on the south side by the following dangers:—

A small shoal of $4\frac{1}{4}$ fathoms, called the Basse Michaud, lies with Du Four Lighthouse bearing N. $\frac{1}{4}$ W. distant $5\frac{1}{2}$ miles, the extremity of Point Croisic N.E. $\frac{1}{2}$ N. $4\frac{1}{2}$ miles, and the tower on the Turk Rock S.E. $\frac{1}{3}$ S. $5\frac{1}{4}$ miles. It is about 3 miles from the north end of La Branche Shoal, the mark to sail between them being the Tour des Bâts in one with the great church at Guérande. All round the shoal is a depth of $9\frac{1}{2}$ to 12 fathoms.

The Basse de l'Astrolabe is a small shoal of $4\frac{1}{2}$ to 6 fathoms, lying about $2\frac{1}{2}$ miles westward of La Branche, with the tower on the Turk Rock bearing E. by S. $\frac{3}{4}$ S. It is surrounded on all sides by $7\frac{1}{2}$ to 12 fathoms. The mark to clear it on the west side is Escoubiac Church open $1^{\circ} 15'$ to the left of Point Pain Chateau.

The extensive bank of La Branche is extremely dangerous, there being many parts

of it which dry at low water. The northern extremity of the bank, a patch of $1\frac{1}{2}$ fathoms, lies with Escoublac Church open $1^{\circ} 15'$ to the left of Point Pain Chateau, and the tower on the Turk Rock bearing S. by E. $\frac{3}{4}$ E. Hence the bank extends in a S.S.E. direction about $3\frac{1}{2}$ miles, being nearly a mile in breadth, to a spot of 7 feet called the South-east Rock, which lies with La Pierre Percée in one with Poulhaut Mill bearing E. by N. $\frac{1}{4}$ N. and the Turk Tower N.W. $\frac{3}{4}$ W. The northernmost of the rocks which dry, called the Three Stones, appear from 6 to 9 feet above the surface when the tide is down. Thence to the ledge called the Turk the distance is about $1\frac{1}{2}$ mile, it being all foul ground between. The Turk shows itself at low water, and is distinguished by a round tower of stone 30 or 40 feet high. All round this bank are from 5 to 12 fathoms, but south-westward of the tower, at the distance of $1\frac{1}{2}$ mile, are two small spots of $5\frac{1}{2}$ fathoms, called the Basses du Turk.

La Lambarde, a shoal of $1\frac{1}{2}$ to 6 fathoms, is before the entrance to the river. It is nearly two miles long by one broad, and has from 6 to 10 fathoms close to all round, being steeper on the southern than on the northern side. One part of it is very dangerous, as it uncovers at low water, being then nearly awash; the marks for it are, St. Nazaire Steeple open $2^{\circ} 30'$ to the right of the Tour d'Aiguillon, Point St. Gildas bearing S.E. $\frac{1}{4}$ S., distant $5\frac{1}{4}$ miles, and the tower on the Turk Rock W.N.W. $\frac{1}{3}$ N. $3\frac{3}{4}$ miles.

The north side of the North Channel to the river, is bounded by the coast and the several dangers which lie off it. The following describes them:—

From Point Croisic the land bends to the south-eastward about 6 miles to Point Pain Chateau, the coast between being moderately clear of dangers, excepting those close in-shore. But, half-way, off the Tour des Bâts, there is a rocky patch called the Basse Lovre, upon which there is not more than a half to 3 fathoms. This extends nearly a mile from the land, so that it is prudent when coasting along, not to approach the shore nearer than $1\frac{1}{2}$ mile, so that you may be certain to avoid it. Just round to the northward of Point Pain Chateau is a small place called Port Poulguen, and the coast here takes a sweep and forms an extensive shallow bay, at the back of which are some sand-hills and the church and mill of Escoublac.

In a line nearly S.E. by S. from Point Pain Chateau, is a series of rocks and shoals, of which some are above the water at all hours of tide. At less than half a mile to the south-westward of them is a depth of 5 and 6 fathoms.

The first of this series is the Leven, which is almost covered at half-tide, and upon which are three hillocks, about 24 feet in height. Near this are several other ledges which are covered at high tide, and are separated from Point Pain Chateau only by a narrow channel of 3 fathoms water.

About a mile from the Leven Rock are several ridges which dry at low water, at that time appearing from 5 to 6 feet above the surface. These are called the Troves.

La Pierre Percée is a small islet elevated about 30 feet above the surface at low water. Within it, about half a mile to the northward, is a rock called the Baguenaud, which is nearly covered at half tide, and has a bank of sand upon it always visible. To the eastward of these, but close to the shore, are some rocks called La Vieille, and Les Fromantieres, which are dry when the tide is down.

At about a quarter of a mile south-eastward from the Pierre Percée is the Longue Folle Rock, a sunken reef, upon which there are only from 5 to 9 feet at low water spring tides. And, at about half a mile further, in the same direction, is another rock called the Grand Charpentier, which is even with the sea at high water of neap tides. Eastward of these, towards the shore, are several other banks and rocks, all of which are more or less dangerous.

To facilitate entrance to the river, there are two towers on the north shore, which brought into one formerly led over the bar, but owing to changes in the latter this line of direction can be no longer safely followed, as it will lead over or very close to the eastern part of the Banc des Charpentiers. It is therefore requisite to keep the flashing light of the Tour du Commerce, a little open to the right or eastward of the fixed light of the Tour d'Aiguillon.*

* The Tour d'Aiguillon is the tower first met with when entering the river. It exhibits a fixed light at 112 feet above the sea, visible in clear weather 12 miles off. From this lighthouse to the Tour du Commerce the bearing is about N.E. $\frac{3}{4}$ E., and the distance 2144 yards. The light from this latter building, is at an elevation of 128 feet above high water, and flashes at intervals of 2 minutes. It can be distinctly seen 14 miles off, and the eclipses are not total within the distance of 6 miles.

On the eastern side of the bar is a rock called *Le Vert*, which appears $7\frac{1}{2}$ feet above the surface when the tide is down. Its position is, we believe, denoted by a buoy.

A little southward of the *Vert Rock*, is another reef called *Les Jardinets*, which also dries. Within the river, on the east side of the channel, and nearly opposite the *Tour du Commerce*, is another rock called the *Morées*, which has a beacon upon it. This uncovers with every tide, and when using the channel you must be careful to avoid getting on it.

Directions.—The course followed by vessels bound for the Loire, has usually been to the northward of the *Plateaux du Four*, and then south-eastward towards *Croisic Point*: but with southerly winds, the channel to the river may be gained with more facility by entering between the *Plateaux du Four* and *La Banche*, or by going eastward of the latter.

The south-eastern part of the *Plateaux du Four* will be avoided by keeping the steeple of *Guérande* eastward of the church of *Croisic*; and the north-west end of *La Banche* by keeping the steeple of *Guérande* a sail's breadth to the north-westward of the *Tour des Bâts*. Either of these marks may be kept on until the lighthouse on the *Plateaux du Four* bears by compass, N. W. $\frac{1}{2}$ N.; and this line of bearing, or a course S.E. $\frac{1}{4}$ S., will lead directly to the bar of the Loire; when you may run into the river by bringing the *Tour du Commerce* a little open to the right, or eastward of the *Tour d'Aiguillon*.*

As already mentioned, the shore south-eastward of *Croisic* is rocky, and there is a reef called the *Basse Lovre*, extending nearly a mile from shore, about 3 miles S.E. by S. from *Croisic Point*. The passage is, therefore, between this reef and the North-west Rock on the northern end of *La Banche*, or the *Turk Bank*. The course to abreast the *Pierre Percée*, or *Pierced Rock*, is, therefore, about S.E. Steer so as to leave this rock at the distance of half a mile on the port side, and then continue a S.E. course (allowing for the tide, which runs strongly) until you bring the *Tour du Commerce* a little open to the right of the *Tour d'Aiguillon*. Steer in the latter direction, with the lighthouses nearly in one, until you come near to *Point de l'Eve*,† when you must proceed in an easterly direction to pass the point of *La Villée Martin*, taking care to avoid the rocks extending from that point. Hence you may continue to *Mendin Road*, E.S.E. of *St. Nazaire*, and anchor in from 6 to $3\frac{1}{2}$ fathoms, or proceed to *Nantes*.

At a league eastward from the *Tour d'Aiguillon*, is the fixed harbour-light on the mole of *St. Nazaire*, which may be seen about 8 miles off. A small fixed light is also shown from the extremity of the mole at *Paimbœuf*, about 7 miles above *St. Nazaire*.

On sailing out of the river, proceed westward, and pass within half a mile of the point of *La Villée Martin*, taking care to keep midway between it and the tower on the *Morées Rocks*. *Point de l'Eve* may be approached pretty closely. When the *Tour du Commerce* appears a little open to the eastward of the *Tour d'Aiguillon*, run out in that direction between the *Lambarde* and *La Couronnée*. In following this course, after having cleared the *Lambarde* on the one side, and the *Couronnée* on the other, you will deepen your water to 9, 10, and 12 fathoms, but should beware of approaching too closely to *Pilier Island*. Give it a berth of $1\frac{1}{2}$ mile at least, or two miles, and do not shoalen your water to less than 6 fathoms.

* These instructions for the Loire are based upon the survey by M. Beauteemps Beupré in 1822, and should be used with great caution, because of the changes to which the entrance of the river is subject, hence, it is advisable for a stranger at all times to avail himself of the assistance of a pilot, in fact, an attempt to enter the river ought not to be made without such assistance. An examination of the mouth of the river in 1853 by M. Boquet de la Grye, shows in some parts a slight variation in the depth from the previous survey in 1822. The line of the lights in one apparently does not now run across the eastern part of the *Charpentier Bank*, but about $\frac{1}{2}$ of a mile eastward from it, clearing it in a depth of about 10 feet water; the depth has also decreased in some parts but increased in others. M. Grye says: "To cross the bar bring the lights in one, and continue with that mark until the church of *St. Nazaire* comes in one with the point of *La Villée Martin*. Vessels of very moderate draught of water can then run up the river to *St. Nazaire*, keeping that point open, and ranging pretty near to the *Tour des Morées*, to avoid the rocks under water extending from *La Villée Martin*; but, large vessels must follow the deep channel along the coast, and take great care to clear the *Banc de Bonne Anse*, a shoal of about 7 feet water lying with the pilot's mast in one with the *Tour d'Aiguillon*, and the mill westward of the *Tour du Commerce* in one with the coastguard station at *Pointe Portsay*. Pilots may be obtained from the pilot's station by making the usual signal."

† A small red light is now shown on *Point de l'Eve*.

In a large vessel, as soon as Pilier Island bears S. by E., appearing then nearly in one with Point de Devin, alter your course to W.S.W. so as to keep in the Grand Channel.

It is high water at St. Nazaire on the days of full and change of the moon at 3h. 40m. Spring tides rise $15\frac{1}{4}$ and neaps $7\frac{1}{4}$ feet.

Point St. Gildas, on the southern side of the entrance to the River Loire, is foul some distance out to the northward. About $2\frac{1}{4}$ miles west of the point, is a rock called La Couronnée, which appears, at low water, 7 feet above the surface. It lies with La Pierre Percée in one with the western extremity of the high downs of Escoublac, and has some shallow patches of a half to 2 fathoms water, at less than a mile northward and north-westward of it. Within this rock, towards the land, are 6 to 7 fathoms, and outside it 6 to 10 fathoms. To keep clear of all danger of striking this rock when leaving the Loire, run out of the river with the towers of Aiguillon and Commerce nearly in one, and it will carry you about $2\frac{1}{2}$ miles to the westward of it.

A little to the south-eastward of the Couronnée, is the commencement of a shoal called the Kerouars, which runs in a direction parallel to the coast, for a distance of about 4 miles. Upon it the average depth is $1\frac{1}{2}$ to 3 fathoms, but in parts it becomes almost dry at low water. The soundings within it, towards the coast, are $4\frac{1}{2}$ to 6 fathoms, and outside it $6\frac{1}{2}$ to $8\frac{1}{2}$ fathoms.

BOURGNEUF BAY. From Point St. Gildas the coast bends to the S.E. $\frac{1}{2}$ E. about $5\frac{1}{2}$ miles to the small port of Pornic, the land between being moderately high and clear of rocks, excepting those which lie close in-shore. About $1\frac{1}{2}$ mile from the coast, is the above-mentioned bank of Kerouars, and opposite Pornic is another shoal of a similar character, but with some rocky ledges upon it which become dry when the tide is down; this is called the Basse Notre Dame, and between it and the shore, to the eastward, is no passage, extensive dry flats and rocks joining the land in that quarter.

Pornic Harbour dries, and can therefore only be used by small vessels. A fixed light, visible about 10 miles, has been established on Point Norveillard, the western side of the entrance, which is useful to those navigating in the vicinity.

From Pornic to Bourgneuf, the distance is $7\frac{1}{2}$ miles, in a south-easterly direction. Masters of vessels desirous of running so far up Bourgneuf Bay as this town must have a pilot, if they are at all unacquainted with the navigation, the eastern part of the bay being full of dangers.

The southern part of the entrance to Bourgneuf Bay is bounded by the northern point of Noirmoutier Island, named Pointe de l'Herbaudière, which lies S.W., nearly 7 miles from Point St. Gildas, the space between forming the entrance to Bourgneuf Bay. Upon Pointe de l'Herbaudière is a battery, and foul ground extends off it to some distance. At $2\frac{1}{2}$ miles N.W. $\frac{1}{4}$ N. from this point, is the small island of Pilier, upon the northern end of which is a lighthouse, showing a light, varied by a brilliant flash every 4 minutes, at 105 feet above the sea, visible about 18 miles in clear weather. A little northward of this island is a ledge of rocks called Les Cheveau, some of which are dry at low water.

Pilier Island should not be approached nearer than 2 miles in any direction, and no passage should be attempted between the island and the shore, as sunken rocks are thickly besprinkled about in all directions. The north-eastern part of Noirmoutier Island is also surrounded by ledges of rocks, and other dangers, which extend out about $2\frac{1}{2}$ miles.

In sailing from Belle Ile to Bourgneuf Bay, steer for the isles of Pilier and Noirmoutier; and when Pilier bears South $3\frac{1}{2}$ miles, steer S.E. by E., till Noirmoutier Church bears S. by W., or the ancient abbey La Blanche S.S.W. $\frac{1}{2}$ W., when you will have passed the Banc de la Banche. Steer now for the Monk's Stone, which may be passed on either side; run southerly into the Rade du Bois de la Chaise, and anchor in $3\frac{1}{2}$ or 4 fathoms, the church of Noirmoutier bearing W.S.W., distant 2 miles, taking care to avoid a shoal nearly in the middle of the Rade, upon which are only 1 to 7 feet water; this shoal extends east and west about half-a-mile, and its western end, which is the shoalest, lies three-quarters of a mile E.N.E. from La Cobe Rock, having 3 fathoms in mid-channel between them. Or, you may anchor farther out in still deeper water; or take a pilot to carry you into Bourgneuf. There are many dangers in this bay, therefore a stranger will always find a pilot necessary. It is high water here on the days of full and change of the moon at 3h. 2m.; spring tides rise 16 and neaps 7 feet.

NOIRMOUTIER ISLAND. The island of Noirmoutier is extensive, but irregularly shaped, being very narrow in the middle, at that part not exceeding a quarter of a mile in breadth. Its length is about 9 miles, and the shores on all sides of it are studded with dangers. Point Devin, the westernmost point of the island, has foul ground off it, in a westerly direction, to the distance of $3\frac{1}{2}$ miles, the principal part of which consists of a rocky ledge, drying at low water, called the *Beufs*, and in the same direction from the point is shallow water of 3 to 4 fathoms, which extends $6\frac{1}{2}$ miles from the land. Further out, about 8 miles, the depth is about 10 fathoms, the soundings gradually increasing, but on a rocky bottom. No vessel should approach this part of the island nearer than this depth.

The southern extremity of the island is separated from the main by a narrow channel, called *Fromantine*, the entrance to which is choked with sand. When used, this passage must be navigated with the utmost caution, as it is probable that the direction, as well as depth of it, changes materially after a continuance of bad weather. On the northern side of the channel is a small fort or battery, and at the southern part the land rises, and forms the *Fromantine Mountains*. None but small vessels must attempt to go in here. At the distance of nearly $5\frac{1}{2}$ miles W. $\frac{1}{2}$ S. from the south end of Noirmoutier Island, is a small bank of three-quarters of a mile in extent, called *Basse de l'Aigle*, upon which are only $1\frac{1}{2}$ to 2 fathoms, rocky soundings. The depth between it and the shore is $3\frac{1}{2}$ to 4 fathoms, but immediately outside are 5 to 7 fathoms. The bottom all about here is of a rocky description.

ILE D'YEU. This island is about $5\frac{1}{4}$ miles long, taken from its extreme ends, and 2 miles broad. The chief port of the island, called *Port Breton*, on the northern side, is protected by a fort, and there are also several batteries placed on the most prominent points of the island. A good distinguishing mark for this island is its church (dedicated to *St. Sauveur*), which has a pointed steeple.

The north-western point of this island is encumbered with rocks, to the distance of about three-quarters of a mile out, the outermost of which are called *Les Chiens Perrins*. The shore hence to *Port Breton* has many rocks off it, but none beyond three-quarters of a mile from the land. Between *Port Breton* and *Pointe du Corbeau*, the south-eastern point of *D'Yeu*, the shore is fronted with rough uneven ground to the distance of $1\frac{1}{4}$ miles, the soundings upon which average from $1\frac{1}{2}$ to $4\frac{1}{2}$ fathoms. The southern side of this island is clear of dangers to within half a mile, and vessels may anchor off it in from 13 to 16 fathoms, fine sandy bottom, with *Pointe du Corbeau* bearing N.E. by N. distant about 2 miles; or more to the eastward with the same point bearing N.W. by N., distant 4 miles, in a similar depth, on mud and sand.

The small harbour of *Port Breton* on the N.E., and that on the S.W. side of the isle, are only fit for small craft, and dry every tide. It is high water here on the days of full and change of the moon at 3h. 6m.; springs rise 14 and neaps 6 feet.

The best anchorage off *Ile d'Yeu* is with the north-west point bearing West, and the east point S. by E., or bring the church to bear S.S.W., distant about 3 miles. With the north point of the island bearing W. by S., and the south-east point S. $\frac{3}{4}$ E., you may anchor in about 6 fathoms, small stones and sand. When sailing from *Pilier Island* to *Ile d'Yeu*, you must take care to avoid the *Beufs*, or Oxen; these lie almost S.S.W. from *Pilier*, and should not be approached nearer than a depth of 14 fathoms, as they are steep-to, having 9 and 10 fathoms close to them.

Lights.—On an elevated spot, at nearly a mile from the north-west end of the island, is a tower which exhibits a brilliant fixed light at 177 feet above the level of the sea, visible 18 miles. At *Port Breton*, on the north side of the isle, there are, likewise, two small harbour-lights, of which the first is on the extremity of the jetty, on the starboard side, when entering the harbour, and the other is at the head of the harbour. They are of unequal height, being respectively of 23 and 49 feet, and may be seen from sea, in fine weather, at 8 and 10 miles off. In order to enter the port, the lights must be kept in a line; but the entrance is so very narrow, that it cannot be attempted in the night without great danger, even with these lights, unless by the aid of a pilot who is intimately acquainted with the passage.

From *Fromantine Channel* the land trends S. by W. $\frac{1}{2}$ W., $4\frac{1}{4}$ miles to the village of *Notre Dame de Monts*, and is low all the way. Off this village a rocky ledge extends in a W. by S. direction $1\frac{1}{2}$ mile, which becomes dry when the tide is out. There are several rocky spots hereabouts of a similar description, so that great circumspection is necessary, when sailing within *Ile d'Yeu*, that you do not approach too close to the mainland. The *Marguerites* are composed of a series of rocky ledges

which show above the surface at low water, lying from $1\frac{1}{2}$ to $2\frac{1}{2}$ miles from the shore, to the northward of the above-mentioned rocky ledge, with the church of the village of Notre Dame de Monts bearing E.S.E.

Point Corbeau, the eastern point of Ile d'Yeu, is connected in some measure with the mainland, at the village of Notre Dame de Monts, by a bank of 3 to 4 fathoms, called the Pont d'Yeu. The deepest water is found about midway between the island and the shore, but towards the mainland it is very shoal, and it will, therefore, be always necessary to keep a considerable distance from it. Point Corbeau should not be approached within a mile, as it is shoal some distance out towards the north-eastward. It is not safe to navigate this passage at low water, if drawing more than 15 or 16 feet.*

From the village of Notre Dame de Monts, the coast runs S. by E. $\frac{1}{2}$ E., $10\frac{1}{2}$ miles, to Pointe de Grosse Terre, which is clifty and rocky a short distance out. The shore is pretty clear all the way, excepting off the village of St. Jean de Monts, where there are two small rocky ledges at half a mile from the land, which appear at low water. The soundings gradually shoalen as you sail eastward, there being at a mile from the shore from $2\frac{1}{2}$ to 3 fathoms, and further out 4 to 5 fathoms. At $2\frac{1}{2}$ miles from Pointe de Grosse Terre, and within a mile of the shore, is a small shoal of 4 to 5 feet, called the Basse de la Vigie; it lies with the church of St. Hilaire bearing N. W. by W. $\frac{3}{4}$ W., and has 3 to $4\frac{1}{2}$ fathoms immediately outside it.

ST. GILLES SUR VIE is a small tide-haven immediately round Pointe de Grosse Terre. The road of this place is between the small dry rock, Pilours, lying off the point, and the rocky bank, Bonneau, part of which appears above the surface when the tide is down, and here small vessels may ride in $7\frac{1}{2}$ to 10 feet at low water. Large ships cannot run for this place, as the harbour will not admit vessels exceeding 100 or 120 tons, so that it is frequented principally by the neighbouring coasters. The town lies in a valley, and can scarcely be seen, but it may be distinguished by a great wood near it. In the year 1852 a fixed red light was established at St. Gilles, on the extremity of the north side of the jetty; it may be seen at the distance of 6 miles, being 39 feet above the level of high water. It is high water here on the days of full and change at about 3h. 10m.; spring tides rise 14 feet and neaps 6 feet.

OLONNE. From St. Gilles sur Vie the coast runs to the southward, about 13 miles, to the rocks called the Bargés d'Olonne, and is moderately clear all the way, there being no dangers further than a mile from the land. The Bargés d'Olonne run out from Point de l'Aiguille in a W.N.W. $\frac{1}{2}$ N. direction, about $2\frac{1}{2}$ miles, and are very dangerous, as parts of them show at low tide. In approaching them, the lead should be used freely, as it would not be safe to get nearer than to 10 or 11 fathoms, and at night than 20 fathoms. The westernmost danger is a patch of 4 fathoms, called Basse Vermeu, which lies with Sables d'Olonne Church open a little to the right of Chaume Mill, bearing E.S.E. $\frac{1}{4}$ S. nearly. The mark to clear these rocks on the south side, is St. Jean Mill a little to the right of La Grange farm, bearing S.E. by E. $\frac{1}{2}$ E.

The harbour of Olonne is a tide-port, into which vessels can enter at high water only. It is situated between two small towns: the one called Les Sables d'Olonne, and the other La Chaume. The headland on the western side, near the latter, has on it a small square church with a little pointed steeple, dedicated to St. Nicholas. Between this church and a castle farther inland, on the same side, is a bank projecting out to a considerable distance. Hence ships, on entering the harbour, must keep over to the eastern side; but it is to be observed, also, that a shoal extends from Les Sables Point. The marks for the harbour, on coming from sea, are a high pointed steeple, with two smaller ones.

A lighthouse has been built at La Chaume, on the western side of the entrance to the harbour; and there is, also, a harbour-light on the head of the jetty upon the eastern side. The light on the jetty, in a line with that of La Chaume, gives the direction of the channel into the harbour. Both lights are fixed; that of La Chaume is 118 feet above the sea, and may be seen 12 miles off, and that of the jetty is but 23 feet high, and visible only 8 miles.

From Les Sables d'Olonne to Pertuis Breton, or Breton Passage, the coast runs

* It has been observed, that the pilots of Ile d'Yeu still adhere to the opinion, that there are $6\frac{1}{2}$ fathoms upon this shoal or bar, notwithstanding that the surveyors found not more than 4 fathoms.

S.E. by S., about 6 leagues, and is low all the way, but with many rocky points running off it.

ILE DE RE. This island is about 18 miles southward of Les Sables d'Olonne; it is about 14 miles in length, from S.E. $\frac{1}{2}$ S. to N.W. $\frac{1}{2}$ N., and is generally sterile. St. Martin, the principal place, is on the north-east coast, and protected by forts; at this place there is a small fixed red light, on the port side of the entrance. The north-western point of Ile de Ré is distinguished by a lighthouse, exhibiting a flashing light, the eclipses of which succeed each other at $\frac{1}{2}$ minute intervals; it is about 165 feet above the sea and can be seen at the distance of about 22 miles,—in ordinary weather the light will appear totally eclipsed only at the distance of 10 miles. From this point a number of rocks, called Les Baleines, or the Whales, extend to the distance of $2\frac{1}{2}$ miles to the northward, and are very dangerous; there are also other reefs along the south-west side of the island, which extend out to nearly the same distance, but the extent of these reefs diminishes outward as you approach the south-east end of the island, although from Point du Chauveau they run off fully one mile.

On the rocks extending from the north-western end of Ile de Ré, there is a lighthouse, which stands on a shoal, named the Haut Banc du Nord, at the distance of about $1\frac{1}{2}$ mile north-westward from the Baleines Light. It shows a fixed light at about 72 feet above the sea, visible 15 miles. Around this light to the distance of fully a mile there are dangers.

On the rocks of Point du Chauveau, the south-east point of Ile de Ré, is a fixed light visible 14 miles. As this light must always be in sight whenever the light at La Rochelle can be seen from seaward, they will readily be distinguished from each other by their appearances and bearings.* Besides the above lights on Ile de Ré, there is also a fixed light at Porte de la Flotte, a small town $1\frac{1}{2}$ mile south-eastward from St. Martin, on the same side of the island: this light is 30 feet above the sea and visible 9 miles.

PERTUIS BRETON, or the **BRETON PASSAGE**, is the space between Ile de Ré and the main. On Point Grouin du Cou, on the north side of the channel, is a fixed light at 59 feet above the sea, visible 10 miles. And, further in, on the low point of Aiguillon, forming the north side of the entrance to Aiguillon Bay, is a similar light.†

When running into this passage, steer in in mid-channel, with the light on Pointe de l'Aiguillon bearing S.E. by E. $\frac{1}{4}$ E., until the light on Point Grouin du Cou bears N.N.W. Steer then a S.S.E. $\frac{1}{4}$ E. course, until the church of St. Martin bears S.W. by W. $\frac{1}{2}$ W., when you may bear up towards Ile de Ré, and anchor, if necessary, before the town, in from 3 to 5 fathoms, sand and mud: but should the wind be contrary, you must be careful to avoid the Bank of St. Martin, which runs eastward from Ile de Ré into the middle of the channel, and has on it but from 1 to 3 fathoms. There are some rocks lying off La Tranche, forming the port side of Pertuis Breton in entering: these run nearly a mile into the sea, and require a berth. There is also shoal water extending from these rocks to Pointe de l'Aiguillon, to the distance of 2 miles from the shore, narrowing the channel between it and St. Martin's Bank to about $1\frac{1}{2}$ miles.

The anchorage in Aiguillon Bay has always been considered the most certain place of shelter in the neighbourhood of Rochefort and La Rochelle. The surveyors in 1824 considered that the water and the extent of the anchorage were fast diminishing, but stated that it was a very excellent place for vessels to run for when deprived of anchors or dismanted, as they might run aground there in perfect safety. In running for this place, the Aiguillon shore should not be approached nearer than $1\frac{1}{2}$ mile, in order to avoid the bank which extends outward to that distance, and which consists of sand, dry at low water. When the lighthouse bears E.N.E., haul up towards it, and anchor in 3 or $2\frac{1}{2}$ fathoms, or you may steer into the bay, and run ashore at convenience, as the bottom consists of soft mud. The channel is narrow, and shoals rapidly as you approach the lighthouse.

When sailing up the Pertuis Breton in a small vessel drawing only 9 or 10 feet water, you need be under no apprehension about the outer part of the Bank of St.

* La Rochelle Light is so placed that the Chauveau Rocks and the Lavardin Reef will be avoided by a vessel of very light draught, by keeping the light open to the southward of the lantern tower, which stands twenty-three yards westward from it.

† It is probable that this light will be removed to a position nearer the extremity of the point.

Martin, as it is not very dangerous, being soft, and having always water enough upon it for you to pass without danger; but the inner part is rocky, with only 5 feet water on it, at $1\frac{3}{4}$ mile eastward of the beacon on Point de Loix. Large ships generally wait for the tide. In working, either at entering or going out of Pertuis Breton, observe the following marks, by which you will avoid the Bank of St. Martin.

When you run along the north-eastern coast of Ré, and perceive the first houses of the village of Loix in one with Ars Steeple, tack; for should you proceed until the said steeple comes on with the middle of the village, you will be upon the bank. You may sail along the coast of the mainland in 8 and 6 fathoms; outside of the bank, and in the middle of the channel, you will have 10 to 12 fathoms; but when Ars Steeple is brought in one with a mill standing at the southern extremity of Loix, you will be within the bank, and may steer into the road, and anchor in 3, 4, or 5 fathoms.

Large vessels bound to Rochelle should not run up this passage, because from Aiguillon, or Maran Bay, a flat of 4 to 10 feet runs across the channel to Ré Island, thus connecting the southern part of the island with the mainland.

OLERON. This island is about 18 miles long and 6 miles wide in its broadest part, which is near the centre of the island. It is almost entirely surrounded with banks and rocky reefs, which, on the western side, extend a considerable distance from the shore, so that it is advisable not to approach nearer than the depth of 11 or 12 fathoms; there are also extensive flats of sand and mud on the eastern shore, which dry at low water. Between the island and the mainland are numerous shifting sands, so that, when running within it, great caution is necessary. On Point Chassiron, the north-west extremity of the island, is a lighthouse, showing a fixed light at 164 feet above high water, visible 18 miles. The rocks which surround this end of the island, named the Antioche Rocks, extend 2 miles eastward from the lighthouse, and dry in many places at low water; within them is said to be an anchorage suitable for very small vessels, but not to be attempted by strangers.

PERTUIS D'ANTIOCHE is the passage between Ile de Ré and Oleron Island. On the south-western side of Ile de Ré are several rocky ledges which extend outward a considerable distance. At the village of Ars, the ledge called Chanchardon extends in a southerly direction, nearly $2\frac{1}{2}$ miles, and the whole coast of the island thence to the south-eastward is lined with a rocky ledge, which diminishes in extent as you get towards the extremity of the island, but off Point de Chauveau it extends to the southward fully a mile, and a shoal spit extends from Point Saint Marc on the opposite side; further to the southward, also, is a small rocky bank, called the Lavardin, dry at low water, which lies about $1\frac{1}{2}$ miles S.S.E. from the south-east end of the island. A white stone beacon, 33 feet above high water, recently constructed on the Lavardin, will indicate its situation by day.

Ships may round the Lavardin in a good depth of water. Between it and Ile de Ré is a depth of 5 and 6 fathoms.

On sailing into the Pertuis d'Antioche, which is nearly two leagues in width, it is safest to keep over to Ile de Ré, until near the south-east end of the island, taking care to avoid the Lavardin before mentioned. Then steer for the west part of Ile d'Aix, a flat island, which lies about half-way between Oleron and the mainland. The soundings in mid-channel, between the Iles de Ré and Oleron, are from 10 to 22 fathoms, shoaling towards each side. When bound to Rochelle, give Ile de Ré a sufficient offing to avoid the Lavardin, which lies with the points of La Plomb and La Repentine in a line. To enter the harbour of La Rochelle and the Charante, or River of Rochefort, the assistance of a pilot is indispensable.

Harbour Lights.—At La Rochelle there are two lights, the Fanal d'Amont and the Fanal d'Aval. The former is a fixed light flashing every three minutes, situated on the eastern quay and elevated 59 feet above the level of high water. The latter is a fixed red light, at 257 yards from the former light, and 46 feet above the sea. The revolving light is, in clear weather, visible 10 miles, and the fixed 8 miles.

There is also a small fixed light on the fort on the south point of Ile d'Aix, which may be seen at the distance of 10 miles. This light, bearing S.E. by S., leads up the fair way of the Antioche Passage, clear of the shoals on the north-east side of Oleron, whence you steer into the roadstead of Aix, south of the island. At Port Chateau, on the eastern side of Oleron, it is intended to establish two fixed lights, which, when in one, will lead into the port.

At Ile d'Aix it is high water on the days of full and change of the moon at 3h. 20m.; spring tides rise 17 and neaps 8 feet. At La Rochelle the time is 3h. 31m.; springs

rise 18 feet, and neaps about 9 feet. At Rochefort the tide attains to its highest point at 4h. 6m., with a rise at springs of 18 feet.

The passage between the southern end of Oleron Island and the shore, is called the Maumusson Channel. It is through banks of sand, the direct channel between which does not always remain the same. The bar shifts almost daily, and the direction which it is necessary to follow, cannot always be indicated by the beacons erected for that purpose, of which one is fixed and the other moveable; but it is generally the heavy sea, more than the depth of water, that renders the bar so dangerous for vessels.

RIVER GIRONDE. From the Maumusson Channel the coast runs to the S.W. $\frac{1}{2}$ S., about 6 miles to Pointe de la Coubre, at the northern side of the entrance to the Gironde River. The shore is low all the way, and shoal some distance out, so that it is necessary, when making the river, to give it a good offing, more especially as a bank of 2 to 3 $\frac{1}{2}$ fathoms, called the Demi Bank, runs out three miles north-westward from Pointe de la Coubre. When close to the outer edge of this bank Marennes Steeple will be hidden by the sandhills of Arvert, on the bearing of E. $\frac{2}{3}$ N.

The entrance of the river is readily distinguished by the tower of Cordouan, which stands on a bed of rocks nearly midway of the entrance, and was for many years esteemed the most elegant structure of the kind in Europe. It exhibits a revolving light, at 207 feet above the level of the sea, visible 9 leagues. The eclipses of this light succeed each other at intervals of one minute, every bright flash being preceded by a flash less brilliant. In ordinary weather, the eclipses do not appear total within the distance of 10 miles.

Pointe de la Coubre is low, with some sand-hills rising inland. Upon it there is a small lighthouse, which shows a fixed light at 66 feet above the sea, visible 10 miles. Near the lighthouse is a beacon, and at about a mile E. by S. $\frac{1}{4}$ S. from it is a black tower. Hence the land bends to the eastward about 3 $\frac{1}{2}$ miles, and then runs southerly 2 miles further, forming a small bay in which is a dangerous bank called the Barre à l'Anglais, the outer edge of which is marked by two buoys; upon the bank there are not more than 1 $\frac{1}{2}$ to 3 $\frac{1}{2}$ fathoms, and in some places much less water.

At 5 miles within Pointe de la Coubre is the Point of Terre Negre, having a battery upon it, and half a mile beyond it a building showing a small fixed red light, named the Falaise Light. Near the light is the Tour de Terre Negre, coloured black and white, which shows a fixed light at 118 feet above the sea, visible 12 miles. Beyond Terre Negre in an easterly direction are the mill, church, and village of St. Palais, and about 1 mile further is a wooden tower erected on the high ground of Pontailac. This tower is 104 feet high, and shows a light alternately red and white, each of the colours lasting 20 seconds, without intervening eclipses. The light is 177 feet above the sea, and visible in clear weather to the distance of 15 miles.

Immediately westward of the town of Royan is a fort, near which is the tower of Chay. At Royan there is a small tide light, situated on the point of the *corps de garde*, at 559 feet from the end of the jetty; it is 36 feet above the level of the sea, and can be seen about 2 leagues.

At 2 miles above Royan, at the back of a sandy cove, are the village and mills of St. George de Didonne; and at half a league southward of this is Suzac Point. At 2 $\frac{1}{2}$ miles above Suzac Point, on the shore, are the village, church, mills, and forts of Meechers.

Opposite the cove of Royan, on the western bank of the river, is Pointe de Grave, with its fixed light, which is shown from a temporary wooden building at 39 feet above the sea, and visible 9 miles. At 2 miles without this, on the sea-coast, are the beacon and semaphore of St. Nicolas, which serve as a mark for the Passe de Grave. Two miles to the southward of Pointe de Grave, in the river, is the village of Verdon, with its mill, &c.*

* Besides the lights mentioned there are the following:—A lightvessel on the middle of the eastern edge of the Tallais Bank, which forms the western side of the channel, the eastern side being formed by the Talmont Bank. It is moored in 4 fathoms, with Pointe de Grave Light bearing N.N.W., distant 5047 fathoms, Talmont Steeple E. $\frac{1}{3}$ N., 3527 fathoms, and Richard red light S. $\frac{1}{2}$ E. 4484 fathoms, and exhibits a fixed light at 33 feet above the surface of the water, visible from the deck of a pilot boat about 9 miles off. The vessel is readily distinguished by a skeleton ball at the mast-head, the centre of which is 46 feet above the surface of the water; a bell is also kept ringing during fogs.

On the western bank of the river, at a little below the small port of Richard, is a red fixed light shown at 56 feet above the level of the highest spring tides, and visible about 8 miles. The lightvessel on the Tallais Bank bears from it N. $\frac{1}{2}$ W., distant 4484 fathoms, and Jau Steeple W.S.W. $\frac{1}{2}$ W., 2184 fathoms.

There are many towns and villages upon the banks of the Gironde, but no trading place of any consequence until we reach the small town of Pouillac, situated on the western shore, at about 25 miles from Pointe de Grave. Here a small tide-light is shown from the landing-place, which can be seen about 4 miles. About 5 miles further up the river, but on the opposite side, is the town of Blaye, remarkable for its castle or citadel, protecting the river, which is here impeded by a long range of islets and shoals. Here there is also a tide-light, visible at the distance of 4 miles. On the opposite bank of the river is the strong fort of Medoc, which commands the western channel. At 7 miles above Blaye, is the conflux of the rivers Dordogne and Garonne, the united streams of which form the Gironde. Above this junction of rivers, at the distance of 13 miles, and seated on the western shore of the Garonne, is the commercial city of Bordeaux.

The banks at the mouth of the Gironde occupy a space of about 12 miles in a northerly and southerly direction, and are extremely dangerous throughout their whole extent, so that a stranger should not attempt to enter the river without the assistance of a pilot. It has also been observed that when the weather is hazy, and there is appearance of a calm, vessels should avoid entering the river, because at such times a heavy swell of the sea frequently arises in an instant. This phenomenon is called by the pilots *Le Brume Seche*, or the *Dry Fog*; it is a sort of mist accompanied by a calm, which is invariably followed by a heavy sea in all the channels.

PASSE DU NORD. The Passe du Nord, on the northern side of the mouth of the river, has a bar across its entrance, upon which there is a depth of 6 to 5 fathoms at low water; its general breadth is about two miles, and within it the water deepens to 8, 12, and 15 fathoms. This channel is bounded on the northern side by the Demi Bank, which extends north-westward from Pointe de la Coubre, and by the Barre à l'Anglais, both of which banks have already been described. On the outer edge of this last-mentioned bank, is a depth of from 2 to $3\frac{1}{2}$ fathoms, but within it, in the Bonne Anse, there are 6 to 8 fathoms; and vessels must carefully avoid getting embayed in this, as it forms a cul-de-sac.

On the south side of the Passe du Nord, off Pointe de la Coubre, is La Mauvaise Banc, which contracts the passage here to little more than half a mile in width; on it are soundings of 4 and $4\frac{1}{2}$ fathoms, and in two places of not more than 16 feet. The southerly continuation of this shoal is called Le Grand Banc, which again joins the Plateau de Cordouan, in the midst of which is the celebrated lighthouse. On the northern side of the Plateau is the Monrevel Bank, limiting the channel on the south, and which has in one part a depth of only 6 feet; this spot is situate about $2\frac{3}{4}$ miles W. by S. from Pointe de la Palmyre, and N. $\frac{1}{2}$ W. from Cordouan Lighthouse. Hence the channel is wide and clear up to Pointe de Grave, off which there is a shoal of 6 feet, called Le Platin, which extends a mile northward from the point. The depth throughout the channel varies from $4\frac{1}{2}$ to 15 fathoms.

This channel was indicated in 1853 by seven buoys, of which the outer one was coloured red and bore a bell; this was placed in 10 fathoms water, outside the bar, at about 5 miles N.W. by W. $\frac{1}{4}$ W. from the lighthouse on Pointe de la Coubre, and with Pontallac Lighthouse in one with that of Terre Negre. At 2 miles S.E. by S. from this was a buoy on the outer edge of the Mauvaise Bank, moored in $4\frac{3}{4}$ fathoms with the lighthouse on Pointe de la Coubre bearing E. by S. $\frac{1}{2}$ S. $3\frac{1}{2}$ miles. Two buoys indicated the southern edge of the Barre à l'Anglais, on the north side of the channel, and two the north-eastern edge of the Monrevel Bank; the latter bank being part of the extensive Cordouan Flats which line the south side of the channel. The seventh and last buoy was situated on the northern end of the Platin Bank, at about $1\frac{1}{4}$ mile N. $\frac{3}{4}$ W. from the lighthouse on Pointe de Grave; this bank is also on the south side of the channel.

The Mauvaise Bank appears to be subject to frequent changes. According to the survey of 1853 the steeple of St. Pierre de Royan in one with that of St. Palais is a good mark by which to sail into the channel, after having made the outer buoy; but, unfortunately, these objects are not sufficiently distinct to be easily recognised. If through rough weather the buoy be not at its station, this mark should be brought on before Marennes Steeple is hidden by the sand-hills of Arvert; also, when approaching from the westward or south-westward, in a similar circumstance, the Tour de Bonne Anse (black) should be brought well open of the lighthouse, and of the beacon near it, on Pointe de la Coubre, before the leading objects for the channel are brought into one, as the

shoal spots of the Mauvaise Bank are then likely to be avoided. The shoal around Pointe de la Coubre is very dangerous to approach, being extremely steep on the south side.

The leading mark at night is Pontailac Light in one with that of Terre Negre. This will lead in from the outer buoy.

Having entered the channel so far that the lighthouse on Pointe de la Coubre bears N.N.E., steer for Cordouan Lighthouse, until you have brought Falaise and Terre Negre Lights on with each other, when you should continue with the latter objects in one, as it will lead between the Monrevel Shoal and the Barre à l'Anglais. When Cordouan Light bears S.S.W., steer into the river in a S.E. by S. direction.

It is very essential to remark that the light of Terre Negre is not of service until Pointe de la Coubre is doubled. Another observation which cannot be too much insisted on is, that notwithstanding the facilities offered to vessels by the light on Terre Negre, for avoiding the Barre à l'Anglais, they should never attempt to enter the Gironde at night, except in cases of absolute necessity, seeing that the dangers are then multiplied, and that the fog often prevents the lights from being seen.

Should circumstances require it, vessels may run up and take shelter under Pointe de Grave, which affords a safe retreat during westerly and S.W. winds; the mark is Royan Steeple and mills N.E. by N. At this place, between Verdon and the bank called the Taillefer, coasting vessels are commonly sheltered in bad weather.

PASSE DE GRAVE. The Passe de Grave, the southern entrance to the Gironde, lies between Le Chevrier, a patch with only 8 to 10 feet on it at low water, lying nearly 4 miles W. by N. $\frac{1}{4}$ N., from the beacon of St. Nicolas, and the Banc des Olives, a bank extending 2 miles from the shore, on the outer edge of which is a depth of 2 to 4 fathoms; on this latter bank there are some patches of little more than 6 feet water, scattered about in various places.

This channel is not deep; but navigators who cannot procure pilots occasionally prefer it to the Passe du Nord, because its entrance and direction are well marked by objects on land; it is also of small extent, and can be cleared in a few hours. The entrance of the channel is precisely in the direction of St. Nicolas beacon and semaphore in one, and the interior part of the channel, in the direction of the steeple of St. Pierre de Royan open its whole breadth to the right of the Tour du Chay; if these marks are followed exactly, there will be found at least a depth of 12 feet at low water spring tides, in the shoalest parts,—but if it is unavoidable that the true direction be departed from, there must not be a greater depth than 8 feet calculated upon. The nature of the bottom in the Passe de Grave leads to the belief that the depth in the channel varies but little.*

* M. Beauteemps Beaupré in his work, *Avis aux Navigateurs sur l'Etat actuel des Passes de l'Embouchure de la Gironde*, published in Paris, 1826, advises shipmasters entering the Gironde by the Passe de Grave not to approach the Plateau de Cordouan nearer than when the church of Royan is seen in one with the Tour du Chay; and also to avoid going too far away from this directing mark on the eastern side, because the stream of flood strikes with such force upon the coast of Medoc, that in many cases it will be almost impossible to keep the vessel thoroughly under command.

He says further that "the pilots of the Gironde are not well acquainted with all the dangerous points in the Passe de Grave; but experience has taught them all that are essential, which they know how to avoid. They know and are well aware—

1st. That the two directions of the Passage are well marked, viz., the exterior part of the channel by the semaphore of St. Nicolas and the beacon, placed at the foot of the Downs; and the interior, or northern part of the channel, by the church of St. Royan and the Tour du Chay.

2ndly. That they cannot reckon upon more than 12 feet depth at low water.

3rdly. That they should not, in tacking, incline to the westward of the mark given, of St. Pierre de Royan Church in one with the Tour du Chay, for fear of falling on the rock of the Chevrier, or of the Ruffiat.

4thly. That when the wind is favourable for them to make the direct route, they must steer so as to keep the tower of St. Pierre de Royan open its own breadth to the right of the Tour du Chay.

5thly. That they ought not to venture too near to the coast of Medoc in tacking, on account of the current of flood setting so strong on that shore, rendering it extremely dangerous to anchor any where, although there are many places where the points are sandy.

6thly. That they should never attempt to leave the river by this channel with a large ship, except when the tide is rising, and the wind favourable.

7thly. That they must never anchor in the Passe de Grave, unless unavoidable.

8thly. That at all times a preference should be given to the Passe du Nord, either when entering or leaving the Gironde, if circumstances allow them to take their choice, as the depth in that channel is greater, and particularly as the ground in all parts is good for anchorage."

The navigable channel through the Passe de Grave is indicated by buoys, which in 1853 were three in number. At that time the outer buoy, conical and bearing a mast, was moored in $9\frac{1}{2}$ fathoms at about five miles from the land, with the beacon at St. Nicolas in one with the semaphore, bearing East $7\frac{1}{2}$ miles, and Cordouan Lighthouse N.E. by E. $\frac{1}{2}$ E. $6\frac{1}{2}$ miles; its position was therefore $3\frac{1}{2}$ miles W. $\frac{3}{4}$ S. from Le Chevrier Bank, the outermost of the shoals on the north side of the channel. The second buoy, also bearing a beacon, was moored in $4\frac{3}{4}$ fathoms midway between the Banc des Olives and Le Chevrier, with Cordouan Lighthouse bearing N. by E. $\frac{3}{4}$ E. $3\frac{1}{2}$ miles, the ruins of Vieux Soulac S.E. $\frac{1}{2}$ E., and the semaphore of St. Nicolas open a little south of the beacon East a little northerly. And, the third buoy, named the Ruffiat, was in a depth of $3\frac{3}{4}$ fathoms, in the middle of the channel, at $1\frac{3}{4}$ miles N. W. $\frac{1}{2}$ W. from the lighthouse on Pointe de Grave, and 3 miles S.E. by E. $\frac{3}{4}$ E. from the Cordouan Lighthouse. These buoys were all so placed that they showed the line of the navigable channel.

Having made the outer buoy of the Passe de Grave, bring the semaphore in one with the beacon of St. Nicolas, and steer in that direction until nearly up with the second buoy, when the steeple of St. Pierre de Royan will appear its own breadth open to the right of the Tour du Chay; continue now in this latter direction, and it will lead through the channel in the best water, past the Ruffiat buoy, and into the main channel of the river. The buoy marking the Platin Bank must always have a wide berth given to it, passing it on the north side, the space between it and Pointe de Grave being very shoal.

TIDES. It is high water at Cordouan Lighthouse on the days of full and change of the moon at 3h. 37m.; springs rise $13\frac{3}{4}$ and neaps $7\frac{1}{4}$ feet. At Bordeaux the time is 6h. 50m.; springs rise 14 feet and neaps $11\frac{1}{2}$ feet.

At the entrance of the Passe de Grave, with the Cordouan Lighthouse bearing N.E. the tides set thus—first of the flood, North; one-third flood, N.E.; half and two-thirds flood, E.N.E.—first ebb, S.E.; one-third ebb, South; half and two-thirds ebb, West. In the channel within, with Cordouan Lighthouse bearing N.N.W., the flood sets generally E.N.E., and the ebb W.S.W. Between the Cordouan Bank and Pointe de Grave, the flood sets generally S.E.; the ebb from West to W.S.W.

The tides, both ebb and flood, set through the different channels with rapidity; and great caution is therefore requisite, on making the river. Should the land-marks be obscured by thick weather, or night come on, it will be prudent to anchor in the first convenient spot, noticing well the above precautions.

The tides during the months of May, June, and even a part of July, are very small; but the Magdalen tides (22nd July) are often as high as those of the equinoxes, which rise 17 or 18 feet. The winds have a great influence on the tides; and in general, a good tide may be depended upon when the wind blows strongly into the river, and a lesser one with a strong wind blowing seaward.*

ARCACHON BASIN. From the Gironde the coast runs S.S.W. $\frac{3}{4}$ W about 57 miles to Arcachon Basin, and consists throughout of low sandy downs, with a few clusters of trees. At a short distance inland, but parallel to the shore, are two remarkable ponds or lakes, the northernmost of which is called Carcans, and the southernmost Canau. This latter has communication, by a small rivulet, with Arcachon Basin.

* Messrs. Serizier and Lafitte, shipbrokers at Bordeaux, wrote in 1846:—

"As ships are liable to severe penalties by the Custom-house laws of France for any articles, though belonging to the crew or passengers, especially for prohibited goods, found in any part of the vessel, if not regularly entered in the manifest, or list of stores, no pains should be spared to ascertain and report the same, before leaving the quarantine ground.

On the arrival of vessels at the lazaretto, the Custom-house requires a duplicate manifest of the cargo, stores, and anything else that may be on board, which must all be reported, but pays no duty if not landed. The principal articles are—bread, flour and meal, beef and pork, spirits, wine, beer, coffee, tea, chocolate, sugar, molasses, spices, fish, salt, cheese, candles, tobacco, cigars, snuff, paints, oil, canvas, medicine chest, arms, gunpowder, cordage, chronometers and barometers, extra anchors and chains, live stock, &c., ballast of whatever kind, fire-wood or coals.

RATES OF STEAMBOAT HIRE TO TOW VESSELS UP TO BORDEAUX.—From 200 to 250 tons:—From the lazaretto 400 fr.; Pauillac 350 fr.; Blaye 380 fr.; Larroque 260 fr.; Parque 220 fr.; Lagrange 200 fr.; Bassens 120 fr.; and Lormont 100 fr. From 350 to 500 tons:—From the lazaretto 450 fr.; Pauillac 400 fr.; Blaye 350 fr.; Larroque 320 fr.; Parque 280 fr.; Lagrange 240 fr.; Bassens 150 fr.; and Lormont 120 fr.

It is not obligatory to employ steamers; that expense can be, and is frequently avoided without losing time, especially at spring tides."

Although extensive, this basin is too shoal for a place of much resort: sandbanks block up the entrance, with the exception of two small channels, known only to the inhabitants and pilots. The breakers at the entrance may always be seen; the soundings towards them diminish gradually; and the place may be known by its fixed light and by the low level land, destitute of trees, on the north side; and the high downs appearing like little mountains on the south.

The time of high water is about the same as at the entrance of the Gironde, but rises about a foot less than at Cordouan Tower. In the road of Arcachon Basin, off the small chapel of Notre Dame d'Arcachon, the time of high water is an hour later than on the bar.

The bar of Arcachon shifts, and increases to the southward, and that so frequently that no chart of it can be depended on for any length of time. Two beacons, one of which is moveable, are erected, to lead up the channel. The only anchorage in Arcachon Basin, where large ships can anchor with safety, is between Bernet Point and the Channel du Teich; but this anchorage is difficult of access, as it is separated from Mouillo Road by a bank of fine sand, which shifts daily.

It is not the shallowness of the water which renders the entrance to this basin dangerous to ships of all sizes, but the heavy sea which frequently breaks on the bar, rendering it on many occasions quite impossible to go over. The fishermen often prefer keeping at sea for days in rough weather, than risk the bar, and are frequently obliged to run for Rochefort, or the Gironde.

On Cape Ferret, the northern side of the Basin, at 3281 yards from the entrance, is a lighthouse, which exhibits a fixed light at 167 feet above the sea, visible about 18 miles in clear weather.*

From the Basin d'Arcachon to Bayonne, the distance is about 22 leagues, the land between being low and level, excepting some little downs, covered with trees, which appear to be elevated above the general level. Along the coast there are numerous guard-houses. There is deep water all the way pretty close to the shore, but about 8 miles from Bayonne there occurs a singular break in the soundings, with very deep water from the sea nearly up to the beach. This is called the Fosse of Cape Breton, and its general direction is indicated by two beacons erected on the shore side.

FOSSE OF CAPE BRETON. The depth in the Fosse, at about $1\frac{1}{2}$ mile westward of the shore, is from 50 to 55 fathoms; at 4 miles, 85 fathoms; at 5 miles, 120 fathoms; at $6\frac{1}{2}$ miles, 174 fathoms; and in continuing to follow to the westward in the same direction, there is found a bottom of soft mud, upon which the soundings are less than in the Fosse itself. At 20 miles from the coast the depth of 180 fathoms is lost, a line of that length not reaching the bottom.

On each side of the Fosse, the depth is from 10 to 45 fathoms, on a sandy bottom, and in blowing weather, a heavy sea breaks over the sandy flat on the north side.

The surveyors have remarked that "Cape Breton Deep has been very carefully examined, and we are convinced, that if the eastern extreme of this extraordinary deep has not an anchorage as safe as seamen generally believe, it has at least an anchorage less dangerous than any other part of the coast in the environs of Bayonne.

It will be in vain for a vessel wind-bound and retained near the bar of the Adour, with heavy on-shore winds, to attempt to gain the Deep of Cape Breton by keeping at a short distance from the coast, as she cannot fail in being overwhelmed by the heavy sea which will be found upon the bank which limits this deep from the coast to the south. To gain the deep in rough weather you must be about 6 miles from the two beacons, and continue to run between the breakers on the north and south sides. It has been stated, that the bottom of the deep offers good anchorage; and also, which is more to be relied on, that in no part is good anchorage to be found. In rough weather it will be often less dangerous to run for an anchoring-place on the mud and sand bank outside Adour Bar than to seek for Cape Breton Deep by keeping near the shore, or reaching out to sea."

* A bank called the Bank of Arcachon, about 12 or 14 leagues westward of Arcachon, and upon which there are stated to be 16 to 18 fathoms, and even less water, appears on a chart of the "Neptune Oriental," of M. d'Après de Manneville, published in 1775, and from it has been copied into almost all the charts of the Bay of Biscay since published, but it is not known upon what authority it was originally inserted. It was sought for without success by the French Surveyors, and the fishermen of La Teste, reputed to be very intelligent, and who sometimes proceed to this distance, are unacquainted with it. Its existence, therefore, is very questionable, and has led us to expunge it from the chart.

BAYONNE. The bar at this place frequently changes; the sea without is very rough, and there is no entrance but at high water, and then a pilot is indispensable. The following instructions were published in 1839 by the officers of the port:

"Captains of vessels bound to Bayonne should carefully calculate the time of high water, in order to be off the bar at the proper time for entering the Adour. Their calculation should be founded on the establishment of the bar, which is at 3h. 30m.

When the sea is smooth, the bar will allow the passage over it at springs of vessels drawing 14 feet, and at neaps those of 11 feet may pass over it, provided in both cases that they do so at the time of high water. It is not always the deficiency of water on the bar of the Adour which determines the chief of the pilot station to signalize that the entrance of the river is impracticable, or at least dangerous; he is guided in his decision as much by the state of the sea on the bar, and the velocity and duration of the ebb stream. The sea is sometimes smooth outside, while it is terrific on the bar, and then it would be impossible to steer a vessel in the surf on it, while even the wind may be fair for entering.

The pilots may be sometimes deceived in their opinion respecting the state of the bar of the Adour, but whatever state it may be in, when there is nothing to prevent a vessel keeping the sea, there is no excuse for a vessel attempting to enter the river when their experience decides on the signal being made not to do so. Even success in the attempt is scarcely enough to justify it. Captains are moreover informed, that the final signal to any class of vessels not to attempt the bar is never made but after the result of a mature deliberation among the pilots along with their chief.

Great care should be taken when making the bar, to keep to the northward of it whenever the wind has previously prevailed from N.N.W. to East, and to keep to the southward of it on the contrary, when the wind has prevailed for 5 or 6 days from South to W.N.W.

Entering with Wind from N.N.W. to East.—Experience has proved that in the first of these cases, the current sets to the S.W., and that it has carried vessels down to the coast of Spain that have not taken the above precaution.

Entering with the Wind from South to W.N.W.—In the case of the wind being from the South to W.N.W., the current sets to the N.E.; vessels are then exposed to being drifted to the northward of the bar, when finding no shelter, and being unable to keep off the land in bad weather, they are obliged to run on shore between Bayonne and Vieux Boucant.

Entering with the Wind from N.N.W. to N.W. approach to the coast by the light of Biaritz.—When the wind is from N.N.W. to N.W. a vessel may run directly for the mouth of the river, and in this case, as in the preceding, it should always be remembered that the light of Biaritz is a short league to the S.W. of the bar.

When a ship bound to Bayonne meets with the wind between W.S.W. and W.N.W. on the coast of Spain, and at such a distance as precludes the hope of entering the river before dark, she should stand off and on under a press of sail, so as to counteract the effects of the currents, which run at the rate of 4 or 5 knots to the N.E., whenever the wind has been blowing some days between W.N.W. and South; she should also strive to keep an anchorage under her lee, into which she may run in the morning, in case the weather obliges her to seek refuge in it. If she be certain that the current is setting her to the N.E., as we have said, she should stand two hours to the northward, or to sea, and three hours to the southward, or in shore. The practice of the most experienced navigators has confirmed the importance of this mode of proceeding.

SIGNALS.—Signals are made for ships to enter or keep off, thus:—

Signals for Entering.—In the signals for entering, it is essentially necessary to distinguish that signifying approach from that of entering. They are made from two different stations, but with the same system of flags.

1. *Signal of Approach.*—The signal of approach summons vessels to the bar.

2. *The Signal for Entering.*—The signal of entering summons vessels across the bar, and directs them how to steer so as to pass it.

Places from which the Signals are made.—The signal of approach is made on the shore to the south of the entrance, on a mast 100 feet above the level of the sea at high water. That for entering is made at a white tower about 50 feet high, at the head of the southern quay, about 5 or 6 cables' length from the bar. The mast for the signal of approach is about $1\frac{1}{2}$ cable's length from this tower.

Ships coming to Bayonne should arrive at the distance which will enable them to

distinguish the mast for the signal of approach, in order that they may conform to the signals from it, or keeping off as hereafter stated.

Colour and Signification of the Flags.—Flags shown at the Tower. 1. Swedish flag (blue, with yellow cross) signifies that vessels under 9 feet draught are to approach. 2. Flag chequered with red and white squares—that vessels drawing 9 feet and more are to approach. 3. Dutch flag (tricoloured horizontally), that vessels of all kinds are to approach.

Vessels are distinguished by two divisions, to each of which a particular flag is assigned. Their coalition is indicated by the Dutch flag, which is addressed to all, large and small.

Ships to approach.—The division of vessels, the signal of which is made to approach, should make all possible sail to profit by the tide in entering. When about a quarter of a league from the bar, these vessels should observe whether their signal is made from the tower, and then they will obey successively the indication of the flag from this tower, as will be seen in the special article on passing the bar.

Ships to keep off.—If, after the signal has been made for ships to approach the bar, the chief pilot considers it necessary, in consequence of a change of weather, to make the signal for keeping off, he will hoist and lower the Dutch flag on the tower three times; after having hauled it down from the flagstaff, for calling the vessels in, there will then be no signal up anywhere.

When the chief pilot forbids one class of vessels only from entering, he will hoist and lower three times the flag addressed to this class, and re-hoist on the flagstaff on the sand-hill the Dutch flag for that class of vessels which he would have approach the bar.

Order not to approach so near the coast.—If the vessels summoned to the bar approach too near the coast, and the time for entering the river be not come, the signal to them will be hauled down; but as the signal for keeping off is not made at the tower, this is no denial for their entering. Vessels waiting for the time should keep a little to seaward under easy sail, until they are finally called to enter.

Examples in the use of the flags in different cases.—1. The chief pilot considers, that none but small vessels will be able to enter in the course of the tide. In this case, the Swedish flag is hoisted on the flagstaff on the beach. Small vessels may crowd on sail for the bar, where they will wait until the same flag hoisted at the tower directs them to the entrance.

2. The chief pilot considers that the state of the sea will permit only large vessels to enter. In this case, the chequered flag will be hoisted at the flagstaff on the beach; large vessels only will approach the bar, and the same flag hoisted at the tower will direct them to the entrance of the Adour.

3. Ships of both classes may enter Bayonne, as is most generally the case. The Dutch flag on the flagstaff on the beach there, calls all vessels over the bar. The chief pilot commences taking in the small ones at half tide, hoisting the Swedish flag at the tower. When there is sufficient water on the bar for the large ones, the Swedish flag is hauled down, and the Dutch one shown in its stead, which applies equally to vessels of both classes.

4. The Dutch flag having called all vessels without distinction, the chief pilot may consider it right, from motives of which he is the best judge, to warn off the large vessels, and only to admit the small ones; in this case the Dutch flag at the flagstaff on the beach is lowered, and the Swedish flag substituted for it; at the same time the chequered flag is hoisted and lowered three times at the tower, to warn off large ships. Small vessels only should remain then, and wait till the Swedish flag is hoisted to direct them over the bar.

5. The whole of the ships having been directed to enter by the Dutch flag, the sea may increase so that it becomes necessary to forbid small vessels entering, in order to admit the larger ones. The signals will be the same as in the fourth example, that is, the chequered flag is substituted at the flagstaff on the beach for the Dutch flag—at the same time, the Swedish flag will be hoisted and lowered three times at the tower flagstaff, to warn off the small vessels. Large ships should look out, and remain till the chequered flag is also hoisted at the tower, to direct them over the bar.

PASSAGE OVER THE BAR.—As soon as one of the three flags is hoisted at the tower, the ships which it summons should make all sail possible for the bar, taking care to leave room between each other, so that no one should enter the surf until the one preceding her has passed it, and has had time to pass the signal staff and anchor.

As soon as the first ship has arrived within the surf, the flag at the tower will be lowered half mast high, and hoisted again immediately; this movement will indicate that it will be to her that the signals from the tower will be next addressed; when the second ship has also passed the bar, the flag at the tower will be lowered and re-hoisted again to make signals to the third, and so on. It is recommended that captains of vessels pay the greatest attention to this signal, in order that they may not fall into serious mistakes.

Whenever the flag of the tower is inclined to the north or to the south, the vessel entering is to put her head more to the north or south than before, and continue to do so as long as the flag is so inclined. As soon as the flag is righted, the vessel is to keep on the course on which she may be at that instant, and continue so until she be signalized afresh by the same flag.*

If two vessels, one from the north and the other from the south, should offer at the same time to take the bar, as the signals to be made to them must necessarily be contrary, no signal will be made to either, in order that all fatal mistakes may be avoided. The flag of the tower will then be lowered, the two ships must haul their wind, and the signal will then be re-hoisted when they are at the entrance of the port, or at least when they are so situated as that all confusion will be avoided.

When a vessel's draught of water is required to be known, approaching the bar alone or before others, the flag of the tower will be hoisted and lowered once. If the vessel draws 9 feet and under, she will answer by hoisting and lowering her flag once; if she draws 10, by doing so twice; if 11, three times, and so on.

After the above answer, or under any other circumstances, if the chief pilot considers it necessary to delay a ship's passing the bar that may be making for it, he will hoist and lower twice the flag of the tower; and if he denies her taking it altogether, he will hoist and lower it three times. No signal appearing at the signal staff on the beach, it will be evident that this signal of denial will only apply to the vessel about or nearest to enter, for we have seen above that it is necessary to change or suppress the signal of approach, that the signal of denial made at the tower may apply to the whole divisions.

The bar being connected with the points forming the mouth of the river, and lying distinctly out to seaward, ships should carefully avoid keeping along the coast when near it. The mouth of the river should always be kept well open, without approaching the surf more than is actually necessary in crossing it.

The River Adour is subject to freshes, or a considerable increase of water, which retards the flood tide, and prevents its entrance. The current under these circumstances always runs out, as may be found by the river water being met a league and even more outside. A vessel should not then attempt to enter the river, because this current will increase the difficulty of passing the bar; nevertheless, if the wind be fresh, and entrance be not interdicted by the flagstaff on the beach, it may be attempted; but it will be necessary to make all possible sail to run over the surf on the bar, which is very dangerous; under such circumstances it is necessary to be ready to enter at least an hour and a half before high water.

Generally, in bad weather, when the sea is high on the coast, it will be necessary to take the bar with all the sail a vessel can carry; the head sails should be hoisted, and the sheets hauled flat aft. If entering before the wind, this precaution is indispensable; for if the sea broaches the vessel to, either way, it is necessary, in such a narrow passage, to have the immediate assistance of the head sails to regain the course.

ANCHORING PLACES.—In bad weather, vessels which cannot pass the bar of Bayonne, if the weather permit, should anchor in the excellent port of Passages, in Spain, where they will be certain of finding pilots and every necessary; when captains require

* **EXAMPLE 1.** Suppose that a vessel is to the N.W. of the bar, steering S.E. to enter.

If the flag of the tower be inclined to the southward, this vessel should come successively to the South, S.S.W., and even S.W.; in fact she should keep more and more to starboard, as long as the flag remains inclined to South. As soon as the flag is righted, the vessel will keep on the course she was steering at the instant; should she be steering S.S.W. she should keep so till signalized afresh.

2. When a vessel to the S.W. of the bar is steering N.E.:—

If the flag of the tower be inclined to the north, the vessel will keep more to port as long as the flag remains so inclined, and she will, as above, keep her head on the course she may be steering when the flag is righted. Other signals from the tower will be directed to her.

it, the chief pilot of the bar can send to Pasages for pilots and instructions, to take ships into Bayonne. With this precaution there is never any risk in returning to the anchorage after having left it.

To the northward of the bar of Bayonne there is not anchorage for a vessel in bad weather, not even in the Fosse of Cape Breton. The beach of this fosse, nevertheless in case of loss, is one on which vessels may run for a chance of saving their crews: unfortunately to gain this in bad weather, it is absolutely necessary to run into the fosse at its entrance, about six miles from the coast, and indicated by two beacons, and then steer up to the shore. To the northward or southward of the fosse are two long flats of sand, on which the sea breaks furiously, and which it is scarcely possible to pass. In bad weather there will be less danger in remaining at anchor outside the bar, than in either endeavouring to gain the Fosse of Cape Breton by running along the coast, or in endeavouring to work off. The anchorage is about half a league N.W. by compass from the entrance of the river in 12 to 15 fathoms—the best position to run in from, at the first favourable moment, and where the ebb makes it favourable to make sail from, in the event of the wind allowing a vessel to get away from the land.

The coast offers several places of anchorage in moderate weather to the south of the bar; the first is called La Sablière. Here the anchorage is at a mile from the shore, in 12 or 13 fathoms, fine sand or mud, with the village of Biaritz bearing E.S.E.

If there be not too much sea, vessels which cannot get into the Adour, may anchor at Socoa, a little port very safe, inside the west point of St. Jean de Luz, but they should consider first their draught of water, the tide and its direction, and above all, should keep clear of detached stones proceeding from the rubbish of the quays of St. Jean de Luz and Socoa. Vessels anchor here in 4 fathoms at low water, the bottom sand and rocks, and it is necessary to buoy the cables. The jetties of the port afford shelter from the wind, but the anchorage is very dangerous in northerly and N.E. winds.

There is also clean anchorage near Fuenterrabia, in Spain, in 5 to 10 fathoms water, on a soft and muddy bottom, with good shelter from westerly winds; but from N.W. and northerly winds this place affords no protection whatever. Navigators are especially reminded that, as soon as they get a glimpse of the shore, if they wish for a pilot, they must be careful to hoist a flag at their fore topgallant-mast head, by which they will be certain of obtaining one, according to their position, either from the port of Socoa, or from the villages of Biaritz, Guethary, to the southward of the Aar, or even from Bayonne and Cape Breton, if the sea be smooth.

Small vessels are safe at Fuenterrabia in anchoring close to Higuera Fort; it is there that the fishermen of St. Jean de Luz wait, made fast to the shore, until they can return home. Large vessels anchor at two or three cables' length south of the fort, in 8 or 10 fathoms, muddy bottom, where they are safe from winds from S.S.W. to W.N.W., but in danger with northerly ones.

It is strongly recommended to captains bound to Bayonne, particularly in winter, and with westerly winds, to make the land on the coast of Spain between Cape Machicaco and San Sebastian: that in case the weather become tempestuous, and crossing the bar of Bayonne dangerous, they may have to leeward of them the ports of San Sebastian and Pasages in Spain, or St. Jean de Luz and Socoa in France, from which ports they will be sure of obtaining pilots.

BIARITZ.—At $3\frac{1}{2}$ miles S.W. from the mouth of the Adour, is the little port and village of Biaritz; the village is nearly a mile from the sea. On Point St. Martin de Biaritz, at the distance of $2\frac{1}{2}$ miles S. 33° W. from the mouth of the Adour, is a light tower, from which a revolving light is exhibited. The flashes succeed each other every half minute, and in clear weather, are visible to an observer, elevated 33 feet above the surface of the sea, at the distance of 8 leagues; the eclipses are not total when within the distance of 12 miles.

The village of Bidart, with a small rivulet, lies $6\frac{1}{4}$ miles south-westward from the mouth of the Adour. Between this place and St. Jean de Luz, the shore consists in general of low rocks, with a few patches of sandy beach, but the inland country is very high. About $2\frac{1}{2}$ miles from Bidart towards St. Jean de Luz, and nearly half a mile off shore, is a patch of only 13 feet at low water.

ST. JEAN DE LUZ. The bay of St. Jean de Luz is situate in lat. $43^\circ 23' 45''$ N., and long. $1^\circ 39' 16''$ W., that being the position of the castle on its western point named Fort Socoa. It is not more than three-quarters of a mile in extent, and is quite open to northerly winds, which send in a very heavy sea when they prevail

with any strength. The depths average 1 to 5 and 6 fathoms, the latter being in a remarkable *fosse* or *deep*, in the centre of the bay, so that the largest vessels can be accommodated, although it is not considered prudent to remain when the wind begins to blow on to the shore. At the bottom of the bay is the outlet of the little River Nivelle, which falls into the sea between piers; on this river are the towns of St. Jean de Luz and Siboure, which are connected by a wooden bridge. The river is, we believe, inaccessible at low tide, being dry at its entrance.

The eastern point of the bay, named Saint Barbe, has a battery upon it, at which a landing place has been constructed on the rocks at the base of the point. These rocks extend out about two cables' length, and are dry at low water; shoal water also surrounds them to some distance, rendering a close approach to this side of the bay dangerous. At half a mile N.N.E. from this point there is a patch of 3 to 4 fathoms water, called Esquilletac, close outside which the depth is 8 and 9 fathoms.

The western point of the bay is also rocky. Here is situate the little harbour of Socoa, enclosed within piers, and which is protected by a fort. It is mostly dry at low tide, and, consequently, should be visited only by vessels able to bear the ground. At neap tide the depth is about $1\frac{1}{2}$ feet. With a smooth sea vessels drawing $8\frac{1}{2}$ feet can enter at high water, and if the tide be high and a strong breeze blows from West or N.W., vessels drawing 9 $\frac{1}{2}$ feet water may enter. In spring tides, the harbour dries as far out as the north jetty. With smooth water, a vessel drawing $11\frac{1}{2}$ feet may enter, and with West and N.W. winds and a high tide, a vessel drawing $12\frac{1}{2}$ feet may enter at high water.

The lighthouse on Socoa Point shows a fixed light at 115 feet above the sea, visible 10 miles.*

When bound to St. Jean de Luz the bay may be found by means of two mountains, Larrun and Batallera, the first bearing from Socoa Point nearly S. $\frac{1}{4}$ E. $5\frac{1}{2}$ miles, and the latter S.W. by W. 8 miles. Mount Larrun is lofty and sharp-pointed, and has, or had, a hermitage on its summit; yet when this mount bears S.S.E. to S.S.W., it does not so appear, but presents a level ridge from the hermitage to the S.E., which seems to be still longer when it bears to the westward of S.S.W. Many ridges appear beyond this mountain, all of which are much further up the country. Mount Batallera is high and broad, and when viewed in the direction above mentioned, appears like a crown, set round with a number of small peaks on its summit; hence the French commonly call it La Montagne Couronnée, or the Crowned Mountain. When it is seen to the westward of S.S.W. (true South), it loses the figure of a crown, and presents only three irregular peaks.

Having made the bay, steer in, cautiously avoiding the Artha Rock, a dangerous patch of $3\frac{1}{2}$ fathoms, lying in the middle of the entrance midway between Points Sainte Barbe and Socoa, with the steeple of the church of St. Jean de Luz in one with Mount Eshawre, bearing S. by E. $\frac{1}{2}$ E.; Socoa Fort, West; and the Tour de Bordagain, S.S.W. $\frac{1}{4}$ W. The usual course is, the steeple bearing S.S.E. $\frac{1}{4}$ E., which will lead between the rock and Fort Socoa; but small vessels also pass between it and the battery on Pointe Sainte Barbe, being careful, however, to give a good berth to the rocks surrounding that point. When between Socoa and the River Nivelle, anchor in 3 to 4 fathoms, on sand and rock. The marks that have been given for the northern anchor are, the church of St. Jean de Luz S.E. $\frac{1}{4}$ S.; chapel of Bordagain S.S.W. $\frac{1}{2}$ S., and the capstan on the north quay of Socoa N.W. $\frac{1}{2}$ W.; for the south-west anchor, the church of St. Jean de Luz S.E. 2° E.; chapel of Bordagain S.S.W. $\frac{1}{2}$ S., and the capstan, N.N.W. $\frac{1}{2}$ W.

* Some years since the following signals were made at this port, and are added in the belief that they may still be shown.

"A fire on the mountain, west of Socoa, is a signal for vessels to keep at sea, the entrance of the port not being practicable. A flag hoisted on the same mountain directs vessels in sight not to attempt to enter till half flood. As soon as the red flag is lowered and a tri-coloured flag shown at the same place, vessels may make for the land, taking particular care to observe the signals of this flag. A vessel should alter her course to port or starboard according as the flag may be inclined, and keep on that course which she may be steering when the flag is righted.

When the flag on the mountain disappears, the vessel should look out for a similar flag on the north jetty, and follow the signals from it. This flag will lead vessels to the anchorage, which a vessel may steer for as soon as the flag is lowered, and not before. Moor with two anchors and a hawser to steady her—she should first drop her best bower for the northern anchor, and having done so, run S.W. and let go her small bower.

The signals from these flags are very seldom used, vessels generally entering with a pilot."

It is recommended not to attempt to enter the bay of St. Jean de Luz before the time of half flood, although the pilot boats go out at quarter flood, and even at low water neap tides. Socoa is the southernmost harbour on the west coast of France. Fuenterrabia, the next port, distant $4\frac{1}{2}$ miles from it, being considered to belong to Spain.

ROCHES BONNES. This is one of the most dangerous shoals on the west coast of France. It lies 42 miles nearly N.W. $\frac{3}{4}$ W. from Chassiron Lighthouse, on the north-western extremity of Oleron Island, and S.W. by S. 30 miles from Ile d'Yeu, and consists of a rocky shoal of about 8 miles in length, and 2 in breadth, extending in a N.W. by N. and S.E. by S. direction. Upon it there are several heads of rocks, with only 10 feet over them at low water; the sea also breaks heavily upon them, especially in blowing weather. This rocky shoal is situated between the parallels of $46^{\circ} 10'$ and $46^{\circ} 18' N.$, and the rock at the south-east extremity of the bank, upon which there are only 18 feet at low tide, lies in lat. $46^{\circ} 11' 25''$, and long. $2^{\circ} 25' W.$, according to the determination of M. Beaumonts Beaupré in 1825.

Considerable caution is necessary when navigating in the vicinity of this rocky bank, there being deep water close to it all round. A little to the eastward of it are 25 to 30 fathoms, red sand and shells, and to the northward and westward the soundings deepen quickly to 50 and 60 fathoms, bottom of soft ground.

The rocky bottom, to the north of the Roches Bonnes, is called by the fishermen of the neighbouring coast the Banche Verte; it is not dangerous, neither is there anything to cause anxiety. Westward of this rocky bottom, the ground consists of soft mud.

At the Roches Bonnes it is high water on the days of full and change, at about $5\frac{1}{2} h.$, the tide rising 10 to 14 feet. In the neighbourhood of the rocks, the tide runs with considerable strength, the flood from the S.S.W., and the ebb from the N.N.E., at nearly 2 miles an hour.

NORTH COAST OF SPAIN.

THE most easterly harbour on the north coast of Spain, and the first in our order of description, following the shore from east to west, is Fuenterrabia, a small shallow inlet about $4\frac{1}{2}$ miles from Socoa. The coast between is clifly and fronted by rocks, rendering a wide berth at all times desirable. Fuenterrabia will be recognised at once by the high land immediately westward of it, which terminates in Cape Higueras; this high land gradually increases in altitude until at about 4 miles from the cape it forms a lofty mountain named Jaisquival, situate close to the shore, and hence a remarkable object to vessels approaching the port from seaward.* The mountains Larrun and Batallera, 6 miles inland, are also good leading marks for the harbour.

FUENTERRABIA. Fuenterrabia Bay is very shallow; hence only capable of admitting small coasters, which load timber and iron ore for Ferrol. It forms the outlet of the River Bidasoa, a narrow winding stream, whose bed is nearly dry at low tide, there being at that period seldom more than one foot of water. This river forms the boundary between France and Spain, and at its mouth are two villages, Fuenterrabia and Hendaya; the former with its fortress belonging to Spain, and the latter to France. At $2\frac{1}{2}$ miles higher up the river, on the Spanish side, is Irun, and near it, in the middle of the stream, a small island named the Isle of Pheasants, celebrated for the conferences held on it by the kings and ministers of both countries. It is high water here on the days of full and change of the moon at 3h.; springs rise 12 feet and neaps 6 feet.

Cape Higueras is of moderate height, and has a rocky islet off it named Amuck, separated from the shore by a passage fit only for the smallest coasters; on the cape is a stone tower 20 feet high, which shows a fixed light of trifling power at 285 feet above the sea, visible in clear weather about 7 miles.† Point Arretas or Santa Ana, the east point of the bay, has close to its western side two round rocks resembling

* Jaisquival, or *Shoulder of the Mountain*, in allusion to its being the last of the Pyrenees towards the seacoast.

† This light is said to be shown only when the fishermen are at sea, and not when they are in the bay; hence it should not, perhaps, be regarded as a coast light.

towers, and others of smaller size lie off its north and north-east sides; these are connected to each other and to the shore by a sunken ledge. The outermost of the rocks immediately off the point is La Roca Negra (the Black Rock), situate $\frac{2}{3}$ of a mile from it in a north-easterly direction; it is 16 feet above the water at low tide, and has soundings of 5 to 2 fathoms close outside it.

When approaching Fuenterrabia from the eastward some care is required not to get too near Point Santa Ana, on account of a dangerous reef of rocks, named Briquets, situate nearly $\frac{3}{4}$ of a mile N.N.E. from the point. This reef has an extent of half a mile in a N.W. by W. and S.E. by E. direction, is partially above the surface at low water, and has soundings of $2\frac{1}{2}$ to 7 fathoms close to it all round, which rapidly increase seaward, a depth of 17 fathoms being found at less than $\frac{3}{4}$ of a mile from it; between it and La Roca Negra the soundings are $2\frac{1}{2}$ to 7 fathoms, but no vessel should attempt this passage, it being always safer to pass outside the reef. If Amuck Island off Cape Higuerá be brought to bear W. by N., it will lead northward of the reef; or, Point Santa Ana South will carry a vessel westward of it. Another mark to carry you westward of it is Fuenterrabia Church S.W. $\frac{3}{4}$ W.

If the wind commences to blow hard from the south-westward, vessels of considerable tonnage may obtain shelter under Cape Higuerá, anchoring in 6 to 8 fathoms sand at two or three cables' length south-eastward from Higuerá Fort. The coast of the cape, especially that immediately northward of the fort, should have a good berth, as rocks run out from it about a cable's length.

At about 4 miles from Cape Higuerá is a projecting point named Turrulla, situate at the foot of Mount Jaisquival, and but slightly breaking the straight uniformity of coast; between, the shore consists of rock, off which are numerous detached masses, having in general deep water at a short distance from them. In this extent of 4 miles there is one small bay with a beach. Hence the distance to Port Pasages is $3\frac{1}{2}$ miles along a very bold cliffy land.

PASAGES. This port consists of a narrow inlet formed by high steep shores, from each of which, at the mouth, two low rocky points run out in opposite directions, thus narrowing the entrance. The point on the east side is called the Great Arando, and that on the west side the Little Arando; and both consist of the extremities of rocks above water, the one larger than the other. These points bear from each other nearly W. by N. and E. by S. distant 92 fathoms, being the whole breadth of the entrance of the harbour. They are very clear, without any hidden danger, excepting just at high water, when a small part of each is covered. At one boat's length from them are 7 fathoms water. Near the western side of the entrance, on Cape La Plata, there is a fixed light at 486 feet above the sea, visible about 14 miles. The position of this light is $43^{\circ} 20' 21''$ N., and $1^{\circ} 56' 33''$ W.

A little outside the harbour are two rocky patches, one on each side of the entrance. That on the east side called the East Bank, lies at the distance of 50 fathoms from the shore, and about twice that distance from the point of the Great Arando; this shoal extends 41 fathoms along the shore, and has on it but 6 feet water, although between it and the land the depth varies from 4 to 7 fathoms, and close to its northern side are 11 and 12 fathoms: to go clear of it, keep about a cable's length from the shore.

The West Bank lies a little to the north of Little Arando Point, and consists of a sharp-pointed rock with but $2\frac{1}{2}$ fathoms on it; but close to it the depth is 5 to 6 fathoms, and at a little distance all round are 8 to 10 fathoms, with a corresponding depth between it and the shore. The mark for this shoal is, the hermitage of Santa Ana hidden by the spot on which the iron cross on Point Cruces stands, and the Pilon of La Banca (a rock on the land, about 2 cables' length from the shore, and N.E. from another resembling a ruined tower) in one with the westernmost part of La Plata, which is a precipice with a very smooth surface, on the north face of the hill, at the Point of Little Arando. The sea breaks on these banks when there is any swell. The harbour is now readily found by strangers coming from the westward, by the lighthouse on Cape La Plata; and in coming from the eastward, it will be known by the hill of Jaisquival, at the western slope of which is the entrance to the harbour. Vessels from the westward may also find the entrance, by first making the lighthouse of San Sebastian and the castle of La Mota, which, standing on high ground, are visible at a great distance.

Within the points forming the harbour, the shores are rugged and craggy; that on the east is bordered with rocks, which in some places extend 15 fathoms from the

land. On the opposite side Point Cruces projects, at low water, about 6 fathoms from a high and very steep hill, forming at the bottom a small level spot, on which people may land, but entirely covered at high water. It is called Cruces, from an iron cross fixed on the side of the hill, about one-fourth the distance up from the base to the summit.

The castle of Santa Ysabel, on the eastern side, is the first building seen within the harbour. The tower of San Sebastian, above it, on the opposite side, is round and high; it seems standing in the water, but is connected to a small battery on the land. The space between the castle and this tower is the only anchorage for vessels drawing more than 10 feet water.

The hermitage of Santa Ana is the second building seen on entering the harbour. It stands on the eastern side, at a quarter of a mile above the castle of Santa Ysabel, and serves as a mark for avoiding the western shoal that lies without the entrance.

In entering the harbour, when at the distance of 2 or 3 cables' length from the mouth of it, bring the hermitage of Santa Ana, with the rocks at its base open with the iron cross on Point Cruces; or bring the extremity of Point Cruces in a line with the salient angle on the western side of Santa Ysabel Castle; then stand on with these marks, in mid channel, until you are half way between the little Point of Arando and Point Cruces. From this point stand more to the eastward, in order to keep clear of the rocky shoal about that point, until the tower of San Sebastian appears between Santa Ysabel Castle and the point. Now steer for the tower, which will lead through in the deepest water to Point Cruces, whence you turn towards the castle of Santa Ysabel. Having passed the castle of Santa Ysabel, you may bring to, in $3\frac{1}{2}$ or 4 fathoms, with an anchor from the stern; then make fast your cables to the shore on both sides, in rocks bored through for the purpose. At high water there will be room to turn the vessel round, and to moor with four good cables out, N.E. and S.W., and N.W. and S.E., especially in winter, on account of the strong run of the sea and the whirling gusts of wind, which come down through the breaks in the hills into and about the harbour.

The time of high water in the port on the days of full and change of the moon is 3h. Common spring tides rise 12 feet, neap tides 8 to 10 feet; equinoctial spring tides, 15 feet.

General Remarks.—1. A large vessel may take this harbour with the wind from W.N.W. by north to E.N.E., when the tide is growing, and the sea not very rough. Other winds are apt to take the vessel a-head, in the windings in the harbour, which is too narrow to admit of tacking; but when these winds are very easy, vessels can anchor at the entrance, and may be warped in, or towed by the country boats. The most adverse wind is from the West; for as, from the mouth as far as Point Cruces, it draws away a little to the N.W., it promises an easy entrance; but, from this point inwards, it comes away from the S.W. squally and uneven, so as neither to allow a vessel to go in, nor to turn back to the mouth, nor even to come to anchor, because this is the narrowest part of the harbour, so that such circumstances render an advance dangerous.

2. The tide ought to be growing, for the wind commonly dies away between Point Cruces and Santa Ysabel Castle; but the tide, added to the ship's way, soon carries her beyond that spot; and with regard to the steerage, it is taken for granted that she has boats, both a-head and a-stern, to assist in case of danger. Should she touch the ground anywhere, the tide may probably lift her off.

3. If the sea without be not moderate, the water is so rough within the harbour as to disturb the steering of any vessel, and she may in a few seconds be on shore.

4. At this and the other harbours hereabout, the native seamen alleviate the dangers considerably, being ready with their boats in piloting and towing vessels into them. Those of Port Pasages and the neighbouring harbour of San Sebastian have peculiar encouragement, by a regulation, which ordains that the boat which first reaches the vessel must be employed, and each man in her paid 12 reals of Vellon, or 2s. 6d. sterling. The other boats may either be employed or not, at the option of the master, and each man employed can demand only 9 reals, or 1s. 10½d. Both men and boats are well qualified for towing, warping, mooring, or keeping a vessel of any size in her proper course.

5. In thick or hazy weather, when the people in the vigias, or look-outs, on land are unable to discover vessels, on firing a few shots the boats stand off to sea, but not beyond soundings. In stormy weather, when they cannot venture off, the people repair

to the mouth of the harbour, to make fast cables on shore, and do everything else in their power to assist vessels approaching.

At the distance of 5 leagues due North from Port Pasages, the depth varies from 100 to 120 fathoms, and at one league from 25 to 30 fathoms, in some places rock and in others sand. The prevailing winds hereabout are, in winter, from the S.W. and N.W. quarters, in general with rain. In summer, gales from East and N.E. with clear open weather, are frequent. The currents generally follow the direction of the winds.

If a vessel bound for Pasages find the wind blowing hard from the westward, the safest way will be not to attempt the harbour, but run, if possible, into that of San Sebastian, and there remain until the wind or weather changes; or, if more to the westward, she may be sheltered on the east side of the Atalaya, or Look-out Point of Guetaria, $7\frac{1}{2}$ miles from San Sebastian, the anchorage there being safe and easily taken.

SAN SEBASTIAN. At about $1\frac{1}{2}$ mile westward from Port Pasages is a high and steep point named Atalaya, having off it at about 2 cables' length a shoal, over which the sea breaks heavily when there is any swell. In case of necessity vessels may run between the shoal and the land. Hence to the most northern part of Mount Orgullo the distance is $1\frac{1}{2}$ mile; between is a small bay called Surriola where is a flat beach over which falls a little river called Urumea. Mount Orgullo forms the eastern side of the harbour of San Sebastian; it is of moderate elevation, and has on its summit the large castle of La Mota. Within the hill, on the south-east, is the fortified town of San Sebastian, which is the capital of the province of Guipuzcoa, and the seat of its commerce.

The lighthouse on Mount Igueldo, on the west side of the entrance, shows a fixed light flashing every two minutes at 431 feet above the sea, visible 15 miles. The tower is white and 30 feet high.

In the middle of the bay is the small island of Santa Clara, upon which is a chapel dedicated to this saint. The island is of moderate height, although much lower than the hills on either side the bay, and is somewhat rugged. The passage between it and Mount Igueldo on the west, is almost closed up by ledges of rocks, leaving only one narrow channel for small craft; but that between the island and Mount Orgullo, on the east side, is clean, and has a depth in the middle of from 9 to 10 fathoms, which decreases to 2 fathoms near the sides.

Without the harbour, at the distance of about a quarter of a mile from the island of Santa Clara, is a rocky shoal, called La Banchar, which is about the same size as the island, and runs parallel to it. The soundings on it are from $1\frac{3}{4}$ to 6 fathoms, with 7 to 11 fathoms all round, and the sea breaks on it when there is a swell.

To enter the bay, keeping clear of La Banchar, bring St. Bartholomew's Church (in the bottom of the bay, on a rising ground near the shore, and the largest building in that quarter), in a line with Mount Ordaburo (which stands inland, having two peaks on its summit). By following this direction, until the town of Guetaria is hidden by the northernmost part of Mount Igueldo, you will be within the shoal, and may make for the anchorage in the bay that seems most convenient.

The common anchorage for large vessels is about a cable's length to the south-eastward of Santa Clara Island, but it will admit only two at a time, in from $4\frac{1}{2}$ to 5 fathoms, mooring with 4 anchors N.E. and S.W., and N.W. and S.E., as, from the small extent of deep water, there is not room for them to swing round. All the cables and anchors should be good, because those to the N.E. and N.W. have to resist the heavy sea setting in when the wind is N.W., and those to the S.E. and S.W. have to resist the efflux of water from the bay. Cables may also be made fast to the rocks of the island, taking care to serve them well to the length of 30 fathoms, as the bottom is rocky close around the island. At a greater distance the ground is clear and good. Small vessels may come to on the south side of the island, in $2\frac{1}{2}$ and 3 fathoms.

For the protection of vessels trading with the town, there are piers, within which vessels of 300 tons may enter at high water, but when the tide is out they lie dry on a hard bottom. In a gale from the N.W. it is very hazardous to run for the piers, for the vessel must come to opposite the outer one, perfectly exposed, and at high water precisely, when some of the shore boats must be employed to convey a cable to the ship, by which the people on the pier heave her within the heads.

From Mount Igueldo to the River Orrio, an extent of $5\frac{3}{4}$ miles, the coast is high and precipitous, and contains two small projecting points, having off them some rocks, with

ground which appears of a whitish colour, hence the second point is called *Tierra Blanca*; the latter is at the foot of *Mount Agudo*, which serves as a mark for the coast. The mouth of the *River Orrio* lies between high land on each side, and on its bar is a depth of only one foot at low water; the river, therefore, is not frequented by vessels larger than fishing-boats.

From *Orrio* westward the coast continues high and steep to *Point Mairruarri*, a distance of about one mile. An islet of the same name off this point, is of moderate height, and surrounded with reefs. Hence follows the sandy cove of *Saraus*, a mile in breadth, the west point of which, called *Itegui*, is high and steep.

About $7\frac{1}{2}$ miles westward from the lighthouse of *San Sebastian*, is the *Atalaya*, or *Look-out Point*, of *Guetaria*. It is the north point of the island of *San Antonio*, which has a chapel on its top. The island is rather elevated, and joined to the main by a pier, so as to afford a safe harbour for small vessels; but those of a larger class may anchor securely on the east side of the pier in 8 to 10 fathoms, being well protected from all winds from the S.W. to N.N.W., but is entirely open to other winds. This road may be readily known, when near the land, by the island; but at a distance the island is not distinguishable from the mainland. In a state of uncertainty, if the flat shore of *Saraus* be made, this will be a certain guide.

Ships bound to *Port Pasages*, with the wind hard at west, will do well to come to in this road, as the anchorage is safe and easily taken. Its only disadvantage is, that should the wind come round to North, which, however, seldom blows on this coast, it is generally very strong, and vessels must then do the best to get off shore that circumstances will allow.

About $1\frac{1}{4}$ mile from the *Atalaya* of *Guetaria* is the *Sumaya*, a small stream, having at its mouth a bar, which renders entering difficult; it is used only by fishing-boats, or the little vessels that go to load with iron brought from the interior. On the west point of the river, which is high, broad, and steep, with rocks extending about a cable's length from its base, is a small house, used as a watch-tower.

At the distance of 4 miles from the *River Sumaya*, is the eastern point of the *River Deba*, which is high and precipitous, with some rocks at its base, and a large hermitage at its summit, dedicated to *Santa Catalina*. The coast throughout this extent is all high and steep, and the shore not very clean. At $1\frac{1}{4}$ mile to the eastward of this river, is the point of *Piedra Blanca*, so called from the white gullies in it, which appear very conspicuous at the distance of 6 or 7 leagues, and point out the situation of the river.

The *River Deba* is large, with a depth of 5 to 6 fathoms, excepting at the mouth, where there is a shallow and dangerous bar: but it is visited, during the summer, by some small vessels, for timber and wool. Hence the coast continues high and steep, to the little harbour of *Montrico*, which has two piers. The points of the cove are closely surrounded with rocks, near to which is a depth of 7 fathoms. Two miles to the westward of *Montrico* is the *River Ondarrua*, a place of no consequence but to small fishing vessels; the entrance of the river is dry at low tide.

San Nicolas Island, at $3\frac{1}{4}$ miles from the *River Ondarrua*, is joined to the mainland by a neck of sand, uncovered at low water. It is an islet of middling height, with a hermitage and battery on it; within it is the little haven of *Lequeitio*, which admits fishing and other small vessels. A little more than a mile from this is the hermitage of *Santa Catalina*, with a watch-tower on a projecting point of moderate elevation, perpendicular towards the sea, and of a black colour, the singularity of which marks this part of the coast, as well as the Height of *Lequeitio*, which stands at the distance of a mile from the hermitage; this height or hill is lofty and irregular, and its summit is crowned with a small flat peak.

At rather more than a mile from *Santa Catalina Point* is *Hea Point*, which is low and rocky, with some large rocks about it, but a little further on, the shore rises to a considerable height, and forms a bay rocky all over. *Cape Ogouno*, which is high, of a red colour, and perpendicular over the sea, is $5\frac{1}{2}$ miles from the same point; this cape is an excellent landmark, there being no other like it on the coast. A large island named *Isaro*, surrounded with shoals and rocks, lies 2 miles from *Cape Ogouno*, and there is a passage between it and the main, of 12 fathoms; within this island is the mouth of the *River Monduca*, which is impeded by a shallow bar, but inside it is deep.

At about $1\frac{1}{2}$ mile from *Isaro Island* there is a small creek, named *Bermeo*, which is only a cable's length wide at the entrance, and has a depth a little way in of 4 and

4½ fathoms. It is quite open to the E.N.E. The town is on the north-west side, and possesses a pier for the accommodation of fishing and coasting vessels, of which many belong to the neighbourhood; the greatest part of the harbour is dry at low water. The way in is by the south-east point, as on the north-west side are several shoals.

At three-quarters of a mile northward from the town of Bermeo is Point Uguerray, which is steep over the sea, and has a battery upon it. In this space there are several rocks lying near the shore.

CAPE MACHICACO is 3½ miles from the island of Isaro; it is not very high, but steep, and has a number of high rocks about its base. Within the point, the ground gradually rises at an inclination of about 20°, forming at last a high, broad, and wooded hill. At about half way up the slope is a sudden break in the face of the hill, which is visible in every direction between W.S.W. southward to E.S.E. (by compass), and serves to distinguish the cape from other mountains in the neighbourhood; besides which there is now a building on the cape exhibiting a fixed light, flashing every 4 minutes, at 260 feet above the level of high water, and visible in clear weather at the distance of 19 miles. Its latitude is 43° 28' N., and long. 2° 49' 26" W.*

At two-thirds of a mile west of Cape Machicaco is Aquech Islet, which is high, broad, and steep, but clear to seaward, and at 1½ mile from the same cape, is another islet joined to the land by a bridge, and having a chapel on it; behind this latter islet the land is high and rugged.

At 6½ miles westward from Cape Machicaco is a high, broad, and precipitous headland named Cape Villano. Between the capes, there is a bay surrounded with high grounds, and two small spots of beach, with two little fishing villages, the first called Baquio and the second Armenta; there is also, about midway between the headlands, a sharp-pointed hill, called the Alto of Plensia, which is the most elevated ground in this tract, and serves to point out the situation of the capes.

About half a mile westward from Cape Villano, is a small low islet close to the shore; the point of land near the south-west side of this islet is less elevated than the coast to the eastward, but equally steep and precipitous. Nearly a mile southward from this point, is the entrance of the River Plensia, which opens to the north-westward, and is formed by two high rugged points of a reddish colour, but impeded by a shallow changeable bar. To this river belong a considerable number of coasting vessels, which are employed in transporting iron ore for the different forges in the country, and timber for the Arsenal and Dockyard at Ferrol. The town is on the northern bank of the river, at the distance of a mile from the entrance.

BILBAO. At 5½ miles W.S.W. from the island of Cape Villano, lies Point Galea, upon which there is a fixed light at 380 feet above the sea, visible 20 miles in clear weather. Between this point and Plensia the shore is moderately high and even, but steep over the sea; it is of a whitish colour, appears at a distance like a tract of sand-hills, and is fronted by rocks.

The entrance to the bay of Bilbao lies between Point Galea and Point Luzuero, its western boundary, which are distant from each other about 3 miles in a W. by N. and E. by S. direction. When coming from the eastward, the bay may be recognised by

* We here remark that between the Fosse of Cape Breton and Cape Machicaco, there are generally found at 2 miles from the coast, soundings of soft mud, mixed with fine sand. This muddy bottom is limited toward the East by the edge of a great flat of irregular rocks, situated at the entrance of the bay of St. Jean de Luz, and by the small flat of isolated rocks before the River Adour, both of which were examined in 1826 by the surveying party acting under the orders of M. Beaupré.

The bottom, between Cape Michicaco and Cape Ortegá, offers nothing remarkable to favour an approach. The bottom is frequently lost in 180 fathoms, at a distance not much beyond 12 miles from the coast, but as you are then in sight of land, it is not of so much importance. Here the position of a ship may be determined by taking bearings of the land, which, in ordinary weather, can be seen at the distance of 15 leagues. Upon the chart of the Bay of Biscay, we have added some views of the principal headlands of the coast, which will doubtless prove valuable.

The Spanish pilots, and many fishermen, have reported, that upon several parts of the coast of Spain, after having lost soundings with a line of 180 and 230 fathoms, banks are met with of 70 and 90 fathoms; but the French surveyors were not able to verify the assertion.

Cape Ortegá, the northernmost point of the coast of Spain, has soundings round it to a considerable distance, as the bottom is not lost with a line of 180 fathoms, till at about 25 miles from the land. The quality of the bottom in the neighbourhood of the cape, and hence to Cape Finisterre, is almost always of muddy sand, or sand and mud, the rocky bottom extending only 2 or 3 miles from the cape.

the white appearance of Galea Point, by the lighthouse upon it, and by the wide opening of the bay, which marks, together with the sharp-pointed hills of Luzuero, Serantes, and the south peak, will also point it out to the mariner from the westward. The red point of San Ignacio, half a mile within Galea Point, has several rocks lying off it, one of which appears like a buoy when seen at low water, and is called the Pilot's Rock; between this and the point and battery of Begona, further on, is the town of Argota, where is a small pier.

The entrance to the River Nervion is formed by two piers, which are in reality a prolongation of the embankments of the river which are continued as far as the town of Bilbao. On the west side, at a quarter of a mile within the piers, is the town of Portugalete, off which is the best anchorage in the harbour; old guns are fixed in the ground on the quays, to which the cables may be fastened. On the outer bar (which is changeable) off Santurce, there is a depth of about 4 feet at low water. The chief and other pilots employed on the bar and river reside at Santurce. In winter a heavy sea sets into the bay, which at times renders it impossible for the pilots to go off.

If approaching when the tide does not serve for taking the bar, with an unfavourable wind, you may come-to in the bay, in 16 fathoms, with sandy bottom, at about midway between the outer points of Luzuero and Galea, bringing the latter in a line with Cape Villano. There is here sufficient room, in case a heavy on-shore wind should bring home the anchor or part the cable, to let go a second anchor, before the ship can get ashore. In summer you may lie nearer to the land, in from 10 to 12 fathoms, all the bottom being of sand.

The following instructions for entering the port were given by Mr. Henry Thompson, of H.M. ship "Saracen," in 1836:—

"It is high water on the bar at full and change at 3h. P.M., and at Bilbao at 3h. 20m. P.M. Spring tides rise 13 feet, and the variation of the compass, in July, 1836, was 23° W.

Vessels bound to this river, in fine weather, will generally find pilots a short distance from the land, as many of the fishermen living in the vicinity of the river are pilots.

In standing towards the bar at the entrance of the river, the chief pilot will always be found in attendance, in a boat, which may be known from others by having a red flag flying, which boat is to be kept in a line with the western pier-head, as the leading mark over the bar. The bar is sounded daily by this pilot (when the wind and weather will permit), otherwise it cannot be depended upon, in consequence of the sands of which it is composed frequently shifting. But, in bad weather, when boats cannot go out, on the appearance of any vessel standing into the bay, if the bar is considered passable, a red flag is hoisted on a point of land about half a mile outside Santurce, a small village on the western extremity of the bar; and, in this case, the chief pilot stations himself on the western pier-head, with a red flag in his hand, with which he guides vessels across the bar, waving it to starboard or port as necessary.*

If the bar be not passable, a white flag is hoisted on the same point of land, and kept flying during the time any vessel is seen in the offing. In this case, I would recommend, during the winter months, vessels to proceed to Santona, a port about 17 miles to the westward, and there await moderate weather. The state of the bar is generally known by the pilots of that port, and the anchorage there is also good.

During the summer months, I would recommend vessels to stand off and on, keeping outside the bay, and well to the westward, to avoid being driven on Cape Villano by the north-west swell, which is a common occurrence when the winds fail. Anchoring in the bay is not recommended under any circumstances, except for a few hours during the day, to await a tide, as the riding is very heavy: and should a vessel part her cables, it would be almost impossible to work out against the heavy north-west swell.

It is impossible to lay down marks for taking vessels up and down the river, its navigation being very intricate, owing to the irregularity of the shoals.

Between Portugalete and Olaveaga, there are several muddy flats, stretching out from the sides of the river, with only 8 feet at the deepest part at low water; and

* On the flag being waved to starboard, it is meant that the vessel's head is to go starboard, of course, the helm to port.

between Olaveaga and Bilbao are similar shoals, extending the whole way across the river, which are barely covered at low water, spring tides. The river is navigable at high water, spring tides, for vessels drawing 9 feet water, as far as Bilbao; those drawing 12 feet to Olaveaga; those drawing 15 feet may lie at Zorroza, San Nicolas, and Portugalete.

The general mark for crossing the bar, for boats and small vessels (say those drawing 8 feet), is to bring the churches of Portugalete and Cestaos in one, standing on with this mark until having arrived half-way between the point of land called El Campello (which is the one on which the red and white flags are hoisted to show the state of the bar) and the village of Santurce; the western pier at the entrance of the river will then be end on, which is the leading mark over the bar; and when abreast of the house called Casa de Campo Grande, which stands alone, about one-third of the distance from Santurce towards the pier-head, haul over for the middle of the river, to avoid a ridge of loose stones, extending a little more than a cable's length from, and in a line with, the western pier-head, with only 4 feet over it at low water. There is a similar ridge stretching out about two cables' length from the eastern pier-head, dry at low water, which will also be avoided by following the above directions. Steer midway between the piers until abreast of Portugalete, at which place there is good anchorage in the middle of the river, as far up as the bridge, called Las Siete Ojos, or The Seven Eyes, it having 7 arches.

After crossing the bar and being between the piers, which form the entrance of the river (if boats have not been able to go out), a pilot will be found in readiness to go on board to bring the vessel to an anchor, or, if the wind and tide permit, to proceed direct up the river. Should the wind prove otherwise, bullocks are provided by the pilots for the purpose of towing vessels up and down the river, there being a good stone pier on the left-hand side all the way to Bilbao.

The largest vessels the pilots will take over the bar are those not drawing more than 15 feet water; but, in this case, it must be with a smooth sea on the bar, and a commanding breeze, at the top of high water, spring tides. The pilots generally dislike taking in such large vessels, as the bar is very dangerous, and cannot always be depended on.

I understood from the pilots, as well as from my own observations during two years in the river, that although the bar frequently shifts, in a short time it returns to the position as expressed in the chart, and averages that position 9 months in the year. A north-westerly gale has more effect in shifting its position, and often turns the channel in the shape of the letter S; at which time it is very dangerous, and has then generally less water on it. I have seen it at extraordinary spring tides left nearly dry, so that people walked across (there being at that time about one foot of water); but the above-mentioned marks will always take boats and small vessels across at high water."

The village of Santurce, on the west side of the River Nervion, in Bilbao Bay, is small, but has a pier and harbour fit for small craft; hence to Point Sevallo the distance is $3\frac{1}{2}$ miles, in a N.W. by N. direction, Mount Serantes lying between, and the land in general being high and rocky. At about half a mile further on in the same direction, are the point and sharp-topped hill of Luzuero.

From Point Luzuero on the south-west the coast falls in and forms Somorrostro Bay, where is a river which is fit only for small vessels, and used chiefly by those that take in the iron ore obtained from the numerous mines in the neighbourhood. In going into this bay you must keep under the western shore, where are a battery and the chapel of Na. Sra. del Socorro. On the eastern side is an extensive low shore, visible 5 or 6 leagues off, and serving to distinguish the bay.

From Somorrostro River the coast runs high and bold, a distance of about $2\frac{1}{2}$ miles, to the village and small bay of Onton, which is so very full of rocks as not to be used even by the coasters. From Onton the coast continues high and steep 3 miles to the island of Santa Ana, near Castro Urdiales. In this space lies the town of Megono, with its shallow bay; the latter too shoal to admit anything but the small craft which load with iron ore.

CASTRO URDIALES. This bay is formed by Santa Ana Island and Point Cotoilino, a projection of coast about $\frac{1}{3}$ of a mile south-eastward from the islet. It is not very deep, being only a slight indentation of the land, but has soundings averaging 6 and 7 fathoms, which decrease to 4 and $3\frac{1}{2}$ fathoms before the town. It is quite exposed to the eastward, and affords no protection whatever from the heavy seas sent in by easterly or north-

easterly gales. As some guide to vessels frequenting the port, a fixed light, flashing red every 3 minutes, is shown from the south-east tower of Santa Ana Castle at 131 feet above the sea, visible 7 miles.*

Santa Ana Island is connected to the main by a bridge, and has on it a hermitage visible at a considerable distance. The town of Castro extends from the point to which the island is joined towards the south-west, and from the same point a pier runs southerly, which, with another beginning at the town, leaving only a small channel between them, forms a shelter for coasters. At low water, vessels lie dry, excepting towards the middle of the north pier and the entrance, where small craft remain afloat at low water of even spring tides.

Vessels may anchor in Castro Bay, south-east from the pier, in 7 to 8 fathoms, sand and mud, with a cable made fast on Santa Ana Island; but this can be done only in fine weather, or when waiting for a tide, and in doing it they must give a good berth to the point of Santa Ana, off which rocks extend in an easterly direction about one-third of a cable's length. In the town there is a good depôt of cables, anchors, &c., from which vessels may be supplied.

A short distance from Santa Ana Island, is a small islet close to the shore named Conejos; and, at about two-thirds of a mile from Santa Ana Point, is Point Rabanal, which is very low, but steep over the water, and has a watch-tower on its summit, a little behind the shore. Between these spots is a rocky bay of low land, with a number of large rocks in it, some under water, running in about half a mile; on the western side of the bay is a small place called Urdiales. This bay affords no shelter, besides which the greater part of the bottom consists of stone and rock.

At $1\frac{1}{2}$ mile from Point Rabanal is a small island called Insua, which is almost constantly washed over by the sea. Behind the island is a headland of the same name, and between is a passage of sufficient depth for small craft. All this part of the coast is rocky, low, and even.

From Insua Island the shore runs westward $1\frac{3}{4}$ mile to Point Islares, a low rocky projection, having two large rocks close to it; this forms the south point of the bay of Orinon. Between these two points the shore forms a low rocky bight of no use, with the places named Sandigo and Islares. At this point ends the tract called the Mountain of Serredo, which commences at Castro; but although it is high land, it is not much noticed at sea, being confounded with much higher mountains in the neighbourhood.

At a little more than 3 miles from Point Rabanal, is Sonavia Point, which is in general even, but higher at the extremity than back from the sea, so that at a distance it looks like an island. This is the north point of the bay of Orinon, which is $1\frac{1}{4}$ mile in depth, and has a river at the bottom. At the entrance is a sandy bar, and it is used only by small coasters which take in iron ore.

From Point Sonavia rises up a high mountain called Candina, which is flat on the summit, and covered with a number of green spots. These, with the white rocks and cliffs of which it consists, present an agreeable view in all directions, and afford an excellent mark for recognising the coast. Hence the shore runs bold with two small headlands, the land decreasing in height towards Point Rastrillar, or the Corner, as it is called, of Laredo; this point is almost W.N.W. $3\frac{1}{2}$ miles from Sonavia Point.

SANTONA. The northern part of this harbour is formed by a high and steep hill. The opposite point, named Rastrillar, appears high, broad, and uneven, and with a black colour, and has some large rocks under it, besides shoals on the western and southern sides.

A bank, called the Doncel, lies at about one-third over from the Hill of Santana, and may be considered as the bar; it has $1\frac{1}{2}$ to 3 fathoms water upon it at low tide. Westward of this, at the mouth of the harbour, is a sandbank, called El Pittoro, which extends westwardly about $3\frac{1}{2}$ cables' length, and has its central part nearly dry at low water. Between this bank and the hill the channel into the harbour is only 2 cables' length in breadth, with a depth of $4\frac{2}{3}$ to 7 fathoms.

To sail into this port you should keep within a short distance of Point Frayle, which is a strange peaked eminence, forming the eastern part of Santana Hill, and supposed

* In the official notice from which the above particulars of the light at Castro Urdiales were copied, it was stated that it illuminates an arc of 270° , but no mention was made of the direction in which it is visible; and also, that the rocks on which the hermitage of Santa Ana is erected, extend out in a S.E. direction to the distance of about 318 feet.

to resemble a friar; take care to steer clear of Merana Shoal, which lies E.N.E. two cables' length from the point. You may then run along shore, at the same distance, until Carlos battery, on its south point, comes in one with the convent of San Francis de Ano; this is on the west side of the harbour, at the foot, and on the south side of the hill of the same name, which hill is high and round like a haycock, and much covered with trees. This hill, from its situation and figure, can never be mistaken for any other; nor can the convent itself, as it is the only building to be seen in this quarter.

Keep this last mark on until you have passed the bar, or until you are near the Carlos Battery; then haul to the south-west towards the steeple of Cisero, by which the shallows of Carlos Battery will be avoided; but take care not to proceed too far to the south-west, lest you touch on the Pittoro. You will now see San Martin's Battery, which is on the south-west side of the Hill of Santana, then keep in mid-channel for the town of Santana, and anchor in 6 to 8 fathoms, sand and mud, mooring either E. or W. according to the set of the tides.

A vessel may anchor S.S.E. or S.W. by S. from Point Frayle, by bringing San Carlos Castle in one with the church of San Francis de Ano; but in gales from the eastward of North, it is neither safe to run from here into the harbour, nor to weather Sonavia Point.

This harbour is much frequented by vessels when, owing to heavy north-westerly gales, they are prevented from attempting Bilbao, the bar before which, in these circumstances, becomes very dangerous; also by vessels, prevented by stress of weather from making Santander Harbour.*

About a mile from the north-westerly part of the Hill of Santana is Point Brusco, which is high and broad, but not projecting; and between these is a large beach, called the Arenal or Sand-hills of Berria, with low and marshy land to the southward, extending as far as the town of Santana. This low land gives the hill the appearance of an island, and conveys an impression that ships may run that way to the harbour.

From Point Brusco, the coast continues of moderate height along the shore, but rises high in the interior. Nearly 4 miles from the Hill of Santana, is Point Garfanta, which is low, and has some small rocky islands on its west side; on the east side of this point is a bay and beach covered with rocks, and a small town called Noxa, having a church visible at a considerable distance.

At $1\frac{3}{4}$ miles from Point Garfanta, is Cape Quexo, which is not very high, but rugged and of a red colour. At a distance its summit appears to be level, but this illusion is dispelled when a nearer approach is made, as it then appears uneven. On it is a small house, which serves as a watch-tower. To the eastward of the cape is a bight, containing some small islands, and near to the cape is a rivulet, which dries at low water, and is only used by fishing boats belonging to a place called Isla. The entrance of the river is not easily distinguishable, as it is formed by two small rocky points running a very short way out.

At a little more than 3 miles from Cape Quexo is Cape Ajo, which is a little lower than the former, and level on its summit, but cut down perpendicularly one-half of its height, and forming a small headland at the extremity; between the capes, the shore bends inwards, and has a beach at the bottom. Near Cape Ajo there is a rivulet, which runs in a south-westerly direction, and is navigable at low water for small craft up to Ajo, a distance of about a mile from the sea.

About 2 miles from Cape Ajo is Cape Quintres, having an appearance nearly similar, but with this difference, that it is higher and has a whitish colour. Hence the coast runs lower, but is abrupt and has the same colour, to Cape Galisano, a distance of 2 miles, at the same time bending a little inwards, and forming a rocky bay.

Cape Langre is rather more than a mile from Cape Galisano, the intermediate space being a small bight, in which is a rivulet leading to Galisano. This cape is low and rocky, and has near it a place of the same name.

SANTANDER.—The entrance to this port lies between Cape Langre and Cape Mayor, which are nearly 4 miles asunder. From Cape Langre, the coast runs about $1\frac{1}{2}$ mile to the island of Santa Marina, which lies very close to the shore, being separated from it by a narrow channel passable by boats. In the entrance near Point del

* Santana Harbour ought to be entered only with a pilot's assistance. We have been informed that since Tofino's survey, upon which our instructions are based, great changes have taken place. Among the improvements contemplated, the erection of a lighthouse has been spoken of.

Puerto, is another small island, called Mouro, which is high and steep, and has a large rock close to its east side, and a shoal a cable's length from it to the N.N.W.; in all other respects the island is clean, and has deep water about it.*

Cape Mayor, on the western side of the harbour, is of moderate elevation, but steep, and has a lighthouse on it, which shows a light at 298 feet above the sea, revolving once in a minute. The flashes in clear weather may be seen at the distance of 7 leagues, but if the observer is 40 feet above the sea, they are visible 9 leagues, the eclipses are not total within the distance of 8 miles. In gloomy weather, or with the Vientor de Travesia, or wind upon the beam, be cautious not to mistake the distance on approaching the coast.

Cape Menor is about half-a-mile to the S.E. of the last-mentioned cape. It is not so elevated as Cape Mayor, but terminates in a low flat point, with a small reef of rocks below it. Upon its summit is a battery.

At a little more than a mile to the southward of Cape Menor is Point del Puerto, the land between bending inwards, and forming a small bay called Sardinero, in which vessels lie, when the wind and tide do not serve for entering the harbour. To obtain the best anchorage, bring Capes Menor and Mayor in one, and at 3 cables' length from the former you will find from 10 to 12 fathoms, bottom of sand, but more to the southward it is all rock and stone. At the back of the bay are three batteries, and another, called Ano Castle, stands a little from the harbour's point.

From Point del Puerto the coast turns to the westward, and at a short distance is the battery of La Serda; it then bends round to Point Promontorio, and forms a small bight, which is full of rocks. About $3\frac{1}{2}$ cables' length from Point del Puerto lies a small island called Latorre, which is close to the shore, and is joined to it at low water; near this is a rock pierced through so as to resemble a bridge, which is called from this circumstance Oradada, and is clean all round.

About 3 cables' length from Point Promontorio is Point San Martin, with a battery on a precipice, having a number of large rocks under it on the west side. Between these points is a small rocky bay, with some spots of beach.

Nearly a mile from Point San Martin lie the pier and town of Santander, situated along the shore. Within the pier, vessels lie dry at low water. From the pier the coast runs of middling height, rocky, with some patches of beach, in a westerly direction for nearly two miles, to a small hill called Pena Castillo, which, when seen in this direction, appears to be sharp-pointed, because it lies East and West; thence the coast runs southward to Maliano Point. The extensive sands on the south side of the harbour frequently shift, and a considerable portion of them dries at low water.

With strong N.W. or S.W. winds, and a heavy sea rising, it is extremely difficult to gain the harbour. In that case, it will be more prudent to drift with the tide for the roadstead of Point Promontorio, and there wait for a change of wind, or, with an ebb tide, it may be safer to run for the roadstead of Sardinero, the northern shore of the harbour, from Cerda Battery to Point Promontorio.

Should it blow from the N.E. or S.W., you may enter by the channel between the islands of Santa Marina and Mouro, or by that between Mouro and Point del Puerto, as both channels are clear and good. Having passed the point, you will see the perforated rock called Oradada, which stands at the distance of 3 cables' length to the westward of it. This islet is clear on its south side, and is to be left on the starboard side; but, having passed it, you must have a pilot for proceeding up the harbour. Here, with a southerly wind, which blows very hard in winter, the anchors frequently come home.

It is high water here on the days of full and change of the moon at 3h. 30m.; spring tides rise 15 feet, neap tides 9 or 10 feet, and more when the wind is from the N.W. The stream of ebb is stronger than that of flood, and runs at the rate of three miles an hour. Within Santa Marina Island a branch of it sets to the S.E., towards the sand to the southward of that island; this is deserving of notice, because many vessels have suffered from ignorance of the fact.

The following remarks upon the harbour are by Mr. J. G. Northcote, late master of H.M.S. "North Star":—

"When approaching Santander from the westward, the first remarkable part of the sea coast is a large white sandy spot which lies at the foot of a haystack-like hill; this

* It is, we believe, intended to erect a lighthouse on this island.

spot is a little to the eastward of Santa Marina, and about 9 miles from the entrance of Santander, between which the land is moderately high and flat, with several watch-towers, a grove of trees, and signal station.

Cape Mayor on the starboard side of entrance, is rather more elevated than the line of coast, ends abruptly, and has a lighthouse on its summit. S.S.E. from this is Cape Menor, which ends in a low flat point, with a reef of rocks running off a short distance, which are steep-to. Point del Puerto bears from hence S. $\frac{1}{2}$ E. $1\frac{1}{2}$ mile having between them a roadstead, where vessels may anchor in moderate weather, with Capes Mayor and Menor in one, in from 12 to 10 fathoms, sandy ground; a short distance within these marks the ground is foul.

At about half-a-mile E.N.E. from Point del Puerto, and S.S.E. $\frac{1}{2}$ E. $1\frac{1}{4}$ mile from Cape Mayor, is the island of Mouro, which is steep-to except to the N.N.W., where, at the distance of half a cable's length, is a rock with only two fathoms water on it. Between this and Point del Puerto the channel is perfectly clear, and the least water is $5\frac{1}{2}$ fathoms.

Having made the port, which may be taken at all times with the winds from N.N.E. round by east to S.E., you may sail on either side of Mouro; and when past Point del Puerto, which is steep to, bring Pena Castillo (a hill like a haycock, to the westward of Santander) open of the Oradada Rock, and steer for it until up with the island Latorre, you may then incline a little northerly towards Point Promontorio, and bring Pena Castillo in a line with the extreme point of San Martin; steer thus, and it will lead you through the North Channel, in from 6 to 8 fathoms to the Basin, where you may anchor in 6 fathoms at low water, with the castle of San Martin N. 67° E., Point del Puerto S. 88° E., and Marnay Island S. 26° W. Moor with open hawse to the southward during the winter, with a long scope of cable on the best bower.

Having made the port with the wind at all westerly, it will be impossible to gain a safe anchorage in the harbour against the ebb tide: it is therefore advisable to wait in the roadstead of Sardinero for the flood, then taking the western channel, which is preferable in this case; and with your ship under such sail and command as to ensure her 'staying,' proceed as before, and when Pena Castillo is well open of Oradada Rock, lay your ship's head to the northward, and back and fill up the anchorage, bearing in mind that two-thirds of the way across to the southward the tide sets to the S.W. and round Passage Point Sand.

Since the harbour was surveyed by Tofino, in 1788, the banks and channels have very much altered. Observe—

1. The southern channel laid down in his chart does not exist, there being only 4 feet water where he gives $3\frac{1}{2}$ fathoms, and is in some parts dry at quarter flood.

2. The northern channel, described in the Directory as being seldom used, is the only navigable one, and is of a good depth.

3. The Oradada Rock is steep-to only to the southward, being connected to the main by a ridge of rocks, on which the sea breaks with a moderate swell.

4. This harbour should not be attempted by a stranger under any circumstances, as the tides are strong, and the banks frequently shift; it will also be impossible to gain a safe anchorage against wind and tide. The pilots are well up to their business, and wait in bad weather under the lee of Point del Puerto until you round it."

The following directions are by Mr. H. J. Loudon, master of H.M. steam frigate Gorgon, 1839.

Santander is the best harbour on the north coast of Spain, eastward of Cape Ortegal, but there is little doubt that it is filling up, and that the channel, and even the anchorage now used, may in a few years be impracticable. The directions given by Tofino will now lead vessels high and dry, and are as unsuitable now as the following may become in a few years.

The lighthouse standing on Cape Mayor may be seen 7 leagues off, so there is but little difficulty in making the port.

Mouro Island lies in the entrance of the harbour, and may be passed on either side, but not within half a cable's length on the western side. After passing Mouro, steering for Point del Puerto, a little islet with a hole in it, called Oradada, will be observed. Give it a berth of a cable's length in passing; then bring a clump of trees (on the land over the N.W. part of the town) on with the south end of the long red-tiled house in Fort San Martin; or, the cathedral open of San Martin's Point. Either of these marks lead nearly up; when getting close over to the northern shore, the bluff of Cape Quintres (seen astern over Marina Island) on with the door in the white

wall at Point del Puerto, will lead to the anchorage. Should the wind be from the westward, it is advisable to go back and fill up, which is easily done with the flood tide, the distance not being above two miles. The best anchorage is in $4\frac{1}{2}$ to 5 fathoms, with the door on Point del Puerto (in the wall) on with the bluff of Cape Quintres, and the red-tiled house in Fort San Martin in a line with two others further up the hill to the N.E.

Santander, in N.W. gales, should not be attempted if the vessel can keep at sea; and even after the gale, for a day or so, it should be approached with great caution, so that the approaching vessel get not so far embayed as not to be able to haul out again should the bar (as it may be termed) be up; when that is the case, from Mouro Island to Point del Puerto, and across Puntal Sands, is one sea of breakers; as awfully heavy as can be imagined from the sea breaking in 7 or 8 fathoms, so that the chances are, a sailing vessel would ship some of those seas, become unmanageable, and be lost on the sands.

On the 24th December, 1838, 2h. A.M., strong N.W. gales, with heavy squalls, hail, and rain, H.M. steamer Gorgon wore, and stood in for Santander, at 8h. A.M. Santander Lighthouse bore S.E. by E. 2 miles, and not expecting the entrance to the harbour to be in the state in which we found it (the sea breaking entirely across it as described before), we went on until there was no alternative but to push in. The ship being a very powerful steamer, and possessing the most excellent qualities, succeeded in getting in, through the most awful sea of breakers ever witnessed by any on board, and she brought up in safety. About two hours after, a schooner attempted it, and was driven high and dry on the Puntal Sands; fortunately the crew were saved. Soon after her, a fine barque, of about 300 tons, made the attempt, and was dashed to pieces on the Puntal Sands; out of 25 persons, two only were saved. These instances, if known, will surely deter any one from attempting the harbour at such a time, unless absolutely obliged by loss of masts, &c.

There is generally a strong set to the eastward, so that a vessel keeping to sea must expect to get far to leeward, and every advantage must be taken, should the wind veer at all, to get to the westward."

SAN MARTIN DE LA ARENA. From Cape Mayor to Cape Lata, a headland of lower elevation than Cape Mayor, the distance is about a mile in a westerly direction, and the coast between bends inwards, forming a steep rocky bight. Hence follows a lower, but still rocky shore, as far as Point Cornuda, when it turns somewhat more to the southward, and forms a small open bay named San Pedro del Mar, which is so shallow and exposed that none but fishing-craft venture in; these, however, occasionally remain during north-easterly winds. From San Juan del Mar Bay the distance to Point Somoenebas is about 5 miles, the shore being rocky throughout, and for the latter $2\frac{1}{2}$ miles of the distance fronted by rocks above and under water. The coast now takes the direction of W. by S. $\frac{1}{2}$ S. for $2\frac{3}{4}$ miles, or as far as Point Cuerno, a cliffy projection of moderate elevation; it is low all the way, and about midway is a small river named Mogro. Within the latter extent is some elevated land, known as the heights of Lieneres, which are recognised by their resemblance to a saddle: the country in the vicinity of these hills being comparatively low, causes them to be a good landmark for the port of Santander, and especially as they are visible a considerable distance at sea.

Point Cuerno, the eastern shore of the inlet of San Martin de la Arena, is rocky, and has off it five islands named Solita, Segunda, Casilda, Demetria and Conejos, of which the latter is the outermost. The channel formed by these islands have, we believe, a depth of 3 and 4 fathoms, but as there may be sunken rocks scattered about, vessels should not attempt to run through them, but rather keep outside Conejos. There are also two rocks, Xarillo and Joaquina, at about $1\frac{1}{2}$ cable's length from the west side of Cuerno Point, almost close to which is a depth of 18 feet. Conejos is a cliffy islet sufficiently lofty to be visible about 15 miles.

The western side of the inlet of San Martin de la Arena terminates in a bold cliffy point, named Dichoso. At about half a mile from this in a south-easterly direction is Point Torco de Afuera, and opposite the latter Point Afuera, under which is a small rocky islet; it is between these two projections of coast that the River Besaya falls into the sea. The river is very narrow and also shallow at its entrance, the sands on each side of the channel becoming dry when the tide is down; on the bar is a depth of not more than 2 feet at low water, so that all vessels bound in have to wait till the sea has

risen sufficiently for them to enter, and then they must do so only with a pilot's assistance, ingress being by no means easy to strangers.

When bound to the River Besaya it is recommended to steer for Santander Lighthouse, as that is a good object by which to recognise the land, and afterwards to run along the coast to Conejos Island, before reaching which some very remarkable yellow sand hills will be passed, said to be visible in clear weather at a distance of 10 or 12 miles. Having doubled Conejos Island, hoist a signal for a pilot if the wind be favourable for entering, when the direction that the vessel should be steered will be indicated by means of a white flag hoisted on a green mound on the right bank of the river, near which is a ruined tower.

When steering for the river a church with a square tower will be seen at a considerable distance. Having passed the bar it is usual to anchor at Suances, a village on the western bank, for the purpose of being waited upon by the custom-house officials, after which the vessel can proceed to Requijsada. Requijsada is about 10 miles up the river, on the eastern bank, and is but a small place, with scarcely two habitable houses (1857); it is frequented, therefore, mainly on account of its minerals and magazines of grain. On the western bank of the river is the village of San Martin de Inojedo, which is separated from Requijsada by an island formed by two branches of the river. San Martin de Inojedo is a village of no commercial importance. We believe that Requijsada is not open to foreign commerce, but that all vessels, unless with special instructions, discharge cargo at Suances.

The rise of tide on the bar at high springs is about 12 feet. North-westerly winds cause the highest rise of tide, and there is always a very heavy sea when the wind blows on to the coast.

The following remarks on the bay of San Martin de la Arena are by M. Ed. de Burgh, vice-consul of France for this part of the coast of Spain, and dated 1857.

Requijsada is a small village in lat. $43^{\circ} 18' N.$ and long. $3^{\circ} 55' W.$, situate about 10 miles up the River Besaya, on its eastern bank, just above where the stream divides into two branches. At the entrance to this river is a small islet named Suances,* and further in a village called San Martin de la Arena, and another Suances, of which the latter is distant about 10 miles westward of the Port of Santander: hence the port is frequently called Port Suances, or San Martin de la Arena. Close behind Requijsada the high road from Castile (through Torre la Vega) passes to Santander.

The river is not sufficiently deep to permit, even at spring-tides, the entrance of vessels drawing more than 12 feet; but these, it is said, may run in during those tides with safety. If there should be a great swell on the bar, which is generally occasioned by north-westerly winds, an allowance must be made for the rise and fall of swell. In fine summer weather, vessels drawing 14 and 15 feet water have entered the river safely, but it is more prudent not to attempt to run in with a greater draught than 10 to 12 feet, or you may be neaped at waning moon tides; some vessels have been so neaped up to the full and change of moon. Vessels in ballast, of 100 to 140 tons register, can enter with the greatest ease at half or three-quarter tide.

A stranger *must not* attempt to enter the river without having the assistance of a pilot. When making the port from sea Santander Lighthouse is the object that should be run for, that being the most prominent and conspicuous landmark. Steer then for the large rock at the entrance to the river, called Suances Islet, and in running along the coast you will see about 3 miles of yellow sand-hills, which are very conspicuous and visible in ordinary weather at the distance of 10 or 12 miles. Having cleared Suances Islet, steering to the westward, you will see a sandy bay about $2\frac{1}{4}$ miles wide, and should then hoist your pilot signal, if the wind be such as to allow you to enter, that is from the N.E., N.W., or North. Signals are made by means of a white flag from a green hillock, close to an old ruined tower on the starboard side of the river. This flag indicates by *dipping* the direction in which you ought to steer.

It is said that merchants are saved 12 shillings per ton for the land carriage of wheat or goods by sending their vessels to Requijsada instead of Santander. The difference of the distance is 48 hours by bullock-carts.

A British shipmaster writes us, "The River Besaya forms a barred harbour, with a flow of tide at springs of about 12 feet and at neaps of 9 feet. It is very narrow, and

* We suppose that this is Conejos Island, the outermost of the islands off Cuerno point, the eastern point of the bay.

can be taken only with a leading wind. The swell generally rolls in very heavily with N.W. winds, and with those winds are the best tides. With strong winds from W.N.W. northerly to East the sea rolls in much."

From San Martin de la Arena Bay the coast westward continues to bear the same rocky character as that hitherto described eastward of the inlet. On the west side of Dichoso Point there is a small islet close to the shore, named Marisco, beyond which at about a mile is the Atalaya de Santa Justa, the coast between consisting of a low sandy shore. From Santa Justa to Point Calderon the distance is $2\frac{3}{4}$ miles; this point is steep, and has some rocks above and under water near it. Succeeding this for about 8 miles, or as far as Comillas, is a bold coast with sunken reefs at its base, and having midway an inlet named San Vicente de Luano, which will be recognised by a hermitage on its western point; this inlet is, we believe, too shallow for anything larger than fishing-boats.

COMILLAS is a small place formed by two projecting points, the eastern of which is high and level on the summit, perpendicular towards the sea, and has a reef before it; the western point has on its south-east side a rocky islet, where is a pier for the protection of such craft as can bear the ground. At high water vessels drawing about 9 feet can enter. The bottom is rocky, and there is no river.*

From Comillas to the eastern point of Cape Oyhambre the distance is about 2 miles in a N.W. $\frac{3}{4}$ W. direction; between is the Rio de la Rabia, which is barred, and so shallow that only fishing boats can enter. Cape Oyhambre presents towards the north an irregular face of one mile in length, of moderate height, steep, and of a white colour; it is bordered by a shoal to the extent of a cable's length outward.

SAN VICENTE DE LA BARQUERA. On the south-west side of Cape Oyhambre there is a large inlet named San Vicente de la Barquera, which is much frequented by Spanish vessels for timber; it is, however, too shallow for ships drawing more than 12 feet, the bar at the entrance becoming dry or nearly so at low tide. Strangers require the assistance of a pilot, but when inside may anchor almost anywhere, and be sheltered from all winds but those that blow directly in.

On the western side of the inlet there is a small islet named Callo, which is separated from the shore by a narrow channel of little water. Vessels can pass on either side of this islet, provided their draught be not too great; in each case the utmost care is requisite.

In order to enter the bay, on the west side of Callo Isle, you must keep very close to it, and when abreast of its south-west point, steer to a house called La Marea, bearing from you to the S.E.; this house is high, and near the north-east end of the bridge. You must continue on thus until you discover the first house in the town, and then steer towards it until the middle of the town is visible, when you will have passed all danger, and must run within a ship's length of the western shore, and there anchor abreast of the chapel of Na. Sra. de la Barquera, in $3\frac{1}{2}$ fathoms, muddy bottom. On account of the narrowness of this situation, it is necessary to moor both head and stern.

On the other hand, when going in by the east side of the island, you must keep close to it until you are near its south-west point, and then follow the directions just given. At about 3 miles inshore from San Vicente de la Barquera, in a south-westerly direction, there is a lofty mountain, named Burgon.

At about three miles westward from Callo Island is Point Pellereso, which forms the east side of a shallow inlet named East Tina. Beyond this, at a similar distance, is an inlet called Great Tina, said to be sufficiently deep to admit vessels drawing 12 or 14 feet; the bar of this inlet, situate near the west point, is difficult at all times to cross, and especially in winter, when heavy floods descend from the hills. The West Tina, or inlet of San Yusti, is $2\frac{1}{2}$ miles from Great Tina, and is a wide opening, which may be easily recognised by a high and precipitous islet, Castron de San Yusti, on its western

* Comillas being in an open bay has hitherto been considered a very unsafe port, especially as north-westerly winds send in a very heavy sea. In consequence of the port being now more frequented than previously, arising from the mining operations in the neighbourhood, some efforts have been made to improve it with the view of affording increased shelter to shipping. A gate or door consisting of strong booms has been erected, which is closed when the sea is rough, so that the little vessels at anchor inside no longer suffer inconvenience from the heavy swell caused by on-shore winds. When tacking about before the harbour some red land on the port side will be observed; it is here that the mines are situate. Strangers are recommended to avail themselves of a pilot's assistance.

side. Into this inlet the River San Yusti discharges its waters, the bridge over which is considered to be the boundary between the Montañas and Asturias. The West Tina is shallow, much exposed, and seldom, if ever, visited by foreign vessels. The coast intersected by these various rivers is high, level on the summit, and said to be recognised at a distance by its resemblance to *tinas* or *tubs*, with the mouth downwards.

From the islet Castron de San Yusti the coast runs 5 miles to Point Ballota, and is a dreary rocky shore, affording no shelter whatever. When sailing along you will see the little islet Concagada, situate very near to Pendueles Point, and having a reef extending from it in a westerly direction. Having passed this you will come to Puertas Islet, almost close to which is a little river named Poran. Ballota Point is moderately high and abrupt, and has under it a small river into which fishing boats sometimes run when the weather does not permit them to reach Llanes.

Llanes. From Ballota Point the coast runs 3 miles to Jarri Point, known by its watch-tower; between is a bay into which the River Llanes falls. This river is frequented only by small vessels, being very narrow, and its bar having a depth of only 2 feet over it at low tide; inconvenience is also occasioned by the Osa Shoal, situate at the entrance, which causes heavy breakers in bad weather. It is intended, we believe, to erect a lighthouse at the entrance of the river.

The situation of Llanes may be recognised by a little islet named Toro, just off the east point of the bay: and, southward of this, about 2 miles up the country, is Soberron Castle, standing on a hill. These are familiar objects to the coasters.

At $1\frac{1}{2}$ mile westward from Jarri Point is the little River Po, having an island, Almenada, at its entrance. On the south-east side of this island vessels occasionally anchor in about 3 fathoms water, on sand, and obtain protection from W.N.W. and even N.N.W. winds. Hence to Cape Prieto the distance is rather more than 3 miles, and between are the bay of Celorio, having on its western side an islet close to the shore, named Borizo, and the river Niembro, the latter being close under the cape and sufficiently deep to admit the smaller class of vessels. Cape Prieto is of moderate height, surrounded by rocks, and with a watch-tower on its summit.

From Cape Prieto to Cape de Mar the distance is about $4\frac{1}{2}$ miles; the latter is of moderate height, perpendicular over the sea, free from rocks, and has a hermitage on its summit. Between these points the land is as high as at the cape, and along shore are found a large rock under the tower of Prieto, the point and island of Desuracado, and the small bay and beach of Carneros.

Rivadesella. From Cape de Mar to Point Caballo, the east point of Rivadesella Inlet, is an interval of 7 miles passing the small rocky islet Horcado de Cuevas, Cape Villanueva and the River Guadama, near whose west point is a shoal, which, together with the small depth of water, renders the river of no use to vessels of commerce. Point Palo Verde will be known by the islets before it, and Point Caballo by being low and rocky; it has been remarked, however, that generally the coast hereabout is of a similar height.

Rivadesella Inlet has at its mouth a sandy bar, which extends from Point Caballo to the sand-hills on the west side of the harbour. The depth on it is about 3 feet at low spring tides, which, immediately you have crossed it, increases to 15, 20, and 30 feet, where is the anchorage. The latter is not extensive, and soon becomes shallow. It is, we believe, intended to erect a lighthouse at the entrance to this inlet.

Rivadesella Inlet is frequented only by the smallest coasters, the bar being a great impediment to vessels bound in, so that it is necessary for strangers to obtain a pilot's assistance. When rounding Point Caballo it should have a moderate berth, the rocks about it rendering a close approach by no means desirable. At about $1\frac{1}{4}$ mile N. 58° E. from the point there is a rocky patch of 10 fathoms water, named Sarrapia, upon which the sea breaks when the wind blows on the land.

From Point Somos, the west point of Rivadesella Inlet, the coast runs $1\frac{3}{4}$ mile N.W. by W. to Point Carreros, and is rocky the whole distance. Point Carreros is low, and surrounded by rocks, obliging vessels to give it a berth of at least a mile. Misiera Point, having a battery upon it, is nearly 7 miles from that of Carreros, between them is no place of shelter, with the exception of the little cove of Lastries, which has clean and good holding ground. Cape Lastries is more than $1\frac{1}{2}$ mile from Point Misiera; it is high and abrupt, of a red colour, and has a ledge of rocks outside it.

At 4 miles N.W. $\frac{3}{4}$ W. from Cape Lastries is Tazones Point, on the east side of which is the entrance of the River Vellaviciosa, an inlet capable of receiving vessels

drawing 12 feet, at high water only. In the middle of its entrance there is a rock, on account of which no one should venture in without a pilot. Between Tazones Point and Cape San Lorenzo, an extent of 10 miles, the shore is dreary, with only a few creeks and rivulets. About two miles from Cape San Lorenzo is Punta Santa Catalina, with its chapel; the outer part is steep, and on the slope inland stands the town of Gijon. Beyond this point, at rather more than two miles, is Cape Torres, with an islet at its base called Orrio.

GIJON. This bay, or road, lies between Punta Santa Catalina and Cape Torres, and affords good anchorage in easy weather, but open to the North and N.E. Should a large ship, in summer, have occasion to anchor here, it must be with Orrio Island, off Cape Torres, in a line with the town of Candas, the latter situate $3\frac{1}{2}$ miles to the N.W., and in 11 fathoms, dark sand. Even here care must be taken to get under sail in case the wind changes to blow on shore, which is frequently the case, even in summer, when the sea is so very heavy as to render it almost impossible to get out of the bay. These heavy on-shore winds commonly last two or three days, that from N.E. is most prevalent. Small vessels may run for the pier of Gijon, but they must be conducted by a pilot. On the bar are 9 feet at low water. The vessels within the pier lie dry at low water.

In order to assist vessels bound to Gijon, a fixed light, visible 10 miles, is shown on Point Gijon, near the hermitage of Santa Catalina. It is 167 feet above the sea, and estimated to be in lat. $43^{\circ} 35' 13''$ N. and long. $5^{\circ} 38' 2''$ W.

From Cape Torres the coast runs 3 miles N.W. to Point San Antonio, and is very foul the whole distance. Under the latter point there is a small bay named Candas, which at high water will receive vessels of light draught, but these must be capable of bearing the ground when the tide goes out, the harbour then becoming dry. At about $\frac{3}{4}$ of a mile E.S.E. from Point Antonio is a shoal of 3 fathoms or less water.

At a short distance north of Point San Antonio is Point Cabrito having an islet off it; and $1\frac{1}{4}$ mile beyond this, in a N. by E. direction, is Point Luanco, close to which is a rocky islet named Baca de Luanco. Under Point Luanco there is a pier for the protection of the small vessels which frequent the bay; these must be capable of bearing the ground, as the sea recedes from the coast at low tide.

Cape Penas. At $1\frac{1}{2}$ mile north-westward from the islet Baca de Luanco, and separated from it by a small bay open to the N.E., is Point Cordero, close to which is a rocky islet. The bay affords no shelter, and has a very rough bottom with patches of rock: into it the little River Banagues falls. Beyond Point Cordero, about $1\frac{1}{4}$ mile is the River Llumeres, which also falls into a rocky bay; and, at nearly the same distance further is Cape Penas, having close to it a rocky islet called Gaviera. The cape presents towards the north a broad head of nearly a mile in extent, is high and steep towards the sea; the ground over it is level and of a whitish colour. On the cape there is a building showing a light revolving every half minute, at 338 feet above the sea, visible 21 miles.

At about half a mile from the western side of Cape Penas there is a small low island, named Hervosa, near which are some rocks above water. Around the cape in various directions are rocks above and under the surface, the latter extending from the land at least $1\frac{1}{2}$ mile; upon these the sea breaks so heavily at times that shipmasters are cautioned not to approach the lighthouse nearer than 4 miles, especially as the uneven nature of the bottom leads one to infer that there may be undiscovered dangers about. The outermost of the known rocky patches is a small head of 13 fathoms, situate 3 miles from Gaviera Islet in an E. $\frac{3}{4}$ N. direction.

AVILES. About $5\frac{1}{2}$ miles W.S.W. from Cape Penas is Point Forcador, the north point of Aviles Bay; the coast between is steep and rocky, and contains some small islets off one of the projecting points, behind which are the sand-hills of Berdicio, stretching along most of the shore. Aviles Bay is very narrow and shallow at the entrance, so much so that only coasters, those well acquainted with the navigation, can enter; foreign vessels very seldom attempt to run in, and are then always in charge of a pilot. It is, we believe, intended to erect a lighthouse, and efforts will be made to improve the navigation.

From Forcado Point to Vidvios Point the distance is 4 miles; close to the latter is a small island named Deba, having rocks about it, and eastward of this in its immediate vicinity are the shoals of Robillo and Amvales, upon which the sea breaks heavily. On the west side of Vidvios Point is the inlet of Pravia, frequented by coasters for timber, the bar before which is shallow and dangerous, rendering it

necessary for strangers to employ a pilot. It is said that vessels should not attempt to cross this bar during the ebb, as the current, caused by freshes from the mountains, is then so strong that it is extremely difficult to stem the stream.

The coast from Pravia westward to Cape Busto is very foul. At about $3\frac{1}{2}$ miles from Pravia Inlet is the little harbour of Cudillero, which is only fit for fishing boats;* and, at $2\frac{1}{2}$ miles beyond this is Artedo Bay, a small inlet with rocks jutting out from the land on both sides of the entrance, but capable, nevertheless, of affording good shelter from south and west winds, and even from the N.W., but the latter send in a heavy swell; the holding ground is said to be good, and the depth 6 to 8 fathoms on sand.

From Artedo Bay to Cape Bidio the distance is $3\frac{1}{2}$ miles along a very rocky and weather-beaten shore. Cape Bidio is of moderate height, and precipitous towards the sea; hence to Cape Busto, about 10 miles, there are no places of anchorage, the only place resorted to by the fishermen in fine weather being an exposed rocky bay named Cadavedo, situate nearly midway between the capes. The whole of this coast is extremely rugged, and fronted by small islets and rocks, the latter being frequently under water.

Cape Busto in lat. $43^{\circ} 36' 10''$ N., and long. $6^{\circ} 28' 48''$ W., is high and steep, with a ledge of rocks, named La Moura, running out from it, north-westerly, nearly a mile. On the summit of the cape there is a white rectangular-shaped building, which shows a fixed light, flashing red every 2 minutes, at 307 feet above the sea, visible 12 miles. The land in this vicinity is very rocky, and before the establishment of the lighthouse, the cape was chiefly recognised when approaching it from the eastward by Serron Islet, a huge rock shaped like a pyramid, situate about three-quarters of a mile from it in an easterly direction.

A river called Caneiro falls into the sea on the west side of Cape Busto, $3\frac{1}{2}$ miles from which is Luarca, a little port frequented by coasters. Hence to Romanilla de Vega Islet, a distance of $4\frac{1}{2}$ miles, the coast is of moderate height and precipitous. The latter is immediately off the land, and behind it is a hill named Mount Pedrajo.

Orrio de Tapia. From Romanilla de Vega Islet to the Islet Orrio de Tapia, a distance of $13\frac{1}{2}$ miles, the coast is very rugged, with outlying rocks; between are the small harbours Vega, Navia, Viaveles, and Porcia, all having bars, and of very difficult access; resorted to, nevertheless, by coasters for timber. Orrio de Tapia will be recognised by its lighthouse, which is octagonal in shape, ash-coloured, 27 feet high, and rises above the north face of the keeper's dwelling, the latter, a white building; it shows a fixed light, flashing every 2 minutes, at 93 feet above the sea, visible 15 miles.

At nearly 4 miles from Orrio de Tapia Islet is Point Rumeles, on the east side of Rivadeo Harbour; between are some inaccessible bays, and it is only on the east side of Point Canlongo, where the fishermen of Tapia run their boats upon the beach, that there is any shelter. In this tract are the large rocks named Pantorgas and the Muelas Shoal. Rivadeo separates the principalities of Asturias from Galicia.†

RIVADEO. The inlet forming the harbour of Rivadeo extends into the land about 3 miles, and is very narrow, being in no part more than half a mile wide. Rumeles, the eastern point of entrance, is a bold bluff, and has numerous rocks above and under the surface, extending from it some distance: Pancha, the western point, is also bold and rocky, and near it is an islet having about it several sunken dangers, of which one named Pancharo lies off its north-west side.‡ When making the port its locality may be known by the mountains Mondigo and San Marcos; the first is situate 5 miles westward from Pancha Islet, about $2\frac{1}{2}$ miles from the coast, is very lofty, sharp-pointed, and has on its summit some white rocks, resembling buildings when viewed from a distance. San Marcos has a round form, and is comparatively low; on its

* On Point Revallera, Port Cudillero, there is a small fixed light at 94 feet above the sea, visible 10 miles. The lighthouse consists of a white rectangular building, with a tower surmounted by a lantern rising from it, both of which are coloured dark green.

† Tofino in his description of the northern sea-board of Spain, when writing of the coast eastward of Rivadeo, says. "It is the part of the north coast of Spain which requires the utmost care and attention, being entirely lined with ledges of rocks and dangerous shoals; and although large vessels generally keep much further off the land than is necessary, yet we must strongly recommend it to small vessels to omit no precaution on this hazardous tract of shore, the assistance of pilots, or a perfect knowledge of the harbours they mean to touch at, being absolutely requisite in approaching them."

‡ It is intended to erect a lighthouse on Pancha Island.

summit there is, we believe, a hermitage, although all traces of it are reported to have disappeared.

Strangers bound to Rivadeo must obtain a pilot's assistance before they attempt to enter. The harbour is said to be capable of accommodating vessels of 16 to 18 feet draught. When running up, keep in midchannel until abreast of Point Castrelius, and then bear over to the western shore, steering so as to anchor opposite San Damian Castle, or a little south of it, in 5 fathoms sand. The south wind usually prevails here with great violence; on account of which, and also because of the narrowness of the channel, it is necessary to moor with four anchors head and stern.

The Hon. E. Plunkett, R.N., wrote in 1840: "There have been no alterations in the positions of the shoals in the port of Rivadeo since the survey made by Tofino, though there is somewhat less water near the entrance. As an anchorage it is small and inconvenient, it being necessary to moor head and stern with cables to the shore. There is no proper berth for a large ship, and not more than 5 or 6 vessels, drawing 12 feet water, can lie in safety. There is a good watering place at Castropol, about one mile from the anchorage, where boats may fill at high water, and fresh beef be procured at a low price."

From the entrance of Rivadeo, at a distance of about 23 miles in a N.W. $\frac{1}{4}$ N. direction, lie the Farrallones Rocks off the bay of San Ciprian, between which and the shore is a passage of 13 or 14 fathoms water, sandy bottom. In the tract of coast between are the small rivers Rilo, Foz, Fasouro, and San Ciprian, but they are hardly accessible, even for small craft, at high water; before the last of these rivers is Suela Islet, which affords shelter in winds from W.N.W. round by south to E.N.E., and sufficient room for a large vessel in case of necessity, in from 3 to 4 fathoms, sand and good holding ground.

From the northernmost Farrallone, the coast runs rather more than 3 miles N.W. $\frac{3}{4}$ W. to Point Roncadoira; midway between is Portizuelo River, at the foot of Monsancho Mount, which is very sharp on the top, and which, with the islet Anzaron, is a good mark for the shore. At $1\frac{1}{2}$ mile W. by N. from Point Roncadoira, is Sanais Point; and at 2 miles W.S.W. $\frac{1}{4}$ W. from the latter is Point Faro, beneath a hill of the same name, on which is a watch-tower. Point Faro is the east point of Vivero Bay.

VIVERO BAY is an inlet extending $2\frac{1}{2}$ miles into the land, and having a breadth of about a mile. The shores on each side are rocky, but there are no outlying dangers. On the west side of the entrance, off Point Ventosa, is a small islet close to the land, named Gaviera: and, opposite this, under Point Faro, is another called Arenas—these, we believe, are surrounded by rocks. The depth is sufficient for vessels of considerable tonnage, so that the bay is frequently resorted to, principally however by the coasters. The best anchorage is said to be in 5 fathoms at nearly the head of the inlet, with the east side of Queimada Island in one with the south-east side of Gaviera Isle, and Puntal Point in line with the southernmost houses of Sillero; here the ground consists of clayey mud, very good for holding. The ship should lie east and west, that the cables may have an equal strain in southerly winds, which in summer blow hard, and also in the heavy sea which frequently sets in from the North and N.W. It is necessary to raise the anchors from time to time, because if they remain long in the ground they will not be raised without difficulty, if they be not totally lost.

Remarks by the Hon. E. Plunkett, R.N., 1840:—"Port Vivero is four miles eastward of Barquero, but can scarcely be considered a safe anchorage, except in the summer months. Although it is only open to two points of the compass, viz., N.N.E. to N.E., and is consequently from appearance better sheltered than Barquero, yet a north-west gale will send in a very heavy sea, and a northerly gale blow directly home. The holding ground is, however, very good, and the shore perfectly clean and steep on both sides, so as to allow of a ship working out when the water is smooth; but this would be impracticable with the wind fresh from the northward.

From inquiry made among persons best acquainted with the coast, and the appearance of the bay itself, I am led to think that no ship should anchor here during the winter months. It is very rarely visited by any description of vessel, and only in the summer time. The near neighbourhood of so superior an anchorage as Barquero, deprives Vivero of any value it might have for ships requiring supplies. The watering place is tolerable, and fresh meat is good."

At about two miles northward from Point Socastro, the west point of Vivero Bay, is Point Ventosa, the coast between bending slightly to the westward, and forming the bay of San Roman. Point Ventosa is rocky and bold, and will be at once

recognised by its having an island off it, named Conejera: in the channel between the island and point, there is, we believe, a good depth of water, but no shelter.

BARQUERO or VARES.—This inlet has an extent of about $2\frac{1}{2}$ miles in a W.S.W. direction, and is 2 miles wide at the entrance between Conejera Island and Point Vares, whence it rapidly narrows towards its head, thus giving it somewhat the form of a funnel. The shores are clean, and have, we believe, no outlying dangers; and the soundings are sufficient for the largest vessels, provided a moderate berth be given to the land on either side. The bottom consists of tenacious sand, good for holding. Point Vares, the north point of the inlet, is high and steep, at the foot of a mountain, and has under it the village of Vares, which is protected from the southward by a reef of rocks named Muelle de Coido. The village of Barquero, at the head of the bay, is accessible only by boats. When at anchor here, vessels are protected from all winds from S.E. round by south to N.W.; but N.E. winds send in a heavy sea. This harbour is said to be the best on the north coast of Spain between Ferrol and Santander, and is frequently run for by vessels driven eastward of Cape Ortegal, although there is scarcely any protection if the wind blow strongly from the north-eastward.

The Hon. E. Plunkett, R.N., has remarked, 1840:—"The want of any commercial town in the neighbourhood, which renders this harbour of no value to commerce, sufficiently accounts for its still being neglected; but as an anchorage for a fleet, or for men-of-war of any description, it possesses advantages not to be found on any other part of the north coast of Spain. It is sheltered from every wind except those from the N.E. to S.E., a quarter whence it rarely blows with any force. It is easy of access with all winds; has very good holding ground, and is perfectly clear from rocks close to the shore. It is sufficiently spacious to contain a large fleet, and has three excellent watering places, where boats may water with great convenience. A good supply of fresh meat may be obtained at a very low price, and fuel may be procured, though not in the immediate neighbourhood. These circumstances seem to recommend it as a place of rendezvous to a fleet, or cruising ships, requiring a refit, or in want of water, &c. It may be also very useful to vessels unable to weather Cape Ortegal in westerly gales, and is often entered by Spanish vessels under those circumstances. In the heavy gale of last winter (1839-40), there were at one time twenty-two vessels at anchor in the inner roads, called El Vicedo, where they remained perfectly sheltered.

The entrance of Barquero is easily distinguished, especially in coming from the northward or westward, when its distance from the remarkable point of Cape Ortegal will serve as a guide; it may be further known by the promontory about $1\frac{1}{2}$ mile in extent, whose western extreme is called Estaca; and which runs down rugged and irregular to the sea, with several small pointed rocks or islands off it. The eastern extreme of the projecting land is called Cape Vares, and the land between the two points is high and steep over the sea. On each side of the promontory is a deep bight, the one being the harbour of Barquero, and the other the inlet of Santa Marta, which latter is not an anchorage.

In approaching the land from the northward or westward, the island of Conejera, which forms the eastern point of the Bay of Barquero, will be seen, and the sandy beach at the bottom of the bay. On the hill above Point Camero at the eastern entrance, is a low square look-out station.

When choosing a berth, regard should be had to the time of the year, the prevailing winds, and the object in view. Ships driven in by stress of weather during the north-west gales in winter time, would do well to run along the weather or western shore, at about three cables' length, and when nearly abreast of Point Almeiro, with Cape Vares about N.E. $\frac{3}{4}$ E., and Conejera Island, S.E. $\frac{1}{2}$ E., to come-to with the small bower in 8 fathoms, so as to moor N.W. and S.E. with open hawse to the north-east; in this position a vessel will be well sheltered by the land, and will have ample room to veer if desired.

If the sea in the offing be very heavy in a north-west gale, some cross swell will come into the bay round Cape Vares, and the smoothest water will then be found farther to the south-east, in the inner roads, called by the pilots Vicedo. It was in this part of the anchorage that twenty sail of merchant vessels rode out the heavy gales of 1839-40.

The marks for this anchorage are to bring the point of Cueva-baja on with Point de Cruz (the south point of Conejera Island) and a long, low, one-story house standing by itself on the beach of El Valle, on with Point Videiros bearing S.S.W. But large

ships should anchor with Conejera Island open nearly its own breadth of the mainland, at the entrance of the harbour, in 6 or 7 fathoms. In the southerly gales which are very heavy on this coast, though unattended with sea, this part of the anchorage will also be preferable, as well as with south-east winds. It is also more convenient for ships having to water, the best watering place being close to Conejera Point, on the south-east side, under the village of El Vicedo. There is, however, an excellent run of water on the opposite shore, near Point Campelo, where two or three ships' boats can water at the same time even at low tide: at present ships find some difficulty in watering both at Corunna and Ferrol, having to get the casks out of the boat.

Though particular marks have been given for the best anchorage, ships may anchor in any part of the bay after bringing Cape Vares to the eastward of N.N.E., which will give them sufficient shelter in north-west gales. The bottom is everywhere clean, with excellent holding ground, and as the soundings are regular, and the shore free from sunken rocks, the largest ships may work in and out with perfect safety, and without any pilot or previous knowledge of the place.

Although Vares or Barquero as a harbour is not equal to Ferrol or Corunna, it offers some advantages not possessed by either of those ports. It is easier to make in thick weather, the coast is perfectly clear and bold, and in approaching it in westerly gales, you do not, as at Corunna and Ferrol, run down on a lee shore and get embayed. Ships may enter Vares with the heaviest gales at S.W. or N.W., and on sailing from it with these winds they will be at once clear of the land, as at the entrance of the harbour is the most northerly point of the whole coast.

Exclusive of Vivero, which is not a safe anchorage for winter time, there is not a single harbour to the eastward of Vares that is suitable for large ships and accessible in N.W. gales. Its only disadvantage consists of being open to easterly winds, which blow with greater force on this part of the coast than further eastward; but it appears from the statement of the inhabitants and others, that these winds are never accompanied by any sea to endanger a ship at anchor, and this is confirmed by the appearance of the shore itself, which does not show the usual marks of a heavy surf, when exposed to the easterly winds. The vegetation on the sides of the harbour extends nearly to high water mark, a certain proof of its not being washed by the sea."

Cape Estaca is about $1\frac{1}{2}$ mile from Point Vares, and the shore between is high and precipitous. On it there is a building showing a light revolving every minute, at 307 feet above the sea, visible about 20 miles off.

The remainder of the northern coast of Spain to Cape Finisterre, is contained in the "Sailing Directions for the Coasts of Spain and Portugal."

LONDON :
SAVILL AND EDWARDS, PRINTERS, CHANDOS STREET,
COVENT GARDEN.